The value of social media for innovation

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The value of social media for innovation: A capability perspective☆

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ABSTRACT

Firms increasingly employ social media for innovation, yet current literature offers little guidance for developing their strategic uses. This study applies a qualitative, theory-building approach to derive a conceptual framework of the capabilities that allow companies to benefit by using social media throughout their innovation processes. This framework, designed to support applications of social media for innovation, sheds light on three key capabilities and related resources: social media managers who orchestrate social media activities across the innovation process; top management that cultivates support, team empowerment, and test-and-learn cycles; and agile processes that facilitate rapid decision making and knowledge flows across teams. This article enriches organizational capability theory as it pertains to innovation, and it provides managers with guidance for implementing social media strategies in practice.

1. Introduction

The proliferation of social media platforms coincides with the expanding open innovation paradigm, in which firms integrate new ideas and feedback from various internal and external sources (Lee, Olson, & Trimi, 2012). In the quest to gain new insights and acquire additional knowledge, firms open their value creation processes and collaborate with various stakeholders, including customers, suppliers, and employees (Felix, Rauschnabel, & Hinsch, 2017; Kazadi, Lievens, & Mahr, 2016). In addition, a recent survey confirms that 82% of companies use social media to enhance their innovation processes (Roberts & Piller, 2016), benefitting from user-generated content and social networks that reflect customers' preferences (Fjeldstad, Snow, Miles, & Lettl, 2012). As a good case in point, "Threadless.com" offers a full lineup of apparel, accessories, home decor, and footwear, based on thousands of designs submitted and voted on by its online community. Similarly, the My Starbucks idea platform has produced more than 300 ideas from the online community that the company subsequently has implemented.

Social media in turn might benefit the different stages of the innovation process uniquely. Firms might create crowdsourcing platforms to gather ideas in the ideation stage (e.g., Innocentive[1]), use toolkits to enhance product designs in the development stage (e.g., Nike[2]), or rely on virtual product testing (e.g., Ipsos[3]) in the launch phase (Dahlander & Wallin, 2006). Yet understanding of the best ways to leverage social media across these various stages remains limited, fragmented, and mostly anecdotal (Bashir, Papamichail, & Malik, 2017; Roberts & Piller, 2016). Systematic insights are needed to help organizations maneuver the shift toward individual and networked customers, which is inherent to social media (Labrecque, vor dem Esche, Mathwick, Novak, & Hofacker, 2013). For example, companies must establish conditions and incentive schemes to empower customers to co-create products or help launch them as brand ambassadors. They also need to address the risks of proactive involvement through social media, including coordination mechanisms and control considerations, which becomes particularly difficult when we note the convoluted nature of both platforms and firms today.

In particular, social media platforms are highly interactive, with specific functionalities, and they evolve quickly and without control over their empowered users (Peters, Chen, Kaplan, Ognibeni, & Pauwels, 2013). Firms require careful orchestration of their digital resources, processes, and competencies to guide social media practices (Fichman, Dos Santos, & Zheng, 2014), especially for the innovation process that demands a strict series of actions, including stage-by-stage approval, long development cycles, regular measures of key factors

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[1] https://www.innocentive.com/
[2] https://www.nike.com/us/en_us/c/nikeid
[3] https://www.ipsos.com/en-us/product-testing

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(e.g., money, time), and strong governance (Cooper, 2008). Each stage of the innovation process also pertains to different web techniques (e.g., online contests for idea generation, virtual product testing for development, user sponsorship for launch) and distinct stakeholders. Therefore, firms need different capabilities to cope with these particularities and ensure effective, efficient innovation processes.

Considering the lack of systematic, theoretically based explanations of which capabilities should be created and how they should be managed in the particular context of innovation processes (Roberts & Candi, 2014), research is needed to clarify the benefits sought by firms when they use social media in the different stages of their innovation processes and the organizational capabilities they need to achieve effective uses of this tool. Accordingly, this study complements previous investigations of social media management (Bianchi & Andrews, 2015; Felix et al., 2017; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011) by focusing on specific capabilities required by the innovation process. In turn, it contributes to marketing and innovation management literature in three main ways. First, this research delineates the objectives that firms pursue when they use social media in each step of the innovation process and thus identifies specific capabilities underpinning these goals, including key capabilities associated with social media and platforms' particularities. Second, to extend recent findings by Felix et al. (2017) that address strategic uses of social media, this study provides a rich, comprehensive framework of organizational capabilities at strategic and operational levels, applied specifically to the innovation process. Third, this research offers a nuanced picture of required social media capabilities and organizes them in a three-stage model of maturity levels. The associated comparison of firms with distinct social media and innovation proficiency provides managers with guides for assessing their own practices and prioritizing their social media investments. Taken together, these exploratory findings offer theoretical insights into the way firms should leverage social media tools throughout the innovation process, which in turn can help managers set up their own social media strategies to support innovation.

2. Theoretical framework

2.1. Social media in the innovation process

Social media are highly interactive platforms that allow individual users and communities to share, co-create, discuss, and modify user-generated content (Piller, Vossen, & Ihl, 2012). Spanning channels such as blogs (e.g., Huffpost), microblogs (e.g., Twitter), social networking sites (e.g., Facebook, LinkedIn), and collaborative platforms (e.g., user forums, Wikipedia; Roberts, Piller, & Lüttgens, 2016), social media have radically changed the way organizations and their employees interact, both within and outside company boundaries, by providing a wider range of interaction opportunities (Aral, Dellarocas, & Godes, 2013). They also represent a tremendous source of data and business intelligence, in the form of market insights and customer feedback, that can inform different stages of innovation processes (Roberts et al., 2016). In particular, social media use in innovation processes might be proactive (e.g., online contests, word-of-mouth campaigns) or reactive (e.g., monitoring, data mining), according to the stages to which it applies (Culnan, Mchugh, & Zubillaga, 2010).

Traditionally, the innovation process is driven by the firm and consists of different stages from ideation to product launch. In the ideation stage, firms leverage social media to increase inputs from consumers, with significantly less costs than are required by traditional methods (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010). For example, netnography applies anthropological research to the Internet and can capture attitudes, perceptions, and behaviors (Kozinets, 2002; Piller et al., 2012), so it effectively gathers innovative ideas and solutions by listening in on users' conversations on social media. Using netnography, Beiersdorf gathered insights shared by online users to learn that they wanted an antiperspirant that would not leave stains on clothes, leading to the innovation of its Nivea Black & White deodorant (Bilgram, Bartl, & Biel, 2011). Text and data mining offer alternative means to collect market insights without actively involving users, because they extract innovation-related information from unstructured text or data (Christensen, Nørskov, Frederiksen, & Scholderer, 2017). These data are rich and often contain additional information, such as tags that indicate users' profiles and location (Moe & Schweidel, 2017).

