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# Reviewing Motivations for Engaging in Decision Support Social Networks

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## ABSTRACT

*This paper reviews the motivations for people to engage in decision support social networks, from existing connections between social network sites and decision support. The paper points out the three intertwined levels that influence interactions and motivation of people when engaged in social network participation: communities, networks and electronic networks of practice. Participating in social networks draws upon the interaction of intrinsic and extrinsic factors. Intrinsic factors refer to motivation embedded in the action itself (comes within the individual), rather than from external rewards or extrinsic factors such as money or recognition. The paper also identifies some problems in engaging in decision support social networks and discusses potential solutions, namely: to create and maintain a critical number of users; the issue of time in decision processes; linguistic barriers and issues of confidentiality.*

*Keywords: Decision-Making, Decision Support Systems, Motivation, Online Social Network, Participation*

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## INTRODUCTION

Online social networks have become extremely popular. More than two-thirds of the global online population visit and participate in social networks and blogs. In fact, social networking and blogging account for nearly 10% of all time spent on the Internet, suggesting that online social networks have become a fundamental part of the global online experience (Benevenuto, Rodrigues, Cha, & Almeida, 2009) and has introduced a new organizational framework

for online communities, and with it, a vibrant new research context (Boyd & Ellison, 2008).

Using such online networks, people share photos of birthdays, holidays and other experiences ranging from the mere everyday happening to the most complex piece of mind. These “diaries” reach out for the public interest (or maybe just the sole curiosity on other people’s lives). Such an interest might just be the trigger to the next evolution of decision support systems (a new paradigm, maybe, according to Antunes and Costa (2012b)).

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It is common knowledge that family and friends assume, and not in rare occasions, a decisive role in individual decision-making (choosing a color for a new car, the next holiday destination, a gift for the spouse/husband, etc.). The weight of such opinions may well match or overcome other criteria thought to be more rational or rigorous. This situation is not awkward or inexistent in firm management, as polls and market studies on customer habits or opinion-based preferences are often incorporated into corporate decisions. Therefore, it is easy to assess the existence of social networks bounded to firms, bearing potential to support decision-making. This perspective grounds in the so-called “wisdom of the crowds” (O’Reilly, 2005), supported by social network sites.

The decision support social network (Antunes & Costa, 2011, 2012c) is an information model where people use social network sites functionalities, in order to develop decision-making processes. It allows different working modes and different number of decision agents, ranging from very small to very large groups, without any constraint neither on how the decision group will organize itself nor on how it will be constituted. The idea behind the decision support social network is that it remains an ad hoc self-organized structure, formed by people who do not have to belong to a specific firm, motivated to contribute to problem-solving (whether by firm mechanisms or by an independent self-motivation).

This paper reviews the motivations by which people engage in social network sites and the ways in which firms can make use of such motivations, in order to establish and develop a decision support social network, supported by social network sites. Some potential problems of decision support social networks are identified and suggestions to overcome them are put forward.

In the next section, a definition of social network sites (SNS) is elaborated. In order to deepen the understanding of social networking phenomena, a classification of SNS is reviewed, as well as SNS’s building blocks. The section ends up with the concept of group or community.

After that, decision support social networks are presented emphasizing the classical concept of group decision support systems and their existing connections with SNS. Once again, people and groups come out of this presentation as one of the most relevant issues. This leads to the following section where the motivations for participation in social networks are exposed. Finally, the constraints of participating in decision support social networks and ways to overcome them are presented. Naturally, the paper ends with a small section where some conclusions are drawn.

## SOCIAL NETWORK SITES

There is not a unique definition for social network sites (SNSs). While the term “social software” became a name to denote contemporary technology that supports social interaction (Boyd, 2006), there are many concurrent names for what it stands, namely groupware, computer-mediated communication software, social computing, just to mention a few.

Social software can be loosely defined as software which supports, extends, or derives added value from, human social behavior – message-boards, musical taste sharing, photo-sharing, instant messaging, mailing lists, social networking (Coates, 2005). Due to the panoply of terms is fair to say that social network sites are web-based services, whose nature and nomenclature may vary from site to site. They allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, view and traverse their list of connections and those made by others within the system (Boyd & Ellison, 2008) and interact with people in their networks (Subrahmanyama, Reich, Waechter, & Espinoza, 2008).

