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SOCIAL STRATEGY AS A MEANS TO GAIN KNOWLEDGE FOR INNOVATION

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ABSTRACT

Taking the knowledge-based view of the firm as its starting point, and acknowledging that knowledge can lie outside the firm, this research extends our understanding of how the growing social media trend can contribute to open innovation. We specifically focus on SMEs, which tend to be resource constrained and might benefit particularly from leveraging social media platforms. We bring forward the notion that people flock to social media because they are motivated by a desire for social interaction. Indeed, our findings suggest that SMEs that put effort into connecting customers on social media—which we refer to as having a *social strategy*—are likely to reap both customers' involvement in innovation on social media and new knowledge of value for innovation. Examining differences between social media platforms used primarily for personal purposes and those used primarily for professional purposes, we find that a social strategy is more effective in the first category than the second. This likely reflects differences in the social identities that people adopt on these two types of social media platforms.

INTRODUCTION

Innovation is a crucial capability of the firm (Baden-Fuller, 1995; Nelson, 1991; Katila and Ahuja, 2002) and the innovation process, from idea generation to new product launch, involves knowledge creation and application (Eisenhardt and Santos, 2002). Indeed, "the ability of a firm to recognize the value of *new, external information*, assimilate it, and apply it to commercial ends is critical to its innovative capabilities" (Cohen and Levinthal, 1990, p. 128). Thus, firms must be willing and able to acquire external knowledge to enhance their innovation effectiveness. Increasingly, firms are involving customers in the innovation process and adopting open innovation models to access knowledge from outside the firm (Chesbrough, 2003; von Hippel, 1998; Laursen and Salter, 2006). According to the Knowledge-Based View (KBV) of the firm, knowledge is socially constructed (Weick and Roberts, 1993; Brown and Duguid, 1991; Nonaka, 1994) and comes into being as a result of social interaction within formal or informal communities (Brown and Duguid, 1991; Nonaka, 1994), which can traverse organizational boundaries (Cohen and Levinthal, 1990).

However, the KBV does not explicitly deal with the role of information technology (IT) and more specifically, social media, in the process of knowledge creation (Wagner et al., 2014). Social media, defined as *virtual platforms on which people can synchronously or asynchronously create, share, modify or react to various forms of electronic content and connect with other people* (Kaplan and Haenlein, 2010; Kietzmann et al., 2011; Majchrzak et al., 2013) can facilitate the sharing of information and knowledge among individuals across firm boundaries (Blazevic and Lievens, 2008; Fuchs and Schreier, 2011; von Krogh 2012). Although the potential value of social media for facilitating knowledge creation has been recognised (Faraj et al., 2011), putting this into practice is challenging. This is in part due to the large quantities of unstructured, diverse, and disconnected data generated on social media (Roberts and Piller, 2016), and the great variation in frequency and content of conversations (Kietzmann et al., 2011). Arguably, as the KBV predates the advent of social media, it fails to take into account the actions firms can take to unlock access to knowledge from customers on social media. Drawing from Piskorski (2011), we address this theoretical gap by focusing on the notion of *social strategy*, which is defined as *actively putting effort into helping people to create and/or enhance relationships and develop social ties among themselves on social media*. We advance arguments that firms that implement a social strategy can gain benefits in the form of customer involvement in innovation and subsequent knowledge gained for innovation.

Having a presence on Facebook, Twitter and LinkedIn have become increasingly common for firms. However, when firms pursue a social strategy, they take things a step further; they develop and foster relationships among people, thus building community. An example is Avalara, a US-based tax software firm, which is very active on social media. Over the span of two weeks they posted nearly twenty times on LinkedIn, sent sixty-one Tweets, and posted twice on Facebook to their 1,500 followers. But besides this conventional activity, they also actively foster a professional community of their customers on LinkedIn. One of the ways they do this is by regularly proposing questions for community members to answer, e.g. questions about global economic issues. Thus, community members communicate with, and for the benefit of, each other and build relationships with each other. Avalara's social strategy is intended to develop their credibility in the accounting space, cultivate new client relationships, provide a platform for prospective employees, and crucially, foster relationships among customers.

Another example is B.C. Rich Guitars, whose social strategy was put in place primarily as a vehicle to promote excitement and community among enthusiastic customers and fans. They have 30,000 followers on Twitter, but their platform of choice for their social strategy is Facebook, where they currently have 250,000 followers. The company invites fans to post pictures of themselves with their guitars, highlight upcoming concerts, and review new guitar models, all of which has enabled a vibrant community to form.

Artists have flocked to the site and posted videos and sound-tracks of themselves playing the guitars. There are active sub-communities focusing on specific guitar models where community members share information about themselves and their own art, other artists and music venues. There is ample evidence of a social strategy in this example and also evidence of potential inputs to innovation in the form of community members' reviews of new guitar models.

Although both examples depict the successful implementation of a social strategy, leveraging social media to gain knowledge for innovation through developing a social strategy is nascent. Indeed, to date, firms have demonstrated mostly disappointing results when attempting to leverage social media for innovation (Roberts and Candi, 2014; Marion et al., 2014). One reason is that firms have not fully acknowledged the unique nature of these platforms as social spaces where common interests are shared and relationships are formed (Fournier and Avery, 2011; Nambisan and Watt, 2011; Piskorski, 2011). Social media can be described as platforms for creating connections between people (Van Dijck, 2012), which can galvanize action in the form of sharing information and knowledge (Fournier and Avery, 2011; Nambisan, 2002; Preece, 2000). The underlying premise of our work is that if people engage with social media primarily for the purpose of building and nurturing social relationships, then firms can encourage customer involvement in innovation and thereby gain knowledge of value for innovation by helping people create and develop such relationships through a social strategy.

People tend to derive their identities from the social groups to which they belong (Hogg et al., 1995) and social media may be used by individuals to project specific desired identities. Some people adopt multiple identities (Ellison, 2013) and might portray different identities on different social media platforms (Kietzmann et al., 2011). In fact, individuals and corporations can use social media for constructing and shaping identities. Social media platforms differ in their explicit or implicit rules of conduct, which coupled with the infrastructure of each platform, influence the type of information that people are likely to share (Kietzmann et al., 2011). "For most users, there is a distinct difference between one's professional persona, addressed mainly to co-workers and employers, and one's self-communication towards 'friends'" (Van Dijck, 2013, p. 200). Thus, implementing a social strategy calls for making decisions about which social media platforms to target. In this vein, we investigate how the category of social media platform at play—those used primarily for personal purposes versus those used mostly for professional purposes—moderates the relationships between and among social strategy, customer involvement in innovation and knowledge gained for innovation.