In contrast, online contests and crowdsourcing involve active participation by stakeholders who offer innovative ideas in response to requests from the firm. Among its many online contests, American Express launched the "YourBuzz[4]" application that consolidates customers' feedback from CitySearch, Yelp, Facebook, Twitter, and other popular websites. In crowdsourcing communities, multidirectional exchanges of comments include customers, their peers, and the firm (Chan, Li, & Zhu, 2015). Although it initially was designed to be a contest platform just for students, the Dell Social Innovation Challenge has grown into one of the most famous crowdsourcing sites, with thousands of ideas submitted by members and non-members of the community each year. Such contests and crowdsourcing efforts also can be supplemented by monetary or non-monetary rewards.

During the development stage, project wikis and shared collaboration spaces also might encourage concepts, prototypes, and evaluations, because they facilitate interactions and information sharing across innovation teams (Marion, Barczak, & Hultink, 2014). With these tools, firms can develop design toolkits and apply them creatively to product design (Cui & Wu, 2015). For example, BMW-Mini's website supports online customization, and then users' designs can be shared with peers through social media to gather feedback (Piller et al., 2012). However, few studies consider social media uses during the development phase; instead, it appears that many firms tend to rely more on internal platforms and closed networks for this stage (Marion et al., 2014).

In the launch stage, awareness is key (Hoyer et al., 2010); it might be created by releasing information to online communities to reach mass markets (Dahlander & Wallin, 2006). Kim and Hanssens (2017) suggest that investing in blogging activities during the pre-launch phase is more effective than traditional advertising in terms of prompting consumers to search for new products and evoking viral effects. After the launch, social media also grant companies access to further feedback, strengthening the sense of community and enhancing customer engagement with the brand or its products (Mangold & Faulds, 2009). For example, Audible[5] offers more than 180,000 audio books, and by employing word-of-mouth advertising and social media marketing campaigns, it created partnerships with influential YouTube contributors to increase other customers' awareness of and engagement with its offerings.

However, for these objectives to be realized, firms must use social media strategically, with the support of their unique capabilities. In particular, firms must acquire value-creation and value-appropriation capabilities (Mizik & Jacobson, 2003). We argue that organizational capabilities, the cornerstone of any effective strategy, facilitate the creation and capture of value, as is central to strategic management (Bowman & Ambrosini, 2000).

2.2. Organizational capabilities for social media use in innovation processes

Marketing, innovation, and general management research identify key resources and capabilities that may help firms leverage social media during their innovation process, according to the specific features of social media and innovation. First, resources represent the firms' ability to conceive of and implement strategies (Porter, 1981). Tiago and Veríssimo (2014) argue that financial resources can facilitate interactions with customers, provided enough time and human capital are

[4] https://yourbuzz.com.cutestat.com/
[5] https://www.audible.com/

dedicated to developing web-based or mobile applications. Digital infrastructures that support the collection, processing, distribution, and use of information also allow for (re)combinations of digital and physical components to produce new products and services (Barrett, Davidson, Prabhu, & Vargo, 2015).

Second, knowledge capabilities are essential to support the innovation process and firm strategy. The way firms acquire, develop, and use new knowledge determines innovation outcomes, such as superior performance or cost efficiency (Grant, 1996). According to Nguyen, Yu, Melewar, and Chen (2014), knowledge gleaned from social media results from experience, which facilitates optimal learning behaviors. However, to leverage this accumulated experience, firms require organizational routines to support the development and dissemination of ideas.

Third, with innumerable platforms, social media create complexity for information gathering. Firms that seek to be market oriented and customer centric need market-based capabilities to capture customers' latent needs and improve their market learning (Day, 2011; Kazadi et al., 2016). In addition, technologies that support customer interactions through social networks can enhance firms' customer centricity (Westerman, Bonnet, & McAfee, 2014).

Fourth, both innovation and social media are characterized by networks of people who interact (Piller et al., 2012; Tushman, 1977). Network capabilities should produce innovation networks that connect resources, knowledge, and capabilities; these networks then can establish unique knowledge through collaborations with various stakeholders (Kazadi et al., 2016; Perks & Moxey, 2011). These network capabilities also can be used to frame inbound (e.g., combining marketing and innovation activities across functional units to match the firm's overarching strategy) and outbound (e.g., reciprocal interactions of the firm and multiple stakeholders to mobilize skills) integration efforts (Felix et al., 2017; Westerman et al., 2014).

In summary, various capabilities may apply to the use of social media to support innovation processes. However, a holistic framework that specifies and details these various uses is missing. In particular, the shift by which users transformed from passive readers into active contributors (Labrecque et al., 2013) has disrupted their roles in every phase of the innovation process, creating both challenges and opportunities. Firms traditionally have sought to develop capabilities like sensing, learning, integration and coordinating (Pavlou & El Sawy, 2011) to capture customer preferences and thus create value (e.g., with market research). Through social media though, single users or communities can express their preferences in various ways (e.g., posting content as text, pictures, or videos). All these varied sources of value creation can benefit the innovation process, but firms need strong competences to be able to identify, interpret, and use the relevant information.

3. Method and procedure

The preceding literature review indicates the limited and fragmented state of knowledge about using social media in innovation processes. Therefore, this study adopts a discovery-oriented research approach to capture important meanings and motivations (Wells, 1993), pertaining to how the innovation process gets organized, how firms leverage social media in different stages of the innovation process, which benefits accrue from using social media in the innovation process, and what capabilities firms put in place to leverage social media for their innovation. Gathering such insights demands qualitative research, which can offer in-depth understanding of the subject, rather than a quantitative study focused on statistical generalizability (Patton, 1990).

3.1. Research design and data collection

This study features a three-stage process: (1) select large organizations active in innovation and with a social media presence, (2) interview experienced senior managers from different departments who are directly involved in the use of social media and/or the innovation process or who have a holistic perspective, and (3) collect extensive secondary data in the form of written documents and oral exchanges with internal and external sources of information to supplement the interviews. For the selection of both companies and managers, this study combines *purposeful sampling* (Patton, 1990) with *theoretical sampling* (Charmaz, 2006), to test for boundary conditions and ensure the overall validity of the results (Busse, Kach, & Wagner, 2017). Purposeful sampling identifies respondents who can generate information-rich data and contribute to an in-depth understanding of current practices and major concerns related to using social media in the innovation process. Theoretical sampling, introduced in a later phase, supports theory development on the basis of the preliminary categories. It ensures the elaboration and refinement of the emerging categories, by moving back and forth between the categories and the data (Charmaz, 2006).