While boundaries are blurred, most social network sites share a core feature: an individual offers a representation of their selves (a “profile”) to others to peruse, with the intention of contacting or being contacted by others, to share opinions and facts, to meet new friends or

dates, find new jobs, receive or provide recommendations, and much more (Gross & Acquisti, 2005). They are also being used to support the creation of brand communities or for marketing research (Maclaran & Catterall, 2002).

According to Kaplan and Haenlein (2010), social network sites can be classified by the cross-over of social presence/media richness and self-presentation/self-disclosure (see Table 1).

Kietzmann, Hermkens, McCarthy, and Silvestre (2011) stand that SNSs are built on seven functional blocks (see Figure 1), namely: identity, conversations, sharing, presence, relationships, reputation and groups. The authors, however, do not stand that the building blocks are mutually exclusive, nor do they all have to be present in a social media activity.

The identity represents the extent to which users reveal their identities in a social media setting (name, age, gender, profession, location, and information that portray users in certain ways), bearing privacy concerns as well.

Conversations represent the extent to which users communicate with other users in a social media setting. These postings can be rich and useful, but not necessarily connected to a greater social media exchange on the same subject. Firms often need tools and capabilities that allow them to combine the information in order to produce an overall image or message.

Sharing represents the extent to which users exchange, distribute, and receive content as well as the implied reasons why they meet online and associate with each other and the mapping of users' connectivity, across their entire social network.

Presence represents the extent to which users can know if other users are accessible. The implication of presence is that firms need to pay attention to the relative importance of user availability and user location. A firm might also want to investigate if users have a desire for selective presences, where one can be visible to some people while staying hidden to others. Another direct implication of presence is that it is linked to the traits of other functional blocks, including conversations and relationships.

Relationships represent the extent to which users can be related to other users, by some form of association that leads them to converse, share objects of sociality, meet up, or simply just list each other as a friend or fan. Research shows that the denser and larger a user's portfolio of relationships is, and the more central his or her position in the portfolio, the more likely that user is to be an influential member in their network. Firms seeking to engage with their users must understand how they can maintain or build relationships, or both.

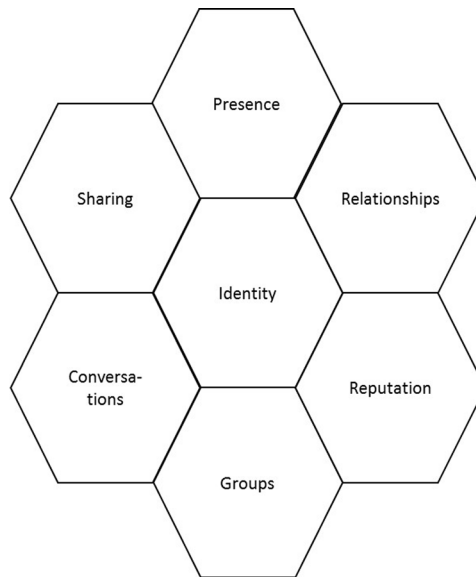
Reputation is the extent to which users can identify the standing of others, including themselves, in a social media setting. In most cases, reputation is a matter of trust and has significant implications for how firms should effectively engage social media. If firms and users value their reputations and those of other users, then a metric must be chosen to provide this information. For a firm, this means that the engagement needs of its community should inform the choice of the reputation system. Once a firm has identified appropriate metrics for the reputation of its community's social media engagement, the appropriate evaluation tool must be chosen. This could be based on

*Table 1. Social presence/media richness and self-presentation/self-disclosure;*

		Social presence / Media richness		
		Low	Medium	High
Self-presentation / Self-disclosure	High	Blogs	Social networking sites	Virtual social worlds
	Low	Collaborative projects	Content communities	Virtual game worlds

Source: adapted from Kaplan and Haenlein (2010)

Figure 1. The honeycomb of Social Media; Source: adapted from Kietzmann, et al. (2011)



either objective data (e.g., the number of views or followers) or collective intelligence of the crowd (e.g., a rating system).

Groups represent the extent to which users can form communities and sub communities. Two major types of groups exist. Firstly, individuals can sort through their contacts and place their “buddies”, friends, followers, or fans into different self-created groups. Secondly, groups online can be analogous to clubs in the offline world: open to anyone, closed (approval required), or secret (by invitation only).