The potential benefits of leveraging social media as a low-cost means for involving customers in the innovation process and gaining knowledge from them makes a social strategy particularly relevant in the context of small to medium sized enterprises (SMEs), which constitute the empirical context for this research. SMEs tend to have fewer financial and organizational resources than larger firms; so finding cost-efficient ways to involve customers in innovation is particularly germane. SMEs use non-internal means of innovation to a greater extent than large firms, and alliances and networks are particularly important for this group of firms (Rothwell and Dodgson, 1991; Deeds and Hill, 1998; Aldrich and Martinez, 2001; Steier and Greenwood, 2000; Marion et al., 2014; van de Vrande et al., 2009). Finally, the economic importance of SMEs cannot be ignored. In the US, over 99% of businesses employ fewer than 100 people (Zimmerer and Scarborough, 2008) and two-thirds to three-fourths of all new jobs in the US are created in SMEs. Similarly, SMEs constitute 99% of European businesses and provide two out of three private sector jobs in Europe (Muller, et al., 2016).

This research makes four important contributions. First, we advance the KBV discourse by leveraging the theory to "explore a new, unexplained phenomenon" (Yadav, 2010, p. 4), namely, *social strategy*. The KBV argues that knowledge is the "strategically most important resource of the firm" (Grant, 1996a, p. 375). Although knowledge resides in individuals, it is socially constructed and the firm's role is to access and apply this knowledge (Grant, 1996b). As part of their strategy to be more open and gain knowledge,

firms are increasingly using social media to connect and interact with external entities (Haefliger et al., 2011). Social media provide a potential mechanism for accessing knowledge for innovation, particularly from customers (von Krogh, 2012). However, Piskorski (2011) argues that firms can only hope to mobilize people on social media—people who are willing to contribute their time and effort to innovation activities—by developing and implementing a *social strategy* that deliberately creates and supports relationships among people. A social strategy is important because followers of a firm's social media may lack social relationships with other followers prior to joining the community (Faraj et al., 2011). However, enhancing and creating relationships is a key motivator for individuals' involvement in social media (O'Mahony and Lakhani, 2011).

Second, traditional processes for knowledge sharing and creation are focused on "centrally managed, proprietary knowledge repositories, often involving structured and controlled search and access" (von Krogh, 2012, p. 154). By contrast, social media are digital, visible, ubiquitous, fluid, dynamic and operate in real-time (Hennig-Thurau et al., 2010; Faraj et al. 2011). Yet, little research has examined the impact of social media on knowledge creation (von Krogh, 2012; Wagner et al., 2014). Moreover, the infrastructures and functionalities of social media platforms differ (Keitzman et al., 2011), inducing individuals to share different types of information on each platform. This leads to our third contribution, which involves shedding light on how relationships among social strategy, customer involvement, and knowledge gained differ between social media platforms used primarily for personal versus professional purposes.

Fourth, social media offer a relatively easy-to-use and low-cost mechanism for accessing knowledge and expertise from a wide range of individuals outside firms' boundaries. These characteristics make social media particularly attractive for SMEs, which tend to lack financial and organizational resources for connecting and interacting with customers.

THEORETICAL FRAMEWORK AND HYPOTHESES

Firms can gain sustainable competitive advantage through the application of knowledge in the creation of new products and services (Grant, 1991; Volberda et al., 2010). Thus, firms need the ability to identify, acquire, integrate, and apply external sources of knowledge (Gottfredson et al., 2005; Cohen and Levinthal, 1990) for improved innovation performance (Laursen and Salter, 2006; Eisenhardt and Santos, 2002). According to the KBV, firms are distributed knowledge systems (Tsoukas, 1996) and knowledge is embodied within individuals and their social interactions (Kogut and Zander, 1992; Weick and Roberts, 1993; Brown and Duguid, 1991).

Identification and acquisition of knowledge from external sources requires a search strategy. Firms that search for knowledge locally tend to exploit knowledge that is closely related to their existing knowledge stocks (March and Simon, 1958), which may constrain the generation of new ideas. In contrast, firms that employ more distant knowledge search strategies have been found to achieve superior innovation performance (Laursen and Salter, 2006; Jeppesen and Lakhani, 2010), because distant search can enrich the firm's knowledge stocks with novel and unique insights (De Jong and Freel, 2010). Social media enable large numbers of people to connect with each other, and make the sharing of large quantities of diverse knowledge possible. Furthermore, their transparent nature enables them to function as boundary-spanning tools that can reduce reluctance to search for external information and knowledge (Ooms et al., 2015).

In this research, we focus on external social media, meaning "social media hosted outside, and used by non-members of the organization" (Schlagwein and Hu, 2016, p. 4). Well-known examples of external social media include LinkedIn and Facebook, which are platforms developed and maintained by third parties and over which individual firms have little or no control (Mangold and Faulds, 2009). It is the social and dynamic nature of social media coupled with businesses' lack of control that makes a *social*

strategy a potential means to spur customer involvement in innovation activities and contributions to knowledge. With the exception of Piskorski (2011, 2014), research has neglected to examine whether and how a social strategy that purposefully creates and fosters social interactions among community members can contribute to innovation.

The potential value of involving customers in innovation is widely espoused (Prahalad and Ramaswamy, 2000; von Hippel, 1998; O'Hern and Rindfleisch, 2009; Ramaswamy and Gouillart, 2010). Customer involvement in innovation via social media can include evaluating new product ideas, proposing ways to improve existing products (Kiron et al., 2012; Schlagwein and Hu, 2016), assessing prototypes, or participating in the design and development of new products (Frow et al., 2015; Füller et al., 2008; O'Hern and Rindfleisch, 2009). Dialogue among customers on social media can be an important source of insight on market trends, competitors and products (Kiron et al., 2012; Schlagwein and Hu, 2016). Through proactively triggering dialogue among customers via social media—which falls under the remit of social strategy—firms can involve customers in the innovation process.