To start, the authors prioritized large companies, which tend to display more efficient processes (Ketchen, Ireland, & Snow, 2007), greater financial and organizational resources (van de Vrande, de Jong, Vanhaverbeke, & de Rochemont, 2009), and capabilities that do not rely on single individuals (Teece, 2012). Such companies should be more likely to identify social media integration as a business priority and commit resources to it. The chosen companies also exhibited both similarities (e.g., active in media and communication) and notable differences in their business activities and internal structures (e.g., audit and consulting vs. packaged goods vs. pharmaceutical vs. logistics). This sample ensures a more detailed identification of pertinent factors (Curtis, Gesler, Smith, & Washburn, 2000). To identify innovative organizations active on social media, the first screening focused on their innovation activity (e.g., number of launches, upcoming innovation projects, crowdsourcing initiatives) and innovation or R&D investments. The next step analyzed their social media presence on Facebook, LinkedIn, Twitter, YouTube, Instagram, Snapchat, WhatsApp, and Pinterest, measuring both the type and amount of content created and the number of followers on each platform.[6] The resulting representative, bounded sample, as detailed in Fig. 1, provides generalizable results (Busse et al., 2017).

Within these relevant companies, experienced managers from various departments (e.g., digital, marketing, innovation, general management) participated in in-depth, face-to-face interviews. The selection criterion for these managers was their ability to take a holistic view of both internal innovation processes and social media activities. The data collection, which took place from January 2016 to December 2017, involved participants from Western Europe and the United States, as listed in Table 1 Semi-structured interview guides framed the data collection; the interviews thus included theory-driven, proposition-directed questions (Patton, 1990) and sought to make the respondents' implicit knowledge more explicit (Flick, 2009). The interviews started with general questions about the companies' innovation process and social media use (e.g., "What can you tell me about your innovation process? What are the different steps involved in your innovation process? Is there a step of the innovation process in which you use social media?"). Next, the interviewer zoomed in on specific social media uses and the capabilities needed to manage them (e.g., human and financial resources, CEO's actions, frequency of meetings, interactions of different teams). The interview questions also evolved with the progression of the research, according to informants' feedback (Gioia, Corley, & Hamilton, 2013). For example, the last round of interviews focused on capabilities mentioned by previous informants. The interviews lasted 60–120 min on average and were audio-recorded for transcription (205 pages). When necessary, follow-up telephone calls

[6] Details are available on request.

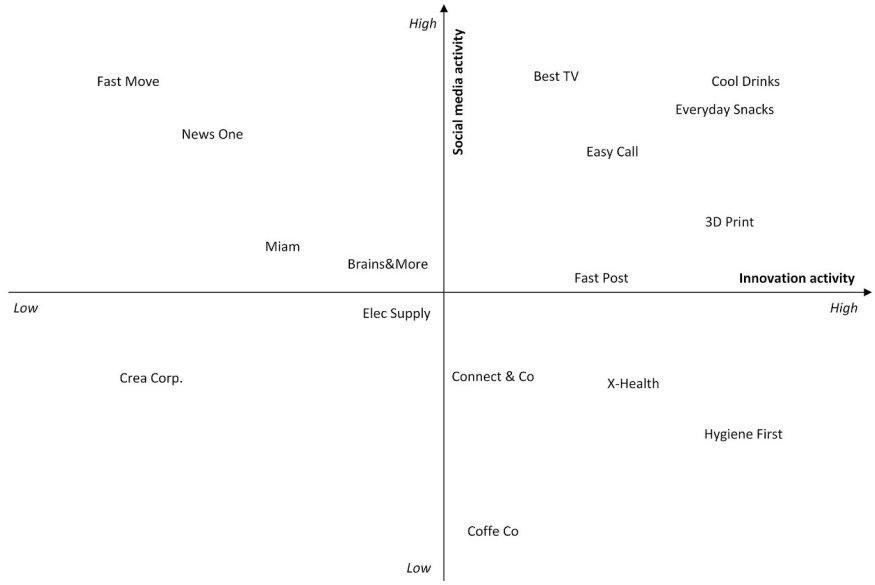

Fig. 1. Typology of firms based on innovation and social media activities.

and emails confirmed the interview information. Finally, the interviews reached saturation; additional data no longer sparked new theoretical insights that could lead to the creation of new categories (Charmaz, 2006).

As Eisenhardt and Graebner (2007) recommend, secondary data support the interview data, including internal reports related to social media and innovation, observations within the companies, information from the web and social media platforms, newspaper articles, and informal conversations with members of those companies. More than 100 documents complement and corroborate the information obtained through the interviews.

3.2. Data analysis, validity and reliability

Several steps ensure the trustworthiness of the analysis. First, a rigorous audit trail applied to the data. All material was carefully recorded, including interview transcripts, observations, analytical memos, and secondary data, to confirm the interpretations needed for the qualitative content analysis (Miles & Huberman, 1994). Second, all the material was entered into NVivo11 software that performed the systematic analysis (Bandara, Furtmueller, Gorbacheva, Miskon, & Beekhuyzen, 2015) to facilitate understanding of the findings (Bazeley & Jackson, 2013). The NVivo database supported searches, improving the coding and classification of the data as themes and patterns emerged. Third, the author team adopted an insider/outsider coding method (Gioia et al., 2013). An "insider" author, who worked in the field, coded the data, then two other authors, who had not worked in the field, acted as "outsiders" by reviewing and criticizing the schema during the coding process. Collective discussions and weekly meetings ensured team alignment. The data analysis procedures also were based on grounded theory, which involves the simultaneous collection and analysis of data to facilitate comparisons of theory and data (Strauss & Corbin, 1994; Wünderlich, Wangenheim, & Bitner, 2013), together with systematic combining, to enable the interpretation and theorization of the data (Dubois & Gadde, 2002). Table 2 summarizes these coding categories.

Starting with an inductive approach, the initial coding established codes on the basis of the information provided by informants (Strauss & Corbin, 1994). This open coding produced 122 first-order topics, addressing both social media use and the capabilities required for it. For example, a respondent's explanation that "being on LinkedIn was a way for me to find information and to know what was going to happen" prompted a "social listening" code, whereas "Our CEO was also into customer experience…. He's really in favor of social media, he's a big endorser" was coded as "top management endorsement." Then the theorizing evolved from inductive to abductive, with a cycle of iteration between the data and prior literature (Dubois & Gadde, 2002). The aim was to identify similarities and differences in the long list of first-order topics (Strauss & Corbin, 1994). Following several iterations, it was possible to combine the first-order topics into fewer, theoretically meaningful, second-order categories (e.g., social listening, look-alike searches, big data analysis, and data mining were grouped into a "passive knowledge acquisition" category). In total 1336 quotations were related to 18 second-order categories. In a final step, we classified the latter into four metacategories: objectives, resources, competencies, and processes. For example, communication (208 quotations), co-creation (32 quotations), and passive knowledge acquisition (84 quotations) were classified under the meta-category "objectives."

