

Afraid of engagement? Towards an Understanding of Engagement in Virtual Communities of Practice.

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Virtual communities of practice (VCoPs) foster learning and knowledge sharing between employees. However, many virtual communities of practice fail due to the lack of engagement of collaborators. Employees often claim that they do not have time for such communities. This paper investigates determinants of engagement in virtual communities of practice. Based on a rare survey of members of VCoPs at Schneider Electric, a multinational company of 137 000 employees, this research highlights the relations between job engagement, the perceived value of virtual communities of practice by members, and engagement in VCoPs. As such, respondents report higher levels of engagement in virtual communities of practice as their engagement in their job increases. Further, the perceived value of VCoPs mediates partially the relation between job engagement and engagement in VCoPs. These results lead to solutions for managers to implement, to increase the engagement of collaborators in virtual communities of practice.

Keywords: communities of practice, virtual communities of practice, engagement, multinational, value of communities of practice

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Introduction

As organizations understand the importance of communities of practice for performance, almost one third of large companies have implemented programs to promote their emergence and development (Statista, 2016). Reinforcing communities of practice is a top priority in Knowledge Management programs and investments for 42% of Knowledge Managers (APQC, 2019). Corporations support the creation of virtual communities of practice, to allow knowledge sharing and learning across frontiers and businesses (APQC, 2019; Statista, 2016).

Employees in virtual communities of practice (VCoPs) rely on group learning in order to accomplish objectives (Frank et al., 2017). Their collaboration includes social media and has a tendency to cross boundaries, whether geographical or political. Individuals also report feeling a strong sense of belonging and are frequently committed to the VCoP's cause (Frank et al., 2017). It has been argued that to create a sustainable community, the support of its participants is indispensable (Ardichvili et al., 2003). However, developing the participation and engagement of collaborators in VCoPs is not self-evident.

CoPs survive as long as their members find value in participating to the community (Wenger, 1998). Several factors support members' decision to share knowledge in online communities of practice, including satisfaction and reciprocity (Cheung et al., 2013). Some researchers analysed the perceived value of communities of practice in terms of costs and benefits to members (Sedighi et al., 2017). Altruism and problem solving on the one hand, and time and effort needed to engage in electronic networks of practice on the other hand, influence members' participation (Sedighi et al., 2017). Other researchers suggested that employees engaged in their jobs adopt helpful and courteous behaviours such as assisting others to solve their problems or discussing with others before taking action (Babcock-Roberson and Strickland, 2010; Matta et al., 2015), and are inclined to learn (Sonnetag, 2003). However, a

review of the literature on engagement in communities of practice shows that the concept needs clarification. Despite their growing importance for both research and practice (Frank et al., 2017), the sources of engagement in VCoPs, and in particular, of the intensity of engagement in VCoPs, still have to be addressed.

Our paper clarifies the concept of engagement in communities of practice. It studies sources of the engagement of collaborators based on the insights provided by the theory of engagement (Kahn, 1990; Rich et al., 2010; Saks, 2006), anchored in social exchange theory (Saks, 2006). Founded on an empirical study of VCoPs at Schneider Electric, this article analyses two different antecedents of engagement in virtual communities of practice: the perceived value of VCoPs, and job engagement.

Theoretical background

Virtual communities of practice

Communities of practice (CoPs) are made of individuals who demonstrate interest or passion about a subject and whose knowledge and skill in that area are increased through regular interaction (Wenger et al., 2002). Members communicate through several means, which can be both digital and physical. By physical CoPs, we mean a CoP where members interact mainly face-to-face. CoPs also include virtual communities (VCoPs) supported by digital tools (Wenger and Snyder, 2000).

In contrast to CoPs, which are physical groups, VCoPs create a unique space for collaboration and skill sharing that exists outside the limits of physical meetings. In this digital space, precise problems can be solved by those who are most interested in them (Snyder and Wenger, 2010). As the technological tools available to collaborators multiply, so too does their ability to work cooperatively with colleagues and experts from virtually every corner - and every culture - of the world (Snyder and Wenger, 2010). In comparison to physical CoPs, the asynchronous nature of online virtual CoPs enables community members to interact free of

typical restraints, such as time and location; users can engage with the community to whatever extent they wish and gather input from a larger group of peers and collaborators than in a traditional face-to-face collaboration (Gray, 2004).

Engagement in virtual communities of practice

Three main characteristics define CoPs: the mutual engagement of its members, the existence and development of a common project, and a shared repertoire (Lave and Wenger, 1991). The mutual engagement of members is rooted on reciprocity and on their perception that they belong to a group. Further, members identify with a shared project or common practices. Finally, they use a common repertoire, i.e., techniques, tools and norms (Brown and Duguid, 1991; Wenger, 1998).