A firm would benefit from studying the groups within the community and their engagement with the other building blocks.

## DECISION SUPPORT SOCIAL NETWORK

The ultimate goal of decision support is to incorporate rationality in balancing or leveraging the decision makers’ intuition, contributing to improve the process and the quality of the adopted solutions. This includes reducing process time, the ability to explain the reasons and the acceptability of adopted solutions and

the overall satisfaction of the involved people, regardless of their objective (e.g. cooperation or negotiation).

According to Dias and Clímaco (2005), cooperative groups possess specific characteristics and contexts that make them different from negotiation groups. These characteristics (properties and context) stem from differences regarding: the convergence of goals and objectives; existing power relationships and interdependencies; information sharing and opinions; and group behavior. A cooperative group encompasses people that want or need to reach a consensus solution (though not necessarily a unanimous one) and, for that reason, are willing to contribute towards a shared understanding of a relevant problem or situation (Bezerra, Melo, & Costa, 2008).

To support decision processes of cooperative groups, Group Decision Support Systems (GDSS), among other tools, can facilitate knowledge understanding by capturing and storing interrelated information; by supporting information sharing; and by allowing information reuse within interdependent contexts. GDSS can supply a learning collaborative environment

where people interact, create, transfer and apply acquired and shared group knowledge (Kwok, Ma, & Vogel, 2000). Naturally, to achieve these goals, a GDSS needs to provide a wide range of services (please see Bafoutsou & Mentzas, 2002; Maier, 2004 for a detailed description of these services), selected according to the specific decision situation and to the characteristics of group decision-making. Moreover, the different phases or stages of a decision process need to be interconnected, as well as distinct, though related, decision processes. Consequently, the concepts of a network of people, decision stages and decision processes arise inevitably. Opinions, information, knowledge and ability for action are entities of that network.

Antunes and Costa (2012a) enlightened the interconnections of online social networking and decision support systems (DSS) concepts. They underwent a large study, using four major bibliographic resources (ISI WOK, SCOPUS, SCIRIUS and EBSCO) and, at the end of the research process, 89 papers were selected as actual interconnections of both fields. In order to reveal the concepts encompassed in the literature, network text analysis (NTA) was used, as it assumes that language and knowledge can be modeled as networks of words and relations, encoding links among words to construct a network of linkages, analyzing the existence, frequencies, and covariance of terms or concepts. Social network analysis was then used to analyze and represent the obtained network of concepts (Carley, 1997). The process returned four concept clusters:

- **Technical Infrastructure (TI):** Encompassing research that elaborates, develops, proposes and analyzes social networking infrastructures, for distinct purposes like data-gathering purposes, information extraction, taxonomy building, web computing, consumer support, decision automation, etc.
- **Online Communities (OC):** Focusing on people, users, teams, and providing a view on the effects of online social networking among established online communities;

research is directed towards group dynamics (formation, cohesion, behavior, etc.) and its effects (actual or perceived) among specific online communities.

- **Network Analysis (NA):** Encompassing the analysis of organizations, companies and distributed structures, providing interpretation and decision support by means of social network analysis measures (centrality, betweenness, closeness, degree, etc.).
- **Knowledge Management (KM):** Addressing the so-called “wisdom of the crowds”, using the lens of knowledge management, namely its use (actual and perceived), usefulness and setbacks towards the objectives of knowledge creation, sharing, encoding, retrieval and representation.

Antunes and Costa (2012a) also used structural equation modeling techniques (Kline, 1998) in order to find out how these concept clusters influenced DSS related research, specifically in terms of their actual support of the three traditional decision-making phases (Simon, 1977), namely the intelligence, design and choice phases. They found that online social networks research has been focusing on TI to within the three phases of decision support. Moreover, TI is also impacting the intelligence phase support through OC and KM. Finally, TI also impacts the three phases of decision support phase through KM. Another finding was that NA, KM and OC are used specially, in the context of online software networking, to support the intelligence phase of decision processes, in spite of the fact that NA is also affecting both KM and OC. These results stress a need for additional studying on how to use online social networks in order to support decision making effectively, particularly regarding the design and choice phases. That is, further study is needed on how to apply the concepts of NA, KM and OC to support these two phases, as the design phase is mostly composed of a structuring process, and the choice phase clearly ends up with a convergent process.