Multiple assessments indicated the validity and reliability of the data. First, the face-to-face interviews, conducted in the respondents' own environment, produced meaningful, consistent perceptions of real-life situations (Wünderlich et al., 2013). Second, the secondary data provided triangulation (Decrop, 1999) and enhanced quality control by affirming the transparency, trustworthiness, and credibility of the interviews (Andrews, Higgins, Andrews, & Lalor, 2012). Third, debriefing sessions at each phase of the coding process involved two peers familiar with the phenomena being explored, who challenged assumptions and interpretations (Creswell & Miller, 2000). Moreover, the author who initially coded the data fully recoded them three months after the end of the research. The intra-rater reliability, calculated in NVivo using Cohen's (1960) Kappa coefficient, reached 0.887, above the cutoff point of 80% recommended by Neuendorf (2016). Fourth, once the data had been recoded by one of the authors, we measured intercoder reliability by asking an independent researcher to code the data to categories and we obtained a high percent agreement of 0.94. This value can be considered as good because it's based on nominal variables (Lombard, Snyder-duch, & Bracken, 2002) and it is higher than the suggested minimum of 0.8. Lastly, the use of multiple sources of information and interpreters increased the overall quality of the study (Strauss & Corbin, 1994).

Table 1
Sample.

	Company	Company description and turnover	Job title	Function	Age (gender)
1	Cool Drinks	Worldwide leader in beverage – $46 MM	Digital activation manager	Manager and owner of social media strategy. Coordinates social media activities with marketing & innovation departments.	30–35 (F)
2	Everyday snacks	Worldwide leader in snacks & beverage – €66,5MM	Senior digital manager	Manager of social media strategy. Coordinates social media activities with marketing & innovation departments.	30–35 (M)
			Marketing Manager	Manager of different brands' marketing mix (incl. innovation strategy)	25–30 (F)
3	Coffe Co	Global leader in hot beverage - €5MM	Marketing manager	Manager of different brands' marketing mix (incl. innovation strategy).	35–40 (M)
			Marketing manager	Manager of different brands' marketing mix (incl. innovation strategy).	30–35 (F)
4	Fast Post	Worldwide leader in logistics - €55 MM	Head of marketing	In charge of the division's marketing strategy (incl. innovations).	40–45 (M)
			Innovation manager	Innovation manager at HQ who also coordinates with marketing teams.	35–40 (F)
5	Best TV	National leader in telecommunications - 334 M€	Digital manager	Works on web creation team in charge of innovative projects.	30–35 (F)
			Digital coordinator	Coordinates innovation projects from a digital perspective with different teams.	25–30 (F)
6	Hygiene First	Worldwide leader in health and hygiene products – £9MM	General manager	Head of the business; involved in all strategic meetings related to innovation and marketing strategies.	35–40 (M)
			Associate director innovation	Works on innovation plans at HQ and with local teams on marketing plans for introducing innovations	30–35 (M)
7	Brains & More	Global leader in audit, advisory and tax services – $25MM	Marketing and Brand manager	In charge of communication and social media management, including internal crowdsourcing projects.	30–35 (F)
			Partner & attorney	Head of indirect taxes department. In charge of department's strategy (incl. innovation plans).	45–50 (M)
8	Fast Move	National transportation leader - €267M	Social media editor	In charge of the communication on all social media platforms. Coordinates social media projects with other teams.	30–35 (F)
			Digital manager	Coordinates social media at the strategic level.	35–40 (M)
9	X-Health	Worldwide leader in pharmaceuticals - £23MM	Head of innovation	Responsible for strategic marketing: launch of new products; pipeline strategy; innovation management.	40–45 (M)
10	Crea Corp.	Subsidiary of worldwide communication agency - £12 MM	General manager	Responsible for the implementation of initiatives to drive the strategic direction of the agency. Strong focus on digital.	40–45 (F)
11	Easy call	Worldwide leader in logistics - €55 MM	Manager of service channel strategy & social business	In charge of the development and implementation of organization-wide omnichannel service strategy and of service transformation initiatives.	40–45 (M)
			Product owner & community manager	Responsible for internal governance, policy of customer communication; community engagement and innovation around social media channels.	35–40 (M)
12	News One	National newsgroup leader - €59M	Product marketer & social media manager	In charge of the online visibility of the brand and responsible for all social media platforms.	30–35 (F)
			Brand Digital Strategy manager	Responsible for different digital fields such as online strategy, digital transformation, service design, and social media.	35–40 (M)
13	Elec supply	Global energy player - €75MM	Digital communication manager	In charge of digital communication: social media, digital campaigns, and content marketing.	40–45 (M)
			Head of innovation and business development	In charge of innovation projects and business development.	40–45 (M)
14	3D Print	Leader in 3D printing – €102 M	Digital marketing manager	Responsible for digital strategy: marketing channels, content strategy and social media.	25–30 (M)
15	Connect & Co	Leader in telecommunications - €73MM	Head of innovation	In charge of seeking and developing innovative services that enable cloud delivery models for enterprises, carriers and content service providers,	35–40 (F)
16	Miam	Global leader in food - €30MM	Marketing manager	Manager of different brands' marketing mix (incl. Innovation strategy).	35–40 (M)

Note: The firm names are disguised, to ensure the anonymity of the informants.

Table 2
Coding categories.

Metacategory	Category	#Sources	#Quotations
Objectives	Active knowledge acquisition	23	67
	Passive knowledge acquisition	22	84
	Co-creation	12	32
	Test of concepts & prototypes	15	53
	Communication	26	208
	Engagement	20	87
	Feedback	19	60
Resources	Budget allocation	20	41
	Time allocation	19	47
	Digital infrastructure	21	59
	Social media manager	16	35
	Operational team	17	31
	Strategic team	22	42
Competences	Knowledge management	23	83
	Top management understanding	21	69
	Networking & collaboration	25	119
Processes	Flexible processes	25	115
	Structured processes	24	104

4. Results

4.1. Objectives of social media use during the innovation process

Table 3 displays the seven main objectives that firms seek to achieve by using social media during their innovation processes. These objectives are categorized by their internal or external nature. For example, high-tech companies tend to rely on internal social media at the innovation front-end, with the justification that they cannot find highly specialized expertise outside their ranks. Low-tech companies instead show more openness to all types of social media throughout the innovation process.