Engagement is central in the dynamics of learning within CoPs. According to Wenger (2010), as community members work to better understand their knowledge domain, they naturally cross paths with others, confronting the same questions and problems and indeed, solving them and learning together. Two simultaneous activities support this engagement: (1) the personal participation of CoPs' members in the social life of the community (Wenger, 1998), and (2) the production of tools, documents or other artefacts, which structures the participation of members (Wenger, 2010).

Despite the role played by engagement in CoPs (Wenger, 1998, 2010), research still needs to clarify the concept in the context of communities of practice. Previous research referred to engagement simply as participation to the community of practice as well as to the engagement of participants towards each other (e.g., Frank et al., 2017). The theory of engagement is a fruitful venue to explore this question. This approach introduced several distinct levels of engagement, including engagement towards work or job, engagement towards the organization, and team engagement (Saks and Gruman, 2014). Engagement is distinct from organizational commitment and organizational citizenship behaviour (Allen and Meyer, 1993;

Robinson et al., 2004; Saks, 2006). Although commitment alludes to an individual's perspective on and devotion to his or her organization, engagement, on the other hand, underscores the extent to which he or she is conscious of and involved in fulfilling the demands of his or her role (Saks, 2006). Further, engagement addresses formal role performance, whereas organizational citizenship behaviour focuses on voluntary conduct (Saks, 2006). Engagement also differs from job satisfaction and job involvement (Porter et al., 1974; Kahn, 1990). Whereas job satisfaction and job involvement are useful to understand employees' perceptions of their work and organization, they are remote from work situations and hard to use in daily practice (Harter et al., 2002). On the other hand, engagement addresses daily emotional connection with others and cognitive attention at work (Harter et al., 2002). As such, the concept of engagement seems particularly appropriate in the context of communities of practice, where social interactions and learning play a central role.

Job engagement captures the amount of dedication and energy of individuals in their work (Kahn, 1990; Rich et al., 2010). In his pioneering research, Kahn (1990) concludes that engagement is simultaneously using and expressing one's self in task behaviours that create bonds with people and with work; personal presence (consisting of physical, cognitive, and emotional factors); and accomplishment of one's role. This definition outlines the three main components of job engagement: physical, emotional and cognitive. Physical engagement describes the amount of energy and effort dedicated to work. Emotional engagement refers to the feelings of collaborators towards their work. Finally, cognitive engagement defines the level of attention and absorption experienced by employees on the job. Taken together simultaneously, these three sub-components constitute the engagement of employees, which is a higher-order concept composed by these three dimensions (Rich et al., 2010). Thus, engagement is a motivational construct that reflects the investment of an individual's complete self into the fulfilment of a role (Rich et al., 2010). Other researchers offered different

definitions, which embraced similar perspectives. For example, Schaufeli and co-authors (2002) pointed out that work engagement is a motivational construct that describes an optimistic, gratifying, professional state of mind. In sum, job engagement reflects the psychological presence of the individual while playing a role, and individuals do not have the same degree of immersion in their roles (Schaufeli et al., 2002).

On the other hand, organizational engagement is the psychological presence of the individual in the organization. It relates to the role of the individual as member of the company (Saks, 2006). Saks (2006) found a significant difference between job engagement and organizational engagement. Indeed, employees can be captivated by activities related to their role as members of the organization, but disengaged from their job (Saks and Gruman, 2014). Research on collective organizational engagement demonstrated the validity of the construct and showed that the concept of engagement can be used at different levels of analysis (Barrick et al., 2015).

Building on these insights, we propose to redefine the concept of engagement towards a community of practice. Saks and Gruman (2014) suggest that based on the definition of job engagement that involves the physical, emotional and cognitive aspects mobilised while working, there can be other forms of engagement that activate the same dimensions, such as task engagement, organizational engagement and group and team engagement. We define CoP or VCoP engagement as the physical, cognitive and emotional dedication contributed by collaborators to the community of practice. Previous research showed that job engagement and organizational engagement are distinct (Saks, 2006). In a similar vein, CoP engagement differs from job engagement. Employees might be engaged in their job but refrain from engaging in a community of practice. Our definition of engagement in communities of practice complements and details the existing references to engagement in the literature on communities of practice. Previous research pointed out that participation in communities of practice, as well as reification

of knowledge produced in these groups, support CoPs (Wenger, 1998). Exploring engagement enables us to uncover in more details the concept of participation in communities as put forward by Wenger (1998). Our definition goes further by highlighting the importance of individuals' motivation and state of mind while participating to communities of practice.