To gain such customer involvement, firms need to not only attract customers to social media sites, they also need to get individuals to participate in the innovation process by sharing their thoughts, opinions, feelings and insights (Heinonen, 2011). Meanwhile, it is important to recognize, that people are essentially social creatures who are strongly influenced by social ties (Pentland, 2014) and use social media first and foremost to meet new people, become engaged for social and intellectual benefit (Fournier and Avery, 2011; Nambisan and Watt, 2011; Piskorski, 2011) and meet relational and identity-based goals (Ellison, 2013). People are driven to share and combine their knowledge for personal gains (Faraj et al., 2011; Franke and Shah, 2003; Roberts et al., 2017) or for the benefit of the community (Wasko and Faraj, 2000). The latter is often driven by social and altruistic motives (Roberts et al., 2014) and the need to feel like part of a group (Mathwick et al., 2008).

A social strategy responds to the motivations that drive social media users by helping people to create or enhance relationships among themselves. This can be achieved by initiating interactions with people who already know each other or by facilitating connections and interactions among strangers who share common interests (Faraj et al., 2011; Jones and Preece, 2006; Porter and Donthu, 2008) as well as knowledge sharing (Chang and Chuang, 2011). In turn, firms can expect customers to be more willing to provide knowledge of value for innovation (Piskorski, 2011). Thus, we expect that customer involvement in innovation can be encouraged by a social strategy and hypothesize as follows:

> *Hypothesis 1: A social strategy is positively related with customers' involvement in innovation on social media.*

New product ideas are crucial to the success of innovation (Cooper, 2008) and can originate from within and from outside of the firm. Customers have long been identified as valuable collaborative partners and sources of ideas (von Hippel, 1998, 2005; Mahr et al., 2014; Nambisan and Baron, 2009; Candi et al., 2016). As discussed above, customers can be involved in evaluating new product ideas, proposing ways to improve existing products, assessing prototypes, or aiding in the design and development of new products via social media. Customers can envision potential new solutions and problems, thereby helping firms to gain knowledge about opportunities for innovation and identifying problem areas (Blazevic and Lievens, 2008; Schweidel et al., 2012). They may provide ideas or insight into market opportunities, current and future customer needs, as well as the competition, (Hoyer et al., 2010; Payne et al., 2008; Prahalad and Ramaswamy, 2000). This leads to the hypothesis that customers' participation in innovation on social media can contribute to knowledge gained for innovation.

> *Hypothesis 2: Customers' involvement in innovation on social media is positively related with knowledge gained from customers for innovation.*

Although connecting with people and sharing information is at the heart of all social media, specific social media platforms appeal to users for different reasons (Smith et al., 2012). Each platform has its own architecture and promotes different forms of user interaction by providing unique types of functionality (Kietzmann et al., 2011). Social media provide an opportunity for people to create and project different identities, which may be independent and even conflict with one another, on different sites. There are variations in how people use the platforms and, consequently, various practices, cultures and norms have developed around each one (Boyd and Ellison, 2008; Smith et al., 2012).

Kietzmann et al. (2011), advocate taking into account the primary purpose of specific social media platforms when attempting to leverage them. In this vein, we make a distinction between social media platforms used primarily for personal purposes and social media platforms used primarily for professional purposes. Facebook is a well-known example of the first category, used primarily for social interaction (Papacharissi, 2009), self-expression (Van Dijck, 2013), and self-promotion (Kietzmann et al., 2011). LinkedIn is a well-known example of the second category and focuses on professional relationships (Papacharissi, 2009), professional experience (Van Dijck, 2013), and self-branding (Kietzmann et al., 2011).

Social identity refers to a person's identification with a community or social group (Stryker and Burke, 2000). Social media are venues on which individuals can be(come) members of a community and create and sculpt identities (Kietzmann et al., 2011; Van Dijck, 2013). Social media enable people to present their identities through disclosure of their thoughts, feelings, and opinions (Kaplan and Haenlein, 2010; Ellison, 2013). Identity theory contends that the number of identities a person has is related to the number of "distinct networks of relationships" in which that person plays a role (Stryker and Burke, 2000, p. 286). Furthermore, a particular identity tends to result in specific behaviours that manifest the identity when interacting with others (Stryker and Burke, 2000).

Thus, as identity theory suggests, users may express different identities on different social media platforms (Kietzmann et al., 2011) and may behave differently (i.e., by sharing different information) on each platform. Since a platform used primarily for professional purposes, such as LinkedIn, is viewed primarily as a stage for business networking, people using this type of platform are likely to post information or views that attempt to create and support their identity of being an expert on a particular subject, technology, or product category. By so doing, they can make professional connections for career or organizational goals rather than personal fulfilment or relationships. The platform architectures of social media used primarily for professional purposes set norms about the type and format of content that can be shared and how people can be accessed, which mirror the professional world (Papacharissi, 2009). Since users of social media platforms used primarily for professional purposes are likely to adopt roles intended to communicate their professional identities, they are likely to be more guarded in their participation than they might be on social media platforms used primarily for personal purposes. They may be experts in their field and may share expert knowledge of potential value for innovation. However, the knowledge shared could be compared to local knowledge, which is likely to be closely related to firms' existing knowledge stocks. Finally, these users may engage with professional social media platforms as employees of the firms they work for, and in this role may be cautious about voicing their ideas and opinions in open forums because of the risk of competitors taking advantage of this knowledge.

In contrast, social media platforms used primarily for personal purposes tend to have architectures expressly designed to facilitate social interaction (Papacharissi, 2009; Van Dijck, 2012). Users tend to communicate informally, personally and on topics and issues related to their personal lives (Van Dijck, 2012) and are considered to be both vocal and creative (Berthon et al., 2012). These characteristics suggest that users of social media platforms used primarily for personal purposes are likely to be quite open, willing to be involved in innovation activities and, therefore, contribute potentially new and unique insights and knowledge of value for innovation.