4.1.1. Front-end

Two goals appear mainly in the front-end of the innovation process, related to knowledge acquisition. Veugelers, Bury, and Viaene (2010) find that social media facilitate crowdsourcing and searches for technological intelligence. Similarly, the current results indicate that firms seek knowledge actively from internal and external platforms, mainly in the form of new ideas. These ideas can be obtained through social listening or by explicitly involving users. Companies that deal with complex products and services tend to rely on internal platforms, especially in the front-end of the innovation process. Input from beyond company boundaries also can be sought; some managers reported that they seek external experts or universities through social media such as Facebook or LinkedIn, though they manage their input through internal social media platforms. They also report using social media as a secondary data source, to gather insights through data mining, look-alike searches, and profile hunting. The informants regard such techniques as significant opportunities to acquire deep knowledge about users, especially if the data come from external social media platforms like Facebook or LinkedIn. Still, most informants indicate that they use these data with caution, citing confidentiality and other potential ethical issues related to big data.

4.1.2. Development phase

Social media also enable brand or product co-creation in the development phase. Informants expressed enthusiasm about creating with customers in general or specific targets, such as experts with unique skills to act as co-creators. These companies also use contests and gamification to encourage co-creation. Moreover, they rely on these

Table 3
Objectives of social media use during the innovation process.

Social media use	Exemplary quotations	Stage of innovation process	Methods
1. Active knowledge acquisition	"To acquire knowledge in the frame of a new project, we organize hackathons with our beta testers, who in turn submit challenges and ideas to test among their own communities." Digital communication manager, Elec Supply "We have no idea about the type of 3D printing material that people really want, and so one thing is a survey to our existing clients, but we also did that on Facebook, asking people what type of material they wanted us to print." Digital marketing manager, 3D Print	Ideation	Hackathons Crowdsourcing Contests Lead-user method Gamification
2. Passive knowledge acquisition	"We have developed our own social network, which is a tool of collective intelligence. I use it as a tool of knowledge management within the company." Head of Innovation, X-Health "All these data, it is a goldmine, something incredible! There, we really see how a company like Facebook is powerful." General manager, Crea Corp.	Ideation	Netnography Data mining Text mining Social listening Profile hunting
3. Co-creation	"Because the external market is not inspired by topics revolving around energy, they created the 'go for service,' a type of start-up within the organization, where the aim is to co-create internally with the use of more agile processes." Digital communication manager, Elec Supply "We currently have co-creation projects: we recruit our consumers through social networks to create new designs that we then publish online." Digital activation manager, Cool Drinks	Ideation & development	All methods of the table
4. Test of concepts & prototypes	"We started using customers to fine tune things and to test them, so we use customers in the test phase." Manager of service channel strategy & social business, Easy Call "We have a team in charge of innovation, it is a lab of innovation and creativity, and they use Facebook among others to make tests on things they are developing." General manager, Crea Corp.	Development	Design toolkits IT collaborative tools (cloud-based file sharing, wikis) Virtual product testing
5. Communication	"For one of our range, we have a new style; in a couple of days, we are going to use SM to spread the news." Digital activation manager, Cool Drinks	Launch	Blogging Vlogging
6. Engagement	"We also post communications and post blog posts. It is more about engagement, but the traffic is not mind blowing." Digital marketing manager, 3D Print	Post-launch	Viral marketing User sponsorship Brand ambassadors
7. Feedback	"We invited our customers to give their opinion." Manager of service channel strategy & social business, Easy Call "It is getting reactions from the consumers: see what they like, what they say and keep it at the top of our mind." Senior digital manager, Everyday Snacks	Throughout innovation process	Active listening Posting Live conversations + all methods of the table

sources to pretest their product prototypes, advertising boards, or television spots before launch, whether they turn to mass audiences through Facebook or blogs or targeted users in communities. For example, Cool Drinks targets designers and invites them to participate in internal prototype workshops. Hoyer et al. (2010) identify differences across consumer knowledge sources as input for innovation; the current findings similarly suggest that particular users, such as brand ambassadors active on social media, can enhance the innovation process because they understand the "brand DNA" better than other users and value consistency in innovation activities.

4.1.3. Commercialization phase

A critical goal, according to the respondents, is to communicate with target users, usually to announce new products or services. Managers prefer to communicate through social media to encourage innovation diffusion, because they can access masses of users at lower costs and potentially initiate viral marketing through word-of-mouth campaigns. Furthermore, managers frequently identified content as a key factor for effective communication, but for content to be noticed, firms had to adopt creative approaches (e.g., contests, videos, humor) that would lead to user engagement (Ashley & Tuten, 2015). The selection of an appropriate platform also helped firms position their content for targets. For example, Pinterest and Instagram often feature visual content that appeals to women and designers; videos on Snapchat, YouTube, and Periscope reach children and teens better. Finally, companies rely on external social media to obtain feedback about specific concerns at different stages of the innovation process (e.g., testing a prototype, after launch). Companies receive feedback in several forms: active listening, posting, and live conversations through various channels such as Facebook, blogs (post-launch), or internally managed social media platforms. Because post-launch feedback is useful for supporting future innovation initiatives, the implementation of iteration cycles appears critical.

4.2. Capabilities for social media use in the innovation process

Fig. 2 illustrates the framework of the social media capabilities comprising resources, competencies, and processes. First, key resources are represented by the social media teams at both operational and strategic levels and by the social media manager, who coordinates communication and decisions across different teams within the company. Resources also encompass the digital infrastructure required for effective social media use by the different teams. Second, competencies entail a series of interrelated skills, namely, knowledge management, top management understanding, and networking and collaboration. Third, resources and competencies are embedded by two types of processes that constitute iterative cycles. Because the innovation process is complex, it requires both flexible processes such as a fast decision making and structured processes such as formal, regular meetings.

4.2.1. Resource combination for social media use in the innovation process

Operational and strategic social media teams

Skilled human resources dedicated to social media management are required to obtain positive outcomes from social media use (Effing & Spil, 2016). They involve both internal and external (e.g., media agencies) resources. Internal human resources refer to the operational or strategic level. At the operational level, informants cite "web-care teams" (or "consumer care teams") that take care of day-to-day interactions on social networking sites. They appear useful for gathering knowledge, insights, and feedback from social media users. Interactions between the operational team and social media users produce useful data that may be leveraged for innovation. As the social media editor at Fast Move states:

> We receive complaints and suggestions every day through social media (e.g., Facebook or Twitter). I remember a suggestion that was reported by the web-care team. A guy had thought about a "beep system" that would make a different sound according to the number of fares left. It was something we had never thought about here internally, and we decided to implement the idea. The idea came through in September, and by December, it was implemented.

At the strategic level, a social media team (which sometimes consists of one person) is in charge of creating annual plans and coordinating with other departments.