Challenges and sources of engagement in virtual communities of practice

The engagement of members in a community of practice can encounter many obstacles, especially if the CoP is virtual. Lack of time is often the main barrier to participation (Hamel et al., 2012). Members of an electronic network of practice underlined that participating necessitates both time and effort. Employees providing knowledge to others might also fear of losing face if they share knowledge that is not valuable to their colleagues (Sedighi et al., 2017). Both extrinsic (i.e., money, visibility) and intrinsic (i.e. altruism) motivational factors influence knowledge sharing in communities of practice (Jeon et al., 2011).

The engagement of members can also vary for other reasons. A virtual CoP offers the opportunity for its members to read, as well as to post (and receive) feedback, guidance and recommendations to (and from) other members of the community (Gunawardena et al., 2009). Members who only participate in the community in a passive way - that is, those who read only the comments and postings of other members, without posting anything themselves - can also acquire knowledge and skills from this shared information base. This is an added value for novice members (Gunawardena et al., 2009). Further, because virtual CoPs don't benefit from the advantage that physical CoPs have, which is enabling members to benefit from the social conviviality of face-to-face contact, one of the biggest challenges to running a virtual CoP is getting group members to engage in the community. In physical CoPs, the pleasantness of face-to-face interaction makes it easier for people to share tacit knowledge (Borzillo, 2017). Tacit knowledge sharing may occur less intensively in a virtual community than in a physical

community, even though members of virtual communities access written words on shared platforms (Zarb, 2006).

Indeed, communities of practice survive as long as their members find value in their engagement in the community (Wenger et al., 2002). Although the contributions of CoPs to strategy development, seizing of opportunities, efficiency and innovation are numerous (Wenger and Snyder, 2000; Lesser and Everest, 2001), previous research highlighted the complexity of measuring the value of CoPs (Wenger, 1998; Wenger et al., 2002). Based on an empirical study, Fontaine and Millen (2004) highlighted the diverse areas where communities of practice influence performance, including ability to execute corporate strategy, collaboration, sales per customer, productivity and professional reputation. Other research pointed out that companies that successfully support communities of practice do not use traditional performance indicators to measure their performance; rather, by collecting stories and anecdotes about how CoPs helped employees to gain business, save costs and gain time, they are able to assess the value of CoPs (Wenger and Snyder, 2000). Indeed, daily activities and discussions can create value for CoP members, but the impact of knowledge sharing might emerge only later and is difficult to track down (Wenger et al., 2002). As such, communities of practice generate value in multiple ways (Fontaine and Millen, 2004), and the value produced is context-based and depends on individual perception. CoPs can influence the skills and reputation of the collaborators. They can also benefit operational efficiency, revenues and business development, cost savings, level of service and speed (Fontaine and Millen, 2004; Wenger and Snyder, 2000).

Building on previous research on communities of practice and on engagement theory, this paper addresses the following research questions: are job engagement and VCoP engagement related? Does the perception of the VCoP value influence VCoP engagement?

Hypothesis and model

Relation between job engagement and VCoP engagement

Saks and Gruman (2014) observe that each form of engagement (such as engagement towards one's job, task, organization or group) probably has an effect on the other types of engagement. As such, job engagement might be related to engagement in communities of practice.

In fact, previous research invites to follow this direction. Engaged employees adopt collaborative and involved behaviours and job engagement and organizational citizenship behaviour are related (Babcock-Roberson and Strickland, 2010; Matta et al., 2015).

In parallel, studies of CoPs indicate that pro-social motivation, i.e., a desire to expand effort in order to benefit other people (Grant, 2008), ignite knowledge sharing behaviours. Altruism and pleasure in helping others are antecedents of knowledge sharing (Bock et al. 2005; Kankanhalli et al. 2005; Wasko and Faraj, 2000). Altruism influences collaborators' attitude towards knowledge sharing, which has consequences on intention to share knowledge and on knowledge sharing behaviour (Matić, et al., 2017).

From there, we can infer that employees with high levels of job engagement will be more likely to get involved and engaged in communities of practice, which favour knowledge sharing and mutual help (Eldor and Harpaz, 2016).

H1: Job engagement is positively related to VCoP engagement.

Relation between job engagement and perceived VCoP value

Highly engaged collaborators are more open to new experiences (Block and Kremen, 1996). They adapt quickly to new surroundings (Langelaan et al., 2006) and often experience positive emotions, such as enthusiasm and pleasure (Schaufeli and Salanova, 2007; Xanthopoulou et al., 2007). Due to their personal characteristics and resources, engaged

employees might be more inclined to value positively virtual communities of practice, as they provide members with new insights and experiences.