The presentation of dissimilar information on different social media sites suggests that individuals adapt their identity to particular social contexts (Farnham and Churchill, 2011). In general, people want others to hold positive impressions of them. The notion of selective self-presentation implies that individuals can choose the cues and information they wish to share in order to portray themselves in a preferred way. Thus, individuals can withhold information and opinions that may reflect poorly on them, while only sharing what will be viewed more positively (Ellison, 2013).

Given the differences between social media used primarily for personal purposes and those used primarily for professional purposes, we expect that the type of social media platform will moderate the relationships between a social strategy and customer involvement in innovation, on one hand, and between customer involvement in innovation and knowledge gained, on the other. Thus, we hypothesize:

> *Hypothesis 3: The relationship between social strategy and customers' involvement in innovation on social media is stronger for social media used primarily for personal purposes than for social media used primarily for professional purposes.*
>
> *Hypothesis 4: The relationship between customers' involvement in innovation on social media and knowledge gained from customers for innovation is stronger for social media used primarily for personal purposes than for social media used primarily for professional purposes.*

The research model is summarized in Figure 1.

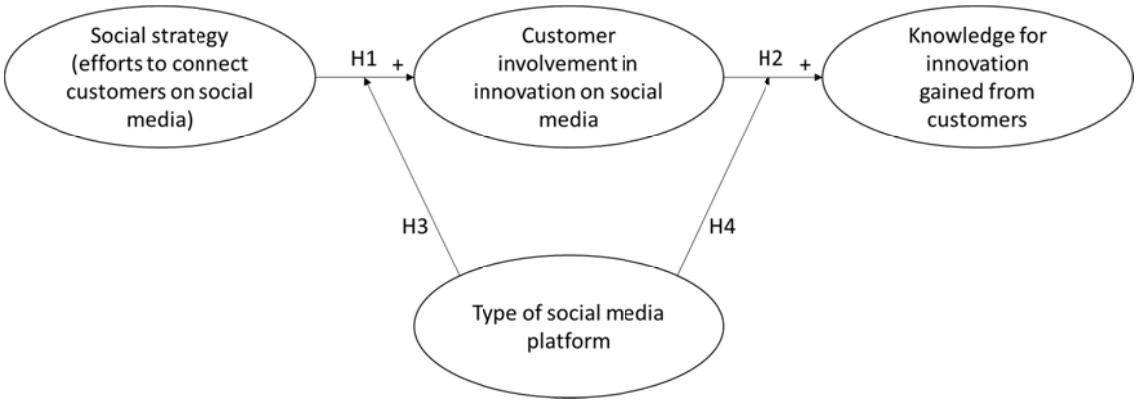

Figure 1: Research model.

METHODOLOGY

A sample of managers in North American and European SMEs was surveyed using a web-based survey. The North American sample was solicited by a panel research provider, who sent the survey to a panel of 2298 managers working in a broad range of sectors. This method of contacting a large number of potential respondents to gain a smaller number of responses may raise the potential issue of self-selection bias. However, a number of criteria were imposed to ensure that respondents were actually qualified to provide the information sought. Criteria for participation included the requirement that respondents should be managers with insight about innovation in their firms, that the firms they worked for should have launched at least one new product or service in the last year, and that the firms they worked for should be SMEs employing no more than 250 persons. Research has shown that results from panel

surveys are not significantly different from random samples as long as the respondents have the necessary knowledge to complete the survey (Krotki and Dennis, 2001; Pollard, 2002; Skinner, 2009).

Managers of 272 European firms meeting the same criteria were contacted by phone and asked to respond to the survey. Since the European managers were contacted directly, after selection from a pool of potential respondents, the issue of self-selection bias can be discounted for this sample.

A total of 350 usable responses were collected; 203 from North America and 147 from Europe. A broad range of sectors was represented, as summarized in Table 1. The average firm sizes for both sub-samples are larger than average firm sizes reported in public reports; 6 employees in European SMEs (Muller et al., 2016) and 19 employees in North American SMEs (U.S. Small Business Administration, 2015). These differences are most likely due to the fact that single-person SMEs were deliberately avoided, since in many cases such firms are simply legal frameworks around one person's independent/freelance work. The distribution among industry sectors in each of the two sub-samples is similar to the distribution among sectors in Europe and North America, respectively. Thus, we can conclude that the sample is reasonably representative of SMEs in the regions included.

Two screening questions were included in the survey (see Table 2). First, managers were asked to indicate all the social media platforms used by their firms. They were presented with a list of social media platforms and offered the opportunity to enter names of additional platforms. If they indicated no use of social media platforms, they were excluded from the sample. The second screening question asked managers to specify which of the social media platforms indicated in the first screening question was most important specifically for their innovation activities. 39% of respondents mentioned Facebook, 15% mentioned LinkedIn, 5% mentioned Twitter and the rest mentioned a broad range of other public social media platforms. To ensure that respondents would answer all survey questions for the one specific social media platform most important for their innovation activities, the name of the platform indicated to be most important was inserted in all subsequent survey questions.

[Table 1 here]

Since there was no existing scale to measure social strategy—meaning firms' efforts to connect their customers with each other on social media—a new scale was developed. First, a total of 24 items were developed based on Dholakia et al. (2004), Nambisan (2002) and Porter and Donthu (2008). The list of items was sent to nine experts in academia and industry for evaluation. The experts were asked how well they thought each item reflected the variable in question. As a result of the evaluations thirteen items were retained. Pilot testing of the complete survey with eleven managers resulted in a reduction to eleven items and rewording of some of the items. The final set of items is listed in Table 2.

Six items to measure customers' involvement in innovation were adapted from Feng et al. (2010). The variable for knowledge gained from customers for innovation was composed of items measuring five categories of knowledge of value for innovation, each of which can be influential in the innovation process (Cooper, 2001, 2005, 2008; Nonaka, 1994; Nonaka and Takeuchi, 1995; Thomke and Fujimoto, 2000; Ulrich and Eppinger, 2011).

In an effort to take into account, as well as test, its separateness from social strategy, the general level of engagement between firms' employees and customers was included as a control variable. The items used to measure this variable were constructed similarly to the items used to measure social strategy, but referred to relationships between employees and customers specifically, without any reference to social media. We expected that a firm's general level of engagement with customers might be related with their propensity to adopt a social strategy as well as the likelihood of customers contributing to innovation and providing knowledge of value for the innovation process (Sashi, 2012).