Social media manager with skills to orchestrate social media activities

The social media manager, often considered the point of contact between the social media team and other departments, is crucial for the deployment of social media activities and must exhibit certain traits. In particular, the social media manager's age appears related to her or his knowledge of existing platforms. Informants from Generation Y (born after 1981; Brosdahl & Carpenter, 2011) demonstrate deep understanding of the various platforms and their functionalities, as well as enthusiasm for testing and learning from them. Some are quite passionate about social media and use them for personal projects too:

> All the collaborators here have been hired based on their dynamism, their capacity to surpass themselves and to suggest projects. For instance, we have this new podcast show called "All for women": it discusses all types of matters women are interested in…. This show comes from one of our collaborators who is passionate about podcasts and who creates them outside work. (digital coordinator, Best TV).

They also act as consultants at several managerial levels within the firm, such as using cogent arguments to get top managers on board. Past professional experience in a media agency serves as another indicator of these managers' available resources. Informants with such a profile acknowledge that they leverage their past experiences in their new positions, and other respondents spontaneously cite those characteristics. This background appears to enhance social media practices in several ways, including more creative approaches and social media expertise, as well as stronger communication skills that facilitate collaboration with multiple stakeholders. These skills help build community engagement.

Digital infrastructure, time and budget allocation

According to the informants, the digital infrastructure also is a precondition of the effective use of social media for any innovation. The features and functionalities provided by innovation platforms are important elements. For example, X-Health created two internally managed innovation platforms to gather new ideas and knowledge: one shared with internal employees and a partner university, and another shared with internal employees only. These two platforms get continuously updated with renewed content to encourage participation, and employees receive continuous training to reflect any changes to the platforms. Time and budget allocations for social media activities instead pose major challenges for the surveyed firms. In many organizations, social media management gets allocated according to employees' own interests and other business priorities.

Despite the growing monetization of platforms such as Facebook, almost all the surveyed organizations spend less than 10% of their total marketing or innovation budget on social media. More than half of the informants indicated their willingness to intensify their social media activities at the moment they obtain accurate measurements about the returns on their investment.

4.2.2. Skills and competencies for social media use in the innovation process

Knowledge management

The data reveal that for many organizations, knowledge about social media tools is spread across people and departments, so social media managers or external agencies still function as experts. All the surveyed organizations work with external agencies for their social media projects,

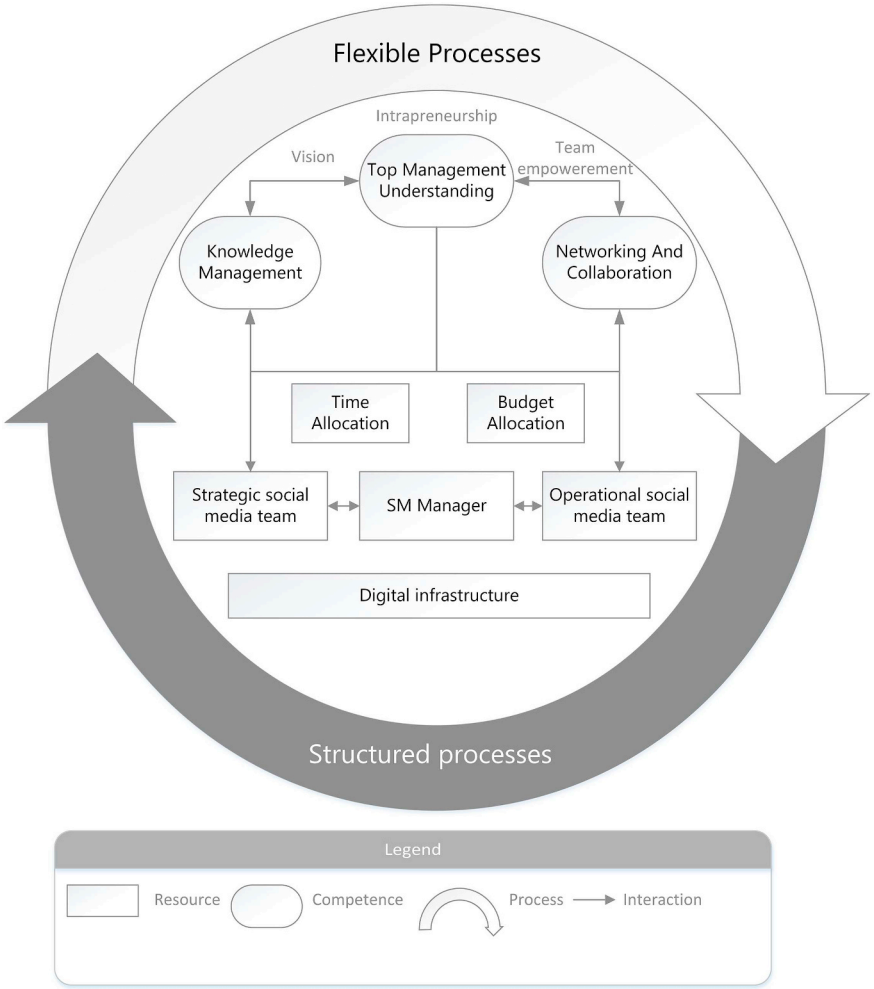

Fig. 2. Framework of key capabilities for social media use in the innovation process.

but only a few informants reported meeting with digital agencies regularly to discuss strategic guidelines, implementation, and follow-up. In addition, knowledge sharing enables collaboration for innovation (Nambisan, Lyytinen, Majchrzak, & Song, 2017), which can occur through digital platforms. The head of innovation at X-Health explains:

> I have managed to motivate my colleagues to participate and generate new ways of thinking inside my company. Employees had to access a platform created by my innovation team, for which they had received training. They were then asked generate innovative ideas regarding process improvements… This initiative was a real success, and we did it again with even more participants.

This organization built knowledge sharing platforms and succeeded in leveraging its knowledge outside the platforms, in the form of process innovations. However, many other organizations struggle with knowledge transfer, or how people pass on messages reflecting their ideas and observations (Ringberg & Reihlen, 2008). This challenge is particularly acute for big data. Some informants reported that they wanted to increase their use of social media data in innovation processes, yet they remain underexploited, due to the firms' inability to filter and share the relevant information internally.

Top management understanding

Social media also need to be understood by top managers, who then support their use (Rydén, Ringberg, & Wilke, 2015). Top managers with a visionary innovation leadership style encourage connectivity and knowledge integration (Caridi-Zahavi, Carmeli, & Arazy, 2016). Accordingly, the firms that leverage social media most effectively for innovation have top managers who envision a future in which social media are fully integrated into their organization. These top managers seek to reduce hierarchical barriers, communicate extensively with teams to increase their knowledge about social media, and encourage intrapreneurship and internal knowledge sharing. To secure team empowerment, they explicitly flatten the hierarchical structure, as noted by the brand digital strategy manager at News One:

> If we say, for instance, “Hey, we want to attempt something new with WhatsApp,” the CEO will ask how much it costs, but eventually he'll let us attempt it. He trusts us. He has also changed the organizational structure to support us in what we do…We really feel that we are supported by our management!