Further, engaged collaborators tend to be reliable and hard-working (Mostert and Rothmann, 2006). They also pursue learning (Sonnetag, 2003), are more proactive, and actively look for ways to improve work methods and procedures (Frese et al., 1996; London and Smither, 1999; Parker, 2000). As such, collaborators with high levels of work engagement might value communities of practice more than other collaborators, as they contribute to their learning and personal development.

H2: Job engagement is positively related to the perceived value of the community of practice.

Relation between perceived value of the VCoP and VCoP engagement

Even though pro-social behaviours might explain engagement in a community of practice, there are other reasons that could influence this type of engagement. Previous research pointed out the role of extrinsic motivation factors such as rewards, reciprocity and reputation, in knowledge sharing (Bock et al. 2005; Kankanhalli et al., 2005; Wasko and Faraj, 2000). Whereas knowledge providers mainly participate to communities of practice because they enjoy helping others and expect reciprocity and recognition, knowledge seekers in CoPs look for quick solutions to their problems and participate to stay informed (Sedighi et al., 2017).

As such, the contribution of the VCoP to members' work is an important source of value for participants. Participants in communities of practice seek and learn from the experiences of others (Wasko and Faraj, 2000). If belonging to a community of practice does not help members to reach their professional goals, they might consider leaving the community or decreasing their engagement. This approach leads us to the following hypothesis.

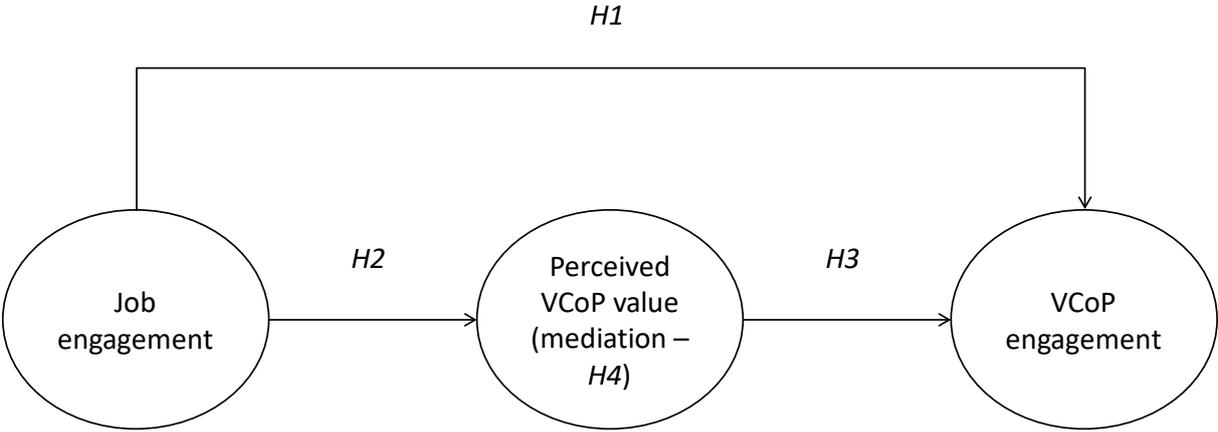
H3: The perceived value of the VCoP is positively related to VCoP engagement.

Further, even if the members of the community are highly engaged in their jobs and adopt altruist behaviours supporting knowledge sharing, their engagement in the community may well depend on their perception of the value of the community of practice.

H4: Perceived VCoP value mediates the relation between job engagement and VCoP engagement.

Figure 1 summarizes our hypothesis and relations between constructs.

Figure 1. Conceptual model



Method

Sample and procedure

The empirical part of this study is based on an analysis of VCoPs at Schneider Electric. Born 180 years ago, Schneider Electric is a multinational company of 137 000 employees present in more than 100 countries. Schneider Electric is a leader in energy management and automation in buildings, industries and data centres (Schneider Electric annual report, 2018). In 2018, the turnover of Schneider Electric amounted to 25.7 billion euros, generating earnings of 3.9 billion euros (Schneider Electric annual report, 2018). Employee engagement is a focus

of attention for the company that has an objective of scoring 70% in its Employee Engagement Index in 2020 (Schneider Electric, 2020).