The logarithm of firm size (number of employees) was included as a control variable, since a firm's size is likely to be related with its ability to engage customers in innovation. Firm age can similarly be expected to be related with the ability to engage customers in innovation, so the logarithm of firm age in years was also included as a control variable.

Separate analyses were conducted for the North American sub-sample and the European sub-sample and the results were found to be consistent across both sub-samples, which justifies treating the combined sample as a whole. Nevertheless, a dummy control variable for geographical location was included, coded 1 for Europe and 0 for North America. As elaborated above, the sample included firms operating in a wide range of sectors. Conducting separate analyses for each sector was not possible because of the small sub-samples involved; instead a dummy control variable distinguishing between service sectors (coded 1) and product sectors (coded 0) was included.

[Table 2 here]

Confirmative factor analysis yielded very good model fit with $\chi^2 = 702$ (360 degrees of freedom), root mean squared error of approximation (RMSEA) = 0.051, comparative fit index (CFI) = 0.96 and Tucker-Lewis index (TLI) = 0.96. Table 3 shows the composite reliabilities and average variances extracted for the variables as well as means and pairwise correlations between variables. We see that all composite reliabilities are over the generally accepted cut-off of 0.7 and all average variances extracted are over 0.5. Comparing the average variances extracted with the correlations between variables shows that the Fornell and Larcker (1981) condition for discriminant validity is met.

[Table 3 here]

Grewal et al. (2004) offer a set of guidelines for detecting potential multicollinearity for various ranges of correlations between independent variables. For the range 0.4-0.59, of which there is one instance in Table 3, Grewal et al. show that provided reliability is strong (over 0.7), and R^2 is acceptable (in this case R^2 is 43%) and sample size is sufficiently large, multicollinearity is not likely to be a problem. To further probe the issue of multicollinearity, variance inflation factors were examined. The highest variance inflation factor was found to be 1.55, which is well below the conservative threshold of 5 (Marquaridt, 1970). Thus, multicollinearity was assumed not to be an issue.

As the data were collected from single respondents, the possibility of common method bias needed to be addressed. In developing the survey, procedural remedies recommended by Podsakoff et al. (2003) were employed. To reduce respondent apprehension, which might lead to more socially acceptable responses, the survey clearly stated that respondents would remain anonymous. To test for common method bias, items measuring a variable unrelated to the topic of this research were included in the survey (Bagozzi, 2011; Lindell and Whitney, 2001). Three items having to do with firms' human resource management were included in the factor analysis. These items loaded on one variable and did not have any substantial cross-loadings with other variables, which helps alleviate concerns over common method bias.

FINDINGS

Structural equation modelling was used to test Hypotheses 1 and 2 and the results are shown in Table 4. In addition to the hypothesized paths, the path between social strategy and the variable for knowledge gained from customers for innovation was included for completeness.

[Table 4 here]

Turning first to the results for the dependent variable for customer involvement in innovation on social media, Hypothesis 1 is supported. Thus, the data indicate that firms that adopt a social strategy are more likely than others to benefit from customer involvement in innovation on social media. These findings underscore the importance of relational motivations in engagement with online environments (Hemetsberger, 2003; Jawecki, 2008; Shah, 2006) and support Piskorski's (2011) view that enabling a sense of community facilitates customers' willingness to be involved in, and contribute to, a firm's innovation process.

Since the coefficients shown in Table 4 are standardized, we can interpret the statistically significant coefficient for social strategy to mean that for each standard deviation by which social strategy increases, customer involvement in innovation on social media is likely to increase by 61% of its standard deviation, which for standardized variables is 1. Taking into account the possible range of values for the standardized variable for customer involvement in innovation on social media, which is -1.5 to 2.3, our findings indicate that an increase in social strategy by one standard deviation will on average be related with a 16% increase in customer involvement in innovation on social media.

None of the control variables are related with customer involvement in innovation on social media at statistically significant levels. Of particular note is that the coefficient for general level of engagement between employees and customers is not statistically significant, which supports our position that social strategy is fundamentally different from general engagement between a firm and its customers. In fact, a *post hoc* test involved adding a path between social strategy and general level of engagement in the structural model, and was found to be not statistically significant.

Turning now to the results for the dependent variable for knowledge gained for innovation, we see that Hypothesis 2 is supported; customer involvement in innovation on social media is related with greater knowledge gained for innovation from customers. Following the same logic as for the coefficient for hypothesis 1 above, we can surmise that for each standard deviation that customer involvement on social media increases, the findings indicate that we can expect a 6% increase in knowledge gained for innovation.

Interestingly social strategy is also related with knowledge gained for innovation at a statistically significant level. This implies that, independent of customers' involvement in innovation on social media, adopting a social strategy is potentially effective in garnering knowledge of value for innovation in and of itself. Total, direct and indirect effects in the structural model were examined and the results indicated that the indirect effect of social strategy on knowledge gained for innovation, mediated by customers' involvement in innovation on social media, accounts for 45% of the total effect.

Turning to the control variables, we see that the general level of engagement between employees and customers is related with knowledge gained for innovation. Thus, we can surmise that besides involving customers in innovation on social media, maintaining a high level of engagement between employees and customers is also positively related with a higher likelihood of gaining knowledge of value for innovation from customers. Firm size, firm age and the sector dummy are not related with the dependent variable at a statistically significant level. However, the geography dummy is statistically significant, indicating that

European firms gain more knowledge of value for innovation from customers than do North American firms. This result lends support to the decision to control for geography. However, as mentioned above, separate analyses for each of the two sub-samples yielded consistent results; the hypothesized relationship between customer involvement in innovation on social media and knowledge gained for innovation holds for both geographical sub-samples.

Before testing hypotheses 3 and 4 using multi-group SEM, the means of the model variables and control variables for the two groups were compared using one-way ANOVA. The results are shown in Table 5. We see that while none of the model variables differ between the two groups, two of the control variables differ at statistically significant levels. Based on these findings we can surmise that older firms are more likely to use social media platforms used primarily for personal purposes than younger firms, which are more likely to use social media platforms used primarily for professional purposes. We also note that European firms are more likely to use social media platforms used primarily for professional purposes than North American firms. We account for these differences between the two groups by controlling for firm age and geographical location in the structural model.