Top managers of innovative companies active in social media also understand that employees need to receive training and attend external meetings that cover topics such as digital transformation. These employees in turn tend to have more time and flexibility in their daily routines to achieve their targets. The senior digital manager at Everyday Snacks testifies:

> I'm not the 9-to-5 type. I have a lot of flexibility, and my management believes in me. I attend many training sessions, and I go to meetings with other companies that face the same questions and issues regarding social media. All these opportunities are really insightful.

In this same company, top managers pursue digitization of the company's business units and invest in innovation and social media,

which helps it court millennial employees who use smartphones and social networking sites intensively. Intrapreneurship (entrepreneurship within existing organizations) in turn strongly characterizes new business venturing, together with innovativeness, self-renewal, and proactivity (Antoncic & Hisrich, 2001), as enabled through support of employees' personal projects, even if they have been developed outside working hours. In addition, a lean start-up mentality prompts the growing phenomenon associated with the incubation of internal or external start-ups. This process is partly supported by social media platforms. For example, Elec Supply uses a social media platform to gather innovative ideas. Within a week, ideas quickly advance, such that they are reworked, tested with a proof of concept, and then enter the incubation phase if they are sufficiently mature. This company also organizes "Entrepreneurial Deep Dives" with high-potential employees who have been identified as potential entrepreneurs and who might eventually initiate a related start-up.

Networking and collaboration

Similarly to Mallapragada, Grewal, and Lilien (2012), the findings further suggest that users' embeddedness and brokerage in both internal and external networks determine the time to product release. From an internal perspective, the connections that social media managers make with other departments are essential for implementing initiatives. Through such internal connections, managers obtain buy-in from top management and other departments to implement their innovations and social media activities. From an external perspective, companies that have digitized their products and services manage to create networks among users and suppliers, which is particularly useful when they want to spread information. Some organizations capitalize on networks of influencers to recruit crowdsourcing co-creators, spread brand messages, or build brand images during and after innovation launches. Close collaboration between stakeholders in turn is an essential element for building internal expertise, in different forms, including the relationships that innovation and marketing teams form with external stakeholders such as digital experts, as well as cross-functional teams within a company that enhance the adoption of social media tools by more employees and increases their acumen with respect to these tools. Finally, firms with large communities benefit from the broader group involved in their innovation projects. For example, Cool Drink maintains a large community on Facebook, as well as a large network of designers through other platforms, such as Pinterest. These designers receive invitations from the company to work on prototypes. Similarly, Elec Supply invites its network of "geeks" to "hackathons," with the objective of finding innovative IT solutions.

4.2.3. Processes for social media use in the innovation process

Flexible processes

Organizations that have mastered social media tend to act quickly and flexibly. They anticipate and respond to market opportunities:

> We have to anticipate, anticipate, anticipate; we need to be reactive, listen to conversations to know what is being discussed and how we can address the questions as quickly as possible … it is really about that — anticipating and being hyper-active. (digital activation manager, Cool Drinks).

Due to top management's trust, internal decision-making processes get shortened, which accelerates the firm's reactivity. Moreover, the decentralization of activities and local power to subsidiaries enables companies to remain relevant and in control of their social media. Local power appears to ensure proximity, speed of action, and adequate content. It also facilitates collaboration with other departments internally and with local agencies externally, which is key to implementing an effective innovation strategy.

Structured processes

Structure and organization affect collaborations with external counterparts, which companies need to gain knowledge, build partnerships, and obtain resources to support their social media activities. Those firms with structured processes appear more advanced in terms of leveraging social media for their innovation, especially through the synergistic effects that arise between their innovation processes and their social media initiatives. Social media thus get integrated or at least considered in each step of their innovation process. For example, X-Health uses the information collected through social media to make decisions about future product and service launches. In the analyzed companies, all processes are embedded, which is facilitated by their implementation of various initiatives (e.g., weekly meetings, information sharing on dedicated platforms, data tools). They also assign employees to oversee all data transfers. This finding confirms the importance of evaluating and managing knowledge flows. As noted by Marion et al. (2014), vertical knowledge is key to the innovation process, because managers must make decisions about the new product portfolio, resource allocations, technology platforms for development and manufacturing, and product road maps.

4.3. Levels of maturity in using social media for innovation

Information systems literature proposes staged models to describe, predict, and control processes; such models also can categorize firms according to their level of new technology adoption (Mergel & Bretschneider, 2013). Introducing new technologies, such as social media, entails changes for organizations. Effing and Spil (2016) offer a maturity model based on firms' social media strategy; the current study similarly proposes three maturity levels (explorers, gold diggers, and trailblazers), reflecting the surveyed firms' increasing maturity in terms of implementing capabilities to support the use of social media for innovation (see Table 4).

Table 4
Maturity in key capabilities for social media use in innovation processes.

		Explorers	Gold diggers	Trailblazers
		(Coffe Co, Connect & Co, Hygiene First, Crea Corp.)	(Elec Supply, Fast Post, Brains & More, X-Health, Easy Call, Miam, News One, 3D Print)	(Fast Move, Best TV, Cool Drinks, Everyday Snacks)
Resource	Operational social media team	+	+	+
	Strategic social media team	−	0	+
	Skilled social media manager	−	0	+
	Budget allocation	−	−	0
	Time allocation	−	0	+
	Digital infrastructure	0	+	+
Competence	Top management understanding	−	0	+
	Knowledge management	−	0	+
	Networking and collaboration	0	+	+
Process	Structured processes	0	0	+
	Flexible processes	−	−	+

4.3.1. Explorers

Four firms in the sample exhibit a low level of maturity. These *explorers* still question the value of social media for innovation. Top managers perceive some potential, but they express doubts about exactly how social media can serve their innovation objectives. In turn, they do not invest substantially in these tools, out of concern about the returns on their investment. Instead, they observe what other market actors do. The few employees working at a strategic level that use social media lack enough time resources to dedicate to integrating social media in the firms' innovation projects. Rather, they sporadically perform tests, without strategic guidelines, and do not systematically integrate the lessons into future initiatives. Explorers have no social media team at the strategic level but instead implement it only at the operational level. They gather feedback, questions, and complaints but leave that feedback inside the department. The resources allotted to social media for innovation are scant, and these organizations have not yet created value from their social media activities.

4.3.2. Gold diggers

Eight organizations at the medium maturity level can be categorized as *gold diggers*. They recognize that social media are important but still are working to understand how to leverage these tools for innovation. They possess some capabilities but are missing key elements at the strategic level. Along with web care teams, they create internal teams at the strategic level, then achieve some minimum knowledge transfer through training, meetings, and ad hoc collaborations. They gradually are increasing resource allocations, in terms of both time and money. Furthermore, they reflect on lessons from their social media tests. Gold diggers have started to create value from social media use; they are allocating resources and developing some important competencies.