Schneider Electric makes available to all its employees a virtual platform. This platform is made up of a portal where employees can find the information they need, tools, and an internal collaboration platform. It includes Schneider Electric's network of communities of practice. In 2018, there were 80 significant virtual communities of practice in the company, which brought together 12 000 employees (Schneider Electric internal document, 2018). Their goal is the sharing of best practices and knowledge. For example, thanks to work done within a virtual community of practice, the firm was able to achieve a 75% reduction in the number of plastic products containing hazardous substances. For Schneider Electric, plastic is a crucial material that contributes to product performance. Every year, the company buys approximately 120,000 tons – worth €300 million – of plastic materials, which are present in all its products. Given the long life of its products, it is important for the company to ban certain substances like phthalates, for example, before this becomes compulsory by regulation. Further, as a responsible company, Schneider Electric puts sustainable development at the heart of its strategy. The Schneider Electric Plastics virtual community was a key resource to achieve these goals (Schneider Electric internal document, 2017).

The researchers who worked on this article collaborated with the team in charge of Knowledge Management at Schneider Electric to collect the data necessary for this study. Every year, the Knowledge Management team launches an online survey directed towards the 12 000 members of VCoPs to assess the performance of the communities of practice. We added a few questions to the October 2017 survey to answer our purpose. In total, 2159 VCoP members answered the questions (18% response rate). We estimated non-response bias by comparing the characteristics of non-responders with the population in the study (Barclay et al., 2002). The representativity of the sample was good.

Most respondents worked in the European offices of Schneider Electric. A significant share of respondents worked for the firm in North America and Asia. Further, these employees belonged to different types of communities of practice, as shown in table 1.

Table 1. VCoP types

VCoP type	% of respondents
Customer Projects and Services	24,4%
Information technology	15,5%
Marketing	14,8%
Industrial manufacturing	13,9%
Technical	11,8%
Customer Satisfaction and Quality	7,4%
General management	4,7%
Sales	3,2%
Purchasing	2,2%
Finance	1,3%
HRM	0,7%

Measures

Participants rated their job engagement, VCoP engagement and perception of the value of the VCoP using a four-point Likert scale that ranged from “Strongly agree” to “Strongly disagree” (Borgers et al., 2004; Chang, 1994; Leung, 2011). Table 2 shows the measures used, that are explained in more details below.

Table 2. Measurement scales.

Construct	General definition	Specifics about the construct	Scale used
Job engagement	The amount of dedication and energy of individuals in their work	Physical, emotional and cognitive engagement	<p>I work with intensity on my job (<i>physical engagement</i>)</p> <p>I feel energetic at my job (<i>emotional engagement</i>)</p> <p>I am proud of my job (<i>emotional engagement</i>)</p> <p>At work, I pay a lot of attention to my job (<i>cognitive engagement</i>)</p> <p>At work, I am absorbed by my job (<i>cognitive engagement</i>)</p> <p>I am highly engaged in my job (<i>general</i>)</p>
VCoP engagement	The dedication and energy contributed by collaborators to the community of practice	Physical, emotional and cognitive engagement	<p>I devote a lot of energy to this community (<i>physical engagement</i>)</p> <p>Being a member of this community makes me feel enthusiastic (<i>emotional engagement</i>)</p> <p>I pay a lot of attention to things happening in this community (<i>cognitive engagement</i>)</p> <p>I am highly engaged in this community (<i>general</i>)</p>
VCoP perceived value	Perception of the usefulness of the VCoP to the collaborator. This perception relates to extrinsic motivation factors.	Utility to one's work	<p>My community helps saving time</p> <p>My community helps reducing costs</p> <p>My community helps bringing more business</p> <p>I consider that my community is an active community because it provides tangible value to me, my business or my clients (<i>general</i>)</p>

Job engagement

There are several measures of job engagement. In this study, which is rooted in the concept of job engagement as defined by Kahn (1990), we designed our measure of job engagement using the latest work on this concept. In their research, Rich and co-authors (2010)

reviewed all existing scales on job engagement and developed and validated a new scale based on these previous works. The scale developed by Rich et al. (2010) included 18 items and was considered as a unidimensional construct (Rich et al., 2010).

The Knowledge Management team of Schneider Electric asked us to reduce the number of items used in the scale of Rich and co-authors (2010), to decrease the time needed to answer the questionnaire and improve the response rate (Toepoel et al., 2009), as well as to improve clarity. Consequently, we reduced the number of items in our questionnaire. Building on previous researches (Barnes et al., 2015; Barrick et al., 2015; He et al., 2014), we selected one or two items for each sub-component of job engagement among the items of the Rich et al. (2010) scale, to promote intelligibility and brevity. We ensured that the items selected captured the main aspects of each job engagement sub-component defined by Rich and co-authors (2010). For example, to account for physical engagement, we used the “I work with intensity on my job” item, which addresses the main topics of this construct, i.e. energy exerted per unit of time, work intensity and effort. We also added a synthetic item from the Saks (2006) five-item scale, “I am highly engaged in this job”, to assess the global perception of job engagement by the respondents and to check the consistency of answers. The internal consistency of the scale is good ($\alpha=.89$).