[Table 5 here]

To test Hypotheses 3 and 4 about the moderating effect of type of social media platform (primarily used for personal versus professional purposes), a multi-group SEM was conducted, followed by Wald tests to check whether differences between groups were statistically significant. The results are shown in Table 6.

[Table 6 here]

Hypothesis 3 about the moderating effect of type of social media platform on the relationship between social strategy and customer involvement in innovation on social media is supported. Although the coefficient for social strategy is positive and statistically significant for both categories of social media platforms, the coefficient is significantly larger for social media platforms used primarily for personal purposes as confirmed by the results of the corresponding Wald test. For social media platforms used primarily for personal/professional purposes, each standard deviation increase of social strategy will on average be related with a 20%/13% increase in customer involvement in innovation on social media, respectively.

Hypothesis 4 about the moderating effect of type of social media platform on the relationship between customer involvement in innovation on social media and knowledge gained from customers is also supported. The data indicate that customers involved in innovation on social media platforms used primarily for personal purposes are more likely to be willing to share valuable knowledge than customers on social media platforms primarily used for professional purposes. For social media platforms used primarily for personal/professional purposes, each standard deviation increase of customer involvement in innovation on social media will on average be related with a 10%/7% increase in knowledge gained from customers, respectively. This lends support to the argument that levels of self-disclosure are likely to be higher on the more personally oriented social media and resistance to giving away knowledge that might be of value to competitors might be higher on more professionally oriented social media platforms.

As shown in Table 6, the relationship between general level of engagement between employees and customers and knowledge gained for innovation is stronger in firms that indicated that a social media platform used primarily for professional purposes was most important for their innovation activities. One might speculate that this reflects a difference in the level of engagement between the two groups of firms. However, comparison of the mean values of the level of engagement between employees and customers for the two groups shows that they are essentially equal (see Table 5). Another possible explanation for this difference may be that firms that choose to leverage social media platforms used mostly for

professional purposes adopt a more professional stance in their relationships with customers on social media. This might translate into a more professional than personal tenor of engagement between employees and customers, which could be related with an increase in gained knowledge that is specifically of value for innovation.

DISCUSSION

Social media provide a novel mechanism for accessing knowledge that can be beneficial for the innovation process. However, due to their collaborative and dynamic nature, social media platforms require a new approach to accessing knowledge, one that is fundamentally different from earlier methods, such as reading comments posted on online forums. As noted by Culnan et al. (2010), organizations need "to take explicit steps to build communities and learn from the interactions" (p. 244). This work proposes such a new approach, that of a *social strategy,* which deliberately creates and supports relationships among people as a precursor to accessing knowledge. Our findings lend support to recommendations by Piskorski (2011) that businesses should actively develop a social strategy that helps people to create or enhance relationships, and that this will in turn yield people willing to contribute of their time and effort to innovation. The relationships, if managed properly, can allow firms to increase their knowledge base for innovation. This represents the core of the promise of open innovation.

This research makes four important contributions. First, we advance the discourse on KBV by leveraging this theory to explore a new, unexplained phenomenon, namely, social strategy. Secondly, social media are fundamentally different from earlier generations of online tools and our work contributes to an understanding of how these platforms can be leveraged for knowledge creation and innovation. In doing this, we answer calls for research that examines the role of IT, particularly social media, in the process of knowledge creation (von Krogh, 2012; Wagner et al., 2014). Third, while social media platforms share important characteristics, people use them for different purposes, which might mean differences in the extent to which they might be willing to contribute to innovation on the platforms. We make an important distinction between social media platforms used primarily for personal reasons and those used primarily for professional reasons and compare the effectiveness of social strategy on these. Finally, social media offer a relatively easy to use and low-cost mechanism for accessing knowledge and expertise from a wide range of individuals outside firms' boundaries. These characteristics make social media particularly attractive for SMEs, which tend to lack financial and organizational resources for connecting and interacting with customers.

A social strategy represents a novel mechanism to improve a firm's potential to leverage external knowledge for innovation. It supports Chang and Chuang's (2011) notion that knowledge belongs to individuals and, therefore, knowledge sharing cannot be forced but can be encouraged and facilitated. Along these lines, a social strategy is an approach that puts effort into helping people to create or enhance relationships among themselves. Importantly, it supports people in satisfying their innate human characteristics, their desire to connect with others for community and social validation, as a precursor to utilizing them as sources of knowledge of value for innovation.

A social strategy runs counter to traditional firm-centric practices embedded in a modernist, positivist view of controllability, as it involves relinquishing control of conversations and activities around a firm and its products. As social media usage gathers momentum, firms can no longer hope to profit from control over messages, brands and communication channels. A social strategy acknowledges this changing business environment, in which people often have a voice as strong, or even stronger, than that of the firm, and where social factors as opposed to economic aspects come to the fore. Against the backdrop of the growing popularity of social media and the fundamental changes that social media have

brought about in business environments, firms need means to tap into social media as sources of knowledge for innovation, and a social strategy represents one such method.

People can have more than one persona, both online and offline, and may curate a desired impression of themselves. Thus, attention needs to be paid to differences among social media platforms. To provide a deeper understanding of the effectiveness of social strategy, this research compares its effectiveness on social media used primarily for personal purposes and social media used primarily for professional purposes. The findings indicate that customers involved in innovation on social media platforms primarily used for personal purposes (e.g., Facebook) are more likely to be willing to share valuable knowledge and ideas than customers involved in innovation on social media platforms primarily used for professional purposes (e.g., LinkedIn). This lends support to the notion that levels of self-disclosure and willingness to share knowledge are likely to be higher on more personally oriented social media platforms. Our findings indicate that when seeking knowledge of value for innovation on social media platforms used mostly for personal purposes, firms would do well to adopt a social strategy. In contrast, a strategy involving active solicitation of ideas by, or relationships with, the firm may detract from the sense of community or openness that encourages people to share deep insights.