Although online social networks seem to be well fitted for searching information (Suki,

Ramayah, Ming, & Suki, 2011) and for developing divergence processes (typical activities within the intelligent phase), how to use online social networks for structuring and/or convergence procedures or activities remains elusive. Nevertheless, produced contents, whether in traditional GDSS or in online social networks, need to be tagged by users or automatically supplied by the system, creating a *folksonomy* that can be used afterwards for convergence purposes. Classifications according to argumentation models can be available, or created by the users, for which semantic techniques (Web 3.0/semantic) seems to be quite promising (please see Schneider, Groza, & Passant, 2013; Turoff, Hiltz, Bieber, Fjermstad, & Rana, 1999). The combination of information filtering, classification, sorting and displaying techniques, becomes essential to support the different cognitive styles (for a comprehensive review on cognitive styles please see Colombo, Antonietti, Sala, and Caravita (2013)) of decision-makers engaged in contingent decision processes.

Knowing that people add value, online social networks depend of their users to create a dynamic database that change and adapts continuously in time, as a result of the interactions among users and between the users and the system. Therefore, a fundamental issue is to create a critical mass of users that regularly and create, update and share knowledge (Gehrke & Wolf, 2010; Jones, Failla, & Miller, 2007). Understanding why people participate in online social networks seems, therefore, crucial for developing and engaging users within a decision support social network.

## **PARTICIPATING IN ONLINE SOCIAL NETWORKS**

According to Wasko and Faraj (2005), three intertwined levels influence the type of interactions and motivation of people when engaged in social network participation: communities of practice; networks of practice and electronic networks of practice.

A community of practice consists of a group (usually small) engaged in joint sense-making

and problem solving, where people know each other and work together, communicate, and coordinate with each other directly. In contrast, networks of practice consist of a larger, geographically distributed group of individuals engaged in a shared practice, whose members may not know each other nor necessarily expect to meet face-to-face, though being able to share a great deal of knowledge. Networks of practice often coordinate through third parties such as professional associations, or exchange knowledge through conferences and publications such as specialized newsletters. Electronic networks are self-organizing, an open activity system focused on a shared practice that exists primarily through computer-mediated communication. The term open activity denotes that participation is open to individuals interested in the shared practice, and mutually willing to engage mutually with others in order to solve problems common to the practice.

Wasko and Faraj (2005) also state that in electronic networks, because participation is open and voluntary, participants are typically strangers. Knowledge seekers have no control over who responds to their questions or the quality of the responses. Knowledge contributors have no assurances that those they are helping will ever return the favor, and lurkers may draw upon the knowledge of others without contributing anything in return. This sharply contrasts with traditional communities of practice and face-to-face knowledge exchanges where people typically know one another and interacts over time, creating expectations of obligation and reciprocity that are enforceable through social sanctions.

Participating in social networks draws upon the interaction of intrinsic and extrinsic factors (see Figure 2). On one hand, intrinsic motivation refers to motivation embedded in the action itself (comes within the individual), rather than from external rewards such as money or recognition. Intrinsic motivation comes from the pleasure of completing the task satisfactorily. On the other hand, extrinsic motivation refers to the motivation coming outside the individual. These are external factors such as money or recognition.

For example, a person might engage in a certain action because of the monetary benefits that he could gain by completing the action. These rewards provide satisfaction and pleasure, that the action/task itself may not provide.

Kolloch (1999) suggests that a person is motivated to contribute valuable information to the group in the expectation that one will receive useful help and information in return. Indeed, there is evidence that active participants in online communities get more responses faster to questions than unknown participants. He identifies three major reasons for why people actively participate in online communities. The first one, anticipated reciprocity, happens when a user is motivated to contribute to the community in the expectation that he will receive useful help and information in return. The second, increased recognition state that individuals want recognition for their contributions, knowing that the desire for prestige is one of the key motivations for individuals' contributions in an online community. Finally, the sense of efficacy stands that individuals may contribute because the act results in a sense that they have had some effect on the community.