VCoP engagement

To develop the scale measuring community engagement, we referred to the seminal work of Saks (2006) on organizational engagement (Meyer et al., 1993; Reichers, 1985). Saks (2006) was the first to make the distinction between job engagement and organizational engagement. To measure organizational engagement, Saks (2006) used a six-item scale. This scale accounts for the three sub-components of engagement, i.e. physical, emotional and cognitive engagement.

We adapted the phrasing of the items to communities of practice and to the context of Schneider Electric, based on discussions with the Knowledge Management team of Schneider Electric (Barnes et al., 2015; Barrick et al., 2015; He et al., 2014). For example, to account for the emotional dimension of VCoP engagement, we used “Being a member of this community makes me feel enthusiastic”. We also tested and validated our four-item scale with respondents from Schneider Electric. The internal consistency of the scale is good ($\alpha=.89$).

Perceived value of the VCoP

One of the challenges of this study was to create a scale to assess the value of virtual communities of practice to members. In this research, we considered value generated by the contribution of the community of practice to the *work* of the individual. As such, participants in communities of practice seek and learn from the experiences of others, to improve their work (Wasko and Faraj, 2000).

We developed a four-item scale to evaluate the contribution of VCoPs to collaborators’ work. We referred in particular to cost reduction, time saving, and business development. We identified these items thanks to several discussions with the Knowledge Management team of Schneider Electric. The team had used these items in previous surveys and validated their meaningfulness to the collaborators of the firm. The internal consistency of the scale is good ($\alpha=.88$).

To establish the discriminant validity between the variables, we used item-level discriminant validity (Gefen & Straub, 2005). Three factors emerged from factor analysis (using oblimin rotation) that replicated the existing scales. There was no cross-loading exceeding 0.3. (Tabachnik and Fidell, 2007). This analysis demonstrated the strong discriminant validity of the three constructs used in this research (job engagement, VCoP engagement and perceived value of the VCoP).

Results

Descriptive statistics and correlations

Table 3 reports the descriptive statistics and correlations among all constructs.

Table 3. Descriptive statistics and correlations among the constructs

	M	SD	1	2
1. Job engagement	3.52	.46		
2. Perceived VCoP Value	3.27	.56	.323***	
3. VCoP engagement	3.07	.61	.310***	.732***

(1)*** $p < .001$

The independent variable, job engagement, has a significant and positive impact on the dependent variable, VCoP engagement ($r = .310, p < .001$). Individuals reported higher levels of engagement in virtual communities of practice as their engagement in their job increases. Thus, our first hypothesis is supported (H1).

Job engagement also has an effect on the perceived value of VCoPs ($r = .323, p < .001$). The more collaborators are engaged in their jobs, the more they value virtual communities of practice. Our second hypothesis is validated (H2).

Further, the effect of the perceived value of VCoPs on engagement in VCoPs is strongly positive and significant ($r = .732, p < .001$). As such, engagement in communities of practice depends on the value that individuals give to these communities. These findings support hypothesis 3 (H3).

Mediation model

To test hypothesis 4, we followed the approach of Zhao et al. (2010). We could validate a partial mediation effect (H4). We could not fully validate a total mediation effect, but the remaining direct effect accounts for a very small part of explained variance. To test the

robustness of our findings, we also used the approach of Baron and Kenny (1986) on mediation analysis. We obtained the same result.

A mediation analysis was conducted through a multiple regression analysis using SPSS. Results from the multiple regression analysis (Table 4) show that model 1 (where job engagement is the only predictor) accounts for 9,7% of the variance whereas model 2 – once Perceived VCoP value is added – accounts for 52,7% of the variance (variation in F is significant at the .001 level). As such, model 2 is much more predictive than model 1.

Table 4. Results from the multiple regression analysis (VCoP engagement as dependent variable).

Model	Predictor(s)	B	SE	Beta	Adj. R2
Model 1	Job engagement	.271	.018	.311***	.097
Model 2	Job engagement	.075	.014	.087***	.527
	Perceived VCoP value	.751	.017	.694***	