On social media platforms used mostly for professional purposes, customers may have mixed feelings about personal exposure to their professional networks/contacts and providing insights on their potential needs or on the competition, which they may feel calls for sharing too much. On these platforms, firms may be able to be more direct when soliciting input about products and features, while still adopting a social strategy with emphasis on customers' relationships with each other. For example, firms may put in place technology or product groups on these platforms that people with shared interests might join. These groups can share ideas about new products or services and new markets without giving away too much proprietary or personal information. In summary, firms that want to leverage social media to gain knowledge for innovation will probably be more effective on social media platforms intended primarily for personal purposes. However, when firms' products, services or markets make such forums largely irrelevant, they need to be aware of the reluctance to share knowledge that is likely to characterize users of social media intended primarily for professional purposes.

In introducing the concept of social strategy, we extend the KBV to this new phenomenon and to the unique and emerging context of social media. Our work can also be said to extend the concept of absorptive capacity (Cohen and Levinthal, 1990), which integrates the external inbound dimension of innovation (or open innovation), which is concerned with the identification and exploitation of external sources of knowledge (Saemundsson and Candi, 2017), and the internal dimension, which is concerned with learning and knowledge transfer processes within the firm (Zahra and George, 2002). Whereas most work on absorptive capacity has emphasized the internal knowledge absorption dimension, our focus is on the external knowledge acquisition dimension, or what Lane et al. (2006) propose could be among the processes that form the pre-requisites for absorptive capacity. The counter-intuitive control-relinquishing mechanism of social strategy extends the external dimension of absorptive capacity by highlighting that knowledge can be gained by encouraging and allowing relationships among customers to form.

SMEs need to find ways to gain external knowledge for competitive advantage. The positive results of this research as regards leveraging social media offer important implications for managers of SMEs. These practitioners can be advised to look for willing contributors to their innovation processes via social media—particularly social media platforms used primarily for personal purposes—by adopting a social strategy. Overall, pursuing a social strategy on existing social media platforms can be a cost-effective way for SMEs to realize the benefits of open innovation by efficiently increasing the breadth of customer interaction. However, a word of caution is in order as the benefits to openness have been found to be subject to decreasing returns (Laurson and Salter, 2006; Katila and Ahuja, 2002). Thus, to avoid potential

waste of resources, future research should examine the value of knowledge gained on social media in terms of firm performance.

Schlagwein and Hu (2016) argue that "sociability" (i.e., using social media for engendering fellowship and social relationships) is one of five different uses for social media. They also contend that focusing only on sociability is not sufficient for organizations. Indeed, we suggest that facilitating social connections among customers on social media is only the first step of what firms need to do to meet their goals. Future research could explore the potential to develop a social strategy in other online contexts—such as firms' own online communities—and compare with the use of a social strategy on public social media platforms. Furthermore, comparisons between firms that use social media platforms for open innovation and firms that use other means are certainly warranted.

Although we highlight the potential opportunities of using social media, it is important to acknowledge inherent challenges and risks, which give rise to areas for further research. For instance, Cumming and Johan (2013) discuss the risks involved in open calls for crowdfunding on the internet. In terms of generating ideas and knowledge for innovation, Gatzweiler, et al. (2017) have recently highlighted the 'dark side' of ideation contests in which some contestants post content that is unintended or unwanted by the hosts. Thus, there remains concern about firms' ability to protect their ideas and knowledge assets (von Krogh, 2012; Lehner et al., 2015) when using the internet in general, and social media in particular.

Along with the focus on SMEs come limitations of the generalizability of our research findings to larger firms. However, larger firms are equally likely to use social media, so examining the use of a social strategy in such firms could provide useful insights. Although the results of our analyses allow us to surmise that our findings are robust across the two geographical samples tested, across the product-service divide and across firm sizes within the SME range, our sample was comprised of firms only from Western countries and broader geographical inquiry is called for.

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Table 1: Composition of the sample used for hypothesis testing (N=350).

	North American sample	European sample	Combined sample
Number of respondents	203	147	350
Average firm size (number of employees)	39	25	34
Average firm age in years	31	11	23
Split among sectors:			
IT services	9%	34%	19%
Logistics	2%	6%	4%
Financial services	7%	2%	5%
Consulting	16%	25%	20%
Other services	38%	8%	25%
Industrial manufacturing	9%	13%	11%
Electronics	12%	4%	9%
Consumer products	7%	8%	7%

Table 2: Variables and survey items. All survey items had possible answers ranging from 1 to 5, where 1 indicated to a small extent or disagree, and 5 indicated to a large extent or agree.

Variables	Survey items
Screening question 1	*From the list below, please check all the social media platforms on which your company has a presence. (If your company does not have a presence on any of these social media platforms, please leave all the options unchecked.)*
	[List of 16 social media platforms in common use at the time of data collection, plus an option to enter the names of other social media platforms]
Screening question 2	*Please indicate which one of the social media platforms that you selected above you believe is MOST important for your company's new product/service development activities:*
	[List of those social media platforms checked in screening question 1]
Social strategy *(new scale developed based on Dholakia et al., 2004; Nambisan, 2002; Porter and Donthu, 2008)*	*Please indicate the extent to which your company puts effort into the following on X [X is the social media platform identified as most important for NPD]:*
	Enabling customers to communicate with each other
	Enabling customers to get to know each other
	Enabling customers to strengthen existing relationships with each other
	Enabling customers to assist each other
	Facilitating interaction among customers
	Enhancing customers' sense of connection with other customers
	Enabling customers to get a positive impression of other customers
	Enabling customers to stay in touch with each other
	Enabling customers to identify themselves with a group of customers
	Enabling customers to easily contact each other
	Enabling spontaneous informal conversations among customers
Customer involvement in innovation on social media *(adapted from Feng et al., 2010)*	*Please indicate the degree to which you agree or disagree with the following statements: [X is the social media platform identified as most important for NPD]*
	Our customers often propose ways to improve our products/services on X
	We hear customers' opinions on prototypes of our new products/services during development on X
	We involve customers in the design and development of our new products/services on X
	Our customers strongly influence the design of our new products/services on X
	There is a strong consensus in our company that customer involvement on X is important for the development of new products/services
	We leverage on X to include our customers in continuous improvement of our products/services
Knowledge gained from customers for innovation *(adapted from Thomke and Fujimoto, 2000; Ulrich and Eppinger, 2011; Cooper 2001, 2005, 2008; Nonaka 1994; Nonaka and Takeuchi 1995)*	*Please indicate the extent to which you believe your company gains the following through its interaction with customers in the new product/service development process:*
	New concepts and product/service ideas
	Opportunities to enter new markets
	Ideas for new business models
	Ideas about potential future customer needs
	Insights on the competition
General engagement between customers and employees	*Please indicate the degree to which you agree or disagree with the following statements:*
	Customers regularly communicate with our employees
	Customers frequently collaborate with our employees
	Customers frequently interact with our employees
	Customers have a strong sense of connection with our employees
	Customers can readily stay in touch with our employees

Table 3: Means, pairwise correlations, composite reliabilities (CR) and average variances extracted (AVE) for variables.