4.3.3. Trailblazers

Trailblazers have a high maturity level and allocate all the required resources to successful social media use for their innovation goals. Few organizations have reached this level; they feature not just the two required social media teams but also a highly skilled social media manager who orchestrates innovation activities. The teams managing social media and innovation projects are recognized internally for their work and have significant freedom, as well as the support of top management, such that they are encouraged to test new ideas, learn from failures, and share their insights quickly. Their processes are flexible, and their decision making tends to be rapid. Furthermore, trailblazers create strong ties with internal and external customers, experts, and fan communities that truly engage with the organizations. A strong intrapreneurial culture also surrounds these organizations. Thus, trailblazers exhibit high market reactivity, which translates into quick responses to feedback gathered from social media. They stand out by virtue of their resources, competencies, and processes, which they acquire, combine, and put to work over time.

5. Discussion and conclusion

To address the paucity of research into strategic approaches to social media for innovation, this study provides an in-depth understanding of key resources, competencies, and processes that are required to create and capture value during the different steps of the innovation process.

5.1. Theoretical implications

This study accordingly makes several important contributions to academic knowledge. First, it presents a typology of the objectives that firms pursue by using social media in different steps of the innovation process. This topic has been overlooked in both innovation and marketing literature, despite its vast importance, in that these objectives set the path for implementing skills and practices to reap benefits from social media (Nambisan et al., 2017; Roberts & Piller, 2016). For example, creating customer engagement is a key objective, related to firms' focus on creating compelling content to reach customers who are prone to participate in new product or service development. Moreover, the different phases of the innovation process require different firm resources and capabilities. In this sense, the present findings build on work by Effing and Spil (2016), Felix et al. (2017), and Roberts and Candi (2014) that investigate capabilities associated with strategic social media marketing or specific phases of the innovation process. By addressing social media use across the entire innovation process, this study suggests a more strategic approach to the different phases.

Second, this study highlights the importance of complementary social media resources and capabilities. Firms that want to deploy a social media strategy clearly need budgets and human resources (Effing & Spil, 2016), but some resources, competencies, and processes apply specifically to unique innovation purposes. A social media manager who orchestrates all the activities and communication inside the company is key to the successful integration of social media platforms; her or his ability to develop strong ties and collaboration skills can support the creation of cross-functional teams and exert stronger influences. Such skills are critical to building and managing network relationships based on mutual trust, communication, and commitment (Blomqvist & Levy, 2006). Similarly, the findings stress the critical role of top managers for ensuring that social media uses are a priority and empowering employees to engage in collaboration. Such collaboration then facilitates knowledge flows. These findings relate closely to recent stakeholder theory, which indicates that firms that actively integrate empowered stakeholders during innovation processes benefit from unique sources of knowledge (Kazadi et al., 2016). In the current results, this competence translates into an ability to transfer knowledge within and across different teams, such that knowledge flows improve with the development and updating of innovation and social media platforms, the production of relevant features, and training. This evidence can help explain why IT-literate organizations with knowledge skills tied to new technologies tend to leverage social media more effectively (Marion et al., 2014). Previous studies suggest the importance of a social media or digital culture (e.g., Felix et al., 2017; Westerman et al., 2014); the current study indicates that an entrepreneurial culture that encourages a start-up mentality, with short testing and learning cycles, may be even more beneficial in terms of innovation outcomes.

Third, managers who blend different organizational capabilities into interconnected, hierarchical processes embed capabilities that help sustain competitive advantages (Grewal & Slotegraaf, 2007). The present findings demonstrate that organizations that embed social media tools within their innovation processes achieve better outputs, because they take a holistic approach and experience more efficient project implementation, through better knowledge transfers and faster decision-making processes. Investigating the influence of collaborative tools in innovation, Marion, Reid, Hultink, and Barczak (2016) suggest that embedding collaborative tools into specific innovation activities may lead to better projects. The formalization of processes also enhances innovation performance (Roberts et al., 2016). Another essential consideration is the way organizations should be designed, in terms of their flexibility and autonomy. Firms working with a lean, start-up model adopt an agile innovation process with short, iterative loops, as predicted by the agile stage-gate process proposed by Cooper (2016). They are characterized by fixed time and budget allocations but a flexible scope of work. In addition, localized decision-making power facilitates social media initiatives by fostering a stronger market orientation, which is crucial to seizing the market (Day, 1994), as is required in innovation settings, given the high rate of innovation failures.

Fourth, few models evaluate business practices in relation to social media; this research offers a novel, staged model of maturity levels that can help managers understand their own resources and capabilities. Similar to Effing and Spil (2016), this study identifies a series of actions that need to be implemented to reach the highest maturity level and

capture full value from social media to fulfill innovation goals.

5.2. Managerial implications

The objective of this exploratory research has been to specify key capabilities that organizations need to create and capture value from social media. The results highlight the complexity of social media uses for innovation and the need for both strategic and operational capabilities, as well as involvement by people from various departments and levels of the organization, to acquire and diffuse knowledge from social media. In particular, social media managers must demonstrate sufficient proficiency to manipulate information, develop ideas, and achieve strategic goals supported by technology (Colbert, Yee, & George, 2016). Firms should prepare to hire such contributors by redesigning their functions (e.g., social media manager that is not solely related to one department) and implementing complementary capabilities and well-established processes (e.g., files that blend input from innovation, digital and marketing teams). Top managers in particular should work to build a strong intrapreneurial culture (i.e., less hierarchical barriers and more trainings) that empowers key stakeholders, encourages the pervasive use of social media tools, and establishes cross-functional teams to work quickly toward the same objective by using information sharing and fast decision-making processes. Finally, the three-stage maturity model can help managers interested in testing and increasing their use of social media for innovation; it contains a comprehensive set of capabilities to assist them in achieving these tasks. This model should inform self-assessments that then can help them prioritize investments.

5.3. Limitations and further research

In line with recent research in digital marketing (e.g., Felix et al., 2017), this study takes an organizational lens to investigate key capabilities needed to foster social media use in the different stages of the innovation process. Our conceptual framework intends to encourage scholars to empirically test, enrich and refine the present findings. At a micro-level, an in-depth analysis of organizational and managerial processes, procedures, systems, and structures undergirding each class of capability (Teece, 2007), would enhance understanding of the suggested capabilities. Longitudinal studies are also needed to examine variations over time, in terms of both the capabilities involved and the innovation outcomes. Lastly, for a better generalizability of the present findings, additional research could investigate capabilities associated with other contexts and firm profiles, such as SME's.

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