(1) ***p<.001

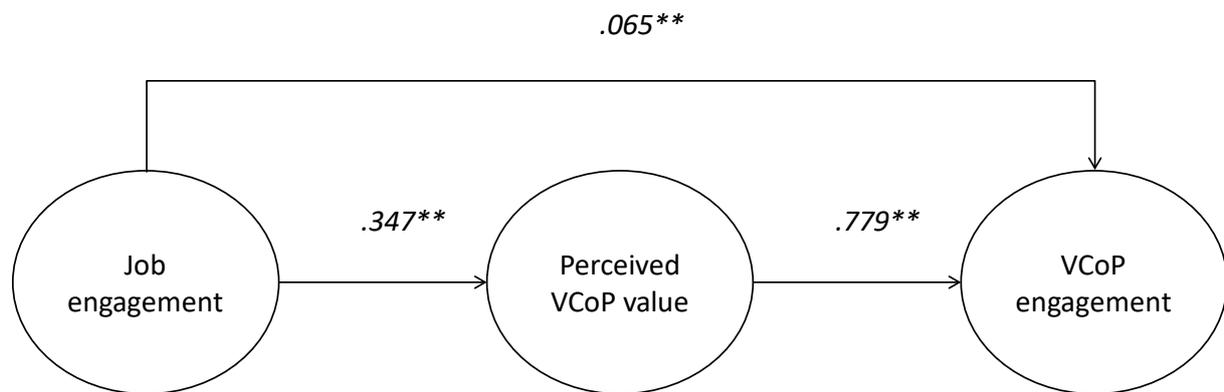
Following Zhao et al. (2010) recommendations, we directly assessed the significance of the indirect effect, i.e. the effect of the independent variable – job engagement – on the dependent variable – CoP engagement – through the mediator variable – perceived VCoP value. Because Sobel test is no longer considered as useful to assess the significance of the indirect effect (Zhao et al., 2010; Hayes, 2017), we used the bootstrapping method as recommended by Zhao et al. (2010) and Hayes (2017). In this study, we used the script developed by Preacher (2017): PROCESS (v3.1). The 95% interval of the indirect effect was obtained with 5000 bootstrap resampling.

Results from the mediation analysis show that perceived VCoP value mediates the relationship between job engagement and VCoP engagement (.195, CI = .17 to .22). Because 0 is not included in the confidence interval, we conclude that the indirect effect is significant.

Following the procedure from Zhao et al. (2010), we checked the direct effect of job engagement on VCoP engagement: results show that the effect of job engagement on VCoP engagement when controlling for perceived VCoP value remains significant (.09, $p < .001$). Because the product $a*b*c'$ is positive, we conclude that the relationship between job engagement and VCoP engagement through perceived VCoP value may be considered as a complementary mediation (Zhao et al., 2010) which is similar to partial mediation in the Baron and Kenny framework (Baron & Kenny, 1986; Zhao et al., 2010).

Following again the recommendations from Zhao et al. (2010) according to which “SEM approach is superior to Baron and Kenny’s because it estimates everything simultaneously instead of assuming that equations 1–3 are independent”, we conducted a confirmatory analysis using SEM. To do so, we used EQS software (robust method). Results of the SEM analysis confirmed the mediating role of perceived VCoP value in the relationship between job engagement and VCoP engagement. The model fit quite well the data (Kline, 2005): $\chi^2 = 13916.57$ on 91 df, NNFI = .948, CFI = .958, RMSEA: 0.061 [0.057, 0.065]. Regression coefficients are very close to those found using SPSS. For instance, the indirect effect is .27 through SEM analysis and .195 through SPSS using the PROCESS macro. Figure 2 displays the results. Thus, results from SEM analysis confirm the role of perceived VCoP value as partial mediator in the relation between job engagement and VCoP engagement.

Figure 2. Results from confirmatory analysis using SEM



(1) **p<.01

Discussion

Our research contributes to clarifying and deepening the concept of participation and engagement in communities of practice (Wenger, 1998). Wenger (1998) characterized communities of practice by the participation and mutual engagement of members, as well as the existence of a shared repertoire and joint enterprise. Our work clarifies the notions of participation and engagement by referring to the theory of engagement (Kahn, 1990, 1992). It offers a method to evaluate the intensity of engagement of members in CoPs. As such, this research makes a strong contribution to the discussion on communities of practice and engagement of members (Hamel et al., 2012; Frank, 2017).

Two distinct visions of knowledge sharing prevail in the literature. Whereas some researchers insist that knowledge sharing is based on self-interest (Bartol and Shrivastava, 2002), others show that such behaviour might have other causes such as enjoyment in helping others (Brown and Duguid, 1991; Lave and Wenger, 1991). In particular, the latter perspective views knowledge as collectively owned and developed by the community. In sum, knowledge sharing can be considered either as primarily motivated by an individual's interest or anchored in community interest and collective principles.