		Mean	CR	AVE	1	2	3	4	5	6	7
Dependent and independent variables											
1	knowledge gained from customers for innovation	3.39	0.91	0.67							
2	social strategy	1.90	0.98	0.78	0.27						
3	customer involvement in innovation on social media	2.10	0.93	0.70	0.26	0.57					
Control variables											
4	general level of engagement between employees and customers	3.08	0.89	0.61	0.20	0.13	0.08				
5	firm age (log)	1.14			-0.10	0.08	0.00	0.11			
6	firm size (log)	1.10			0.01	0.05	0.07	0.06	0.29		
7	geography dummy (1=Europe, 0=North America)	0.45			0.30	-0.25	-0.15	0.01	-0.35	-0.25	
8	sector dummy (1=service, 0=product)	0.73			0.00	0.10	0.03	0.12	0.05	-0.13	0.02

Table 4: Results of structural equation modelling. Coefficients are standardized. N=350.

		Std.coef.	Std.err.	z	P>z	
Dependent variable: Customer involvement in innovation on social media						
	general level of engagement between employees and customers	0.07	0.05	1.39	0.17	
	firm size	0.06	0.05	1.32	0.19	
	firm age	-0.07	0.05	-1.44	0.15	
	geography dummy (1=Europe, 0=N.America)	-0.01	0.05	-0.29	0.78	
	sector dummy (1=service, 0=product)	-0.04	0.05	-0.78	0.44	
H1	social strategy	0.61	0.04	16.00	0.00	**
Dependent variable: Knowledge gained from customers for innovation						
	general level of engagement between employees and customers	0.14	0.05	2.94	0.00	**
	firm size	0.08	0.05	1.60	0.11	
	firm age	0.00	0.05	-0.02	0.99	
	geography dummy (1=Europe, 0=N.America)	0.43	0.05	9.63	0.00	**
	sector dummy (1=service, 0=product)	-0.07	0.05	-1.46	0.15	
	social strategy	0.24	0.06	4.00	0.00	**
H2	customer involvement in innovation on social media	0.26	0.06	4.24	0.00	**

* p<0.05 ** p<0.01

Table 5: Comparison of means and results of one-way ANOVA testing depending on whether firms indicated that social media platforms used primarily for personal (Group 1, N=169) vs. professional (Group 2, N=181) purposes were most important for their innovation activities.

	Group 1 (N=169)	Group 2 (N=181)	Results of one-way anova comparisons		
	Mean	Mean	F	Prob > F	
Dependent and independent variables					
knowledge gained from customers for innovation	3.32	3.45	1.66	0.20	
social strategy	2.10	1.93	2.46	0.12	
customer involvement in innovation on social media	2.27	2.15	1.63	0.20	
Control variables					
general level of engagement between employees and customers	3.09	3.10	0.01	0.92	
firm age (log)	1.21	1.11	4.25	0.04	*
firm size (log)	1.18	1.08	2.12	0.15	
geography dummy (1=Europe, 0=North America)	0.31	0.42	4.30	0.04	*
sector dummy (1=service, 0=product)	0.72	0.74	0.25	0.62	

* $p<0.05$

Table 6: Results of multi-group structural equation modelling comparing firms for which social media platforms used primarily for personal purposes were most important (N=169) and firms for which social media platforms used primarily for professional purposes were most important (N=181).

		Group 1: Social media platforms used primarily for personal purposes (N=169)					Group 2: Social media platforms used primarily for professional purposes (N=181)					Wald test	
		Std.coef.	Std.err.	z	P>z		Std.coef.	Std.err.	z	P>z		p	
Dependent variable: Customer involvement in innovation on social media													
	general level of engagement between employees and customers	0.11	0.06	1.80	0.07		0.08	0.08	1.09	0.28		0.97	
	firm size	0.08	0.06	1.37	0.17		0.06	0.07	0.82	0.41		0.90	
	firm age	-0.10	0.06	-1.83	0.07		-0.02	0.07	-0.36	0.72		0.38	
	geography dummy (1=Europe, 0=N.America)	0.05	0.06	0.91	0.36		0.02	0.07	0.22	0.83		0.70	
	sector dummy (1=service, 0=product)	0.01	0.06	0.14	0.89		-0.08	0.07	-1.12	0.27		0.31	
H3	social strategy	0.78	0.04	21.00	0.00	**	0.52	0.06	8.42	0.00	**	0.04	*
Dependent variable: Knowledge gained from customers for innovation													
	general level of engagement between employees and customers	-0.06	0.06	-0.97	0.33		0.29	0.07	4.04	0.00	**	0.00	**
	firm size	0.04	0.06	0.65	0.51		0.08	0.07	1.16	0.25		0.65	
	firm age	0.05	0.06	0.80	0.42		0.03	0.06	0.40	0.69		0.79	
	geography dummy (1=Europe, 0=N.America)	0.40	0.06	6.98	0.00	**	0.50	0.06	7.80	0.00	**	0.50	
	sector dummy (1=service, 0=product)	-0.10	0.06	-1.70	0.09		-0.07	0.07	-1.10	0.27		0.73	
	social strategy	0.23	0.11	2.15	0.03	*	0.18	0.08	2.24	0.03	*	0.65	
H4	customer involvement in innovation on social media	0.44	0.11	4.04	0.00	**	0.29	0.07	4.04	0.00	**	0.03	*

* p<0.05 ** p<0.01