This research highlights this debate by showing that the level of energy and dedication of individuals in communities of practice is related to both their engagement in their job and to the perceived value of the community of practice to their work. Whereas the former construct addresses non-economic motivational aspects of the individual, the latter refers to self-interest and to the value of the community in terms of reaching the individual's professional goals. Our findings suggest that both aspects are important to understand engagement in a virtual community of practice. However, if individuals do not find any value in the community in terms of utility to one's work, engagement in VCoPs fades away. The level of job engagement of individuals influences their engagement in VCoPs, as job engagement supports altruist behaviours. Nonetheless, the contribution of the VCoP to one's work determines the level of energy dedicated to the community. As such, this research adds to the understanding of collaborators' motivation to contribute knowledge. Stewart and Osei-Bryson (2013) highlighted that organizational commitment and intrinsic motivation both influence the intention of collaborators to contribute knowledge to knowledge repositories. Our work shows that two new constructs, job engagement and VCoP value, influence engagement in communities of practice.

The value of communities of practice is context-based and difficult to assess, and mostly based on anecdotal evidence in many organizations (Carter, 2018; Wenger and Snyder, 2000). To date, few researches tried to measure VCoP value, whereas the benefits and outcomes of VCoPs are diverse and well-documented (e.g., Sedighi et al., 2017). As such, this research contributes to discussions on VCoPs by proposing a method to measure some of their benefits that was tested empirically. We tested a new scale to gauge the value of communities of practice in terms of contribution to the work of their members. Going forward, researchers could build on this work and attempt to include other aspects of value of communities of practice in measurement scales. For example, several studies of communities of practice and weblogs

showed that the development of members' reputation influences their participation (Kaiser et al., 2009; Lee et al., 2015). Future research could complement these studies by assessing the contribution of this dimension to the value of communities of practice and engagement of their members.

Our research extends the literature on engagement. Researchers showed that different types of engagement, such as job engagement and organizational engagement, are distinct constructs that can be evaluated separately (Saks, 2006). Further, despite this differentiation, diverse types of engagement might be related (Saks and Gruman, 2014). Our research clarifies the concept of engagement in virtual communities of practice. Based on former research, we defined engagement in VCoPs as the physical, cognitive and emotional dedication contributed by collaborators to the community of practice. Secondly, the results of this study demonstrate that job engagement and VCoP engagement are related. This research validates the hypothesis of Saks and Gruman (2014) about the existence of links between different forms of engagement. As such, employees with high levels of job engagement are more likely to have high levels of VCoP engagement. This relation remains (weakly) even after having identified the mediating effect of the perceived value of VCoPs.

This paper makes several managerial contributions. The engagement of members in VCoPs depends on their job engagement and perceived value of the VCoP. To make their VCoP successful, managers of communities of practice could ensure that they bring meaning and value to the work of members, by sharing best practices and creating new relevant knowledge. This might require managerial initiatives such as (i) building repositories of knowledge and search engines for the VCoP that are easily accessible to members thanks to friendly digital interfaces, (ii) fostering knowledge sharing in the community by organizing regular events and meetings, or (iii) developing groupwork on specific sub-themes. Community managers could also monitor the value of VCoP over time by using the scale that is proposed in this paper, and

make operational changes as needed. By focusing on the value that VCoPs bring to the work of employees, managers of VCoPs can increase the engagement of employees in virtual communities of practice. Moreover, a study conducted at a large scale on the level of engagement of VCoP members may also be a very pragmatic starting point for Human Resources (HR) or Corporate Knowledge (KM) managers to gather employees' feedback on the ways knowledge and best practices are shared amongst colleagues in and across the whole company. Such a study could enable HR and KM managers to investigate where and at what levels of the firm employees develop critical skills (or still lack critical skills) and to have a better view of where in the organization the motivated employees are located. This study of VCoPs is also a window into the future of collaboration in the workplace, as we can draw a link between VCoPs and virtual meeting rooms that will become increasingly important as digital technology evolves.

Of course, this study has some limitations that need to be pointed out. Future research could explore other variables to refine the understanding of the relation between job engagement and VCoP engagement. Also, we cannot exclude that there might be an effect of VCoP engagement on job engagement. The results could therefore be confirmed by a longitudinal analysis and validated externally in other empirical settings.

Conclusion

Knowledge is a strategic resource for the firm (Grant, 1996; Spender, 1996). Following this trend, many organizations implemented digital platforms and systems to allow collaborators to share knowledge in virtual communities of practice. However, developing the participation and engagement of collaborators in VCoPs is not self-evident.

Based on the theory of engagement, our research clarified the concept of engagement in virtual communities of practice. It showed that job engagement positively influences VCoP

engagement. Further, the perceived value of VCoPs positively mediates this relation. As such, this research contributes to the theory on communities of practice as well as on engagement. It also outlines solutions for managers to implement in order to increase the engagement of collaborators in virtual communities of practice.

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