In "The Social Mind" research project at the Society of New Communications Research (SNCR <http://sncr.org/>) the questions "what drives people to participate in social networks and online communities?" and "what do they hope to get out of the experience?" were analyzed. This was done by means of a survey of more than 400 persons, mostly professional and highly educated people in North America, who actively participate in social media networks. The project results evidence that social media networks have evolved into trusted expert communities that are testing the trust that people have in more traditional news and information sources and nearly 65% of the sample base indicated that social and professional networks are more trust worthy than traditional news and information aggregators are. Additionally, the study shows that nearly 80% of the respondents participate in online groups to help others, by sharing information and experiences, and that 66% participate in a professional community

to belong to a group of colleagues and peers, though other motivations were also expressed (see Figure 3).

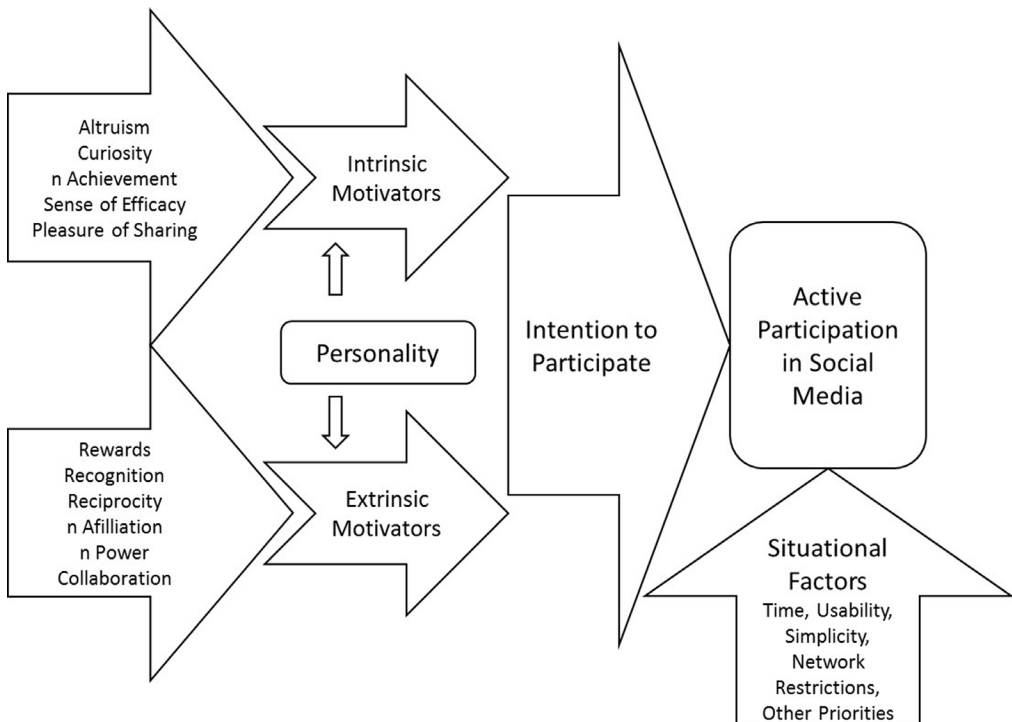
However, why individuals help strangers in these electronic networks is not well understood. In a previous study, Wasko and Faraj (2005) demonstrated a weak evidence that online social network users enjoy helping other users as a motivation for participating in online groups. Other factors (social rewards) such as centrality and tenure within the network and especially reputation were deemed more important. This suggests that one potential way an individual can benefit from active participation, even in the absence of personal acquaintance, is the perception that participation enhances his or her personal reputation (status) within the network. This is consonant with the case of other online environments, as it has been shown that reputation is a common motivation for participation (Burke, Marlow, & Lento, 2009). Theories about participation can be grouped into three high level categories: what a user sees other users doing (social learning), effects that other users have on the newcomer (feedback), and the general structure of content and exposure achieved through participation (distribution) (Burke, et al., 2009). For open-source software, competitive motivations in the form of reputation and status attainment have been cited as a primary incentive for continued participation (Hertel, Niedner, & Herrmann, 2003) and bloggers cite the intent to affect their professional reputation as being among their top motivations for blogging (Marlow, 2006). In both of these cases, the distribution of attention received by the author is important regardless of the received feedback. For this reason, the benefits derived directly from having a wider audience should not be disregarded.

## **MOTIVATING PARTICIPATION IN DECISION SUPPORT SOCIAL NETWORKS**

Knowledge contribution in an electronic network of practice primarily occurs when individuals are motivated to access the network,



Figure 2. What motivates people to participate in social media?; Source: adapted from Amarasinghe (2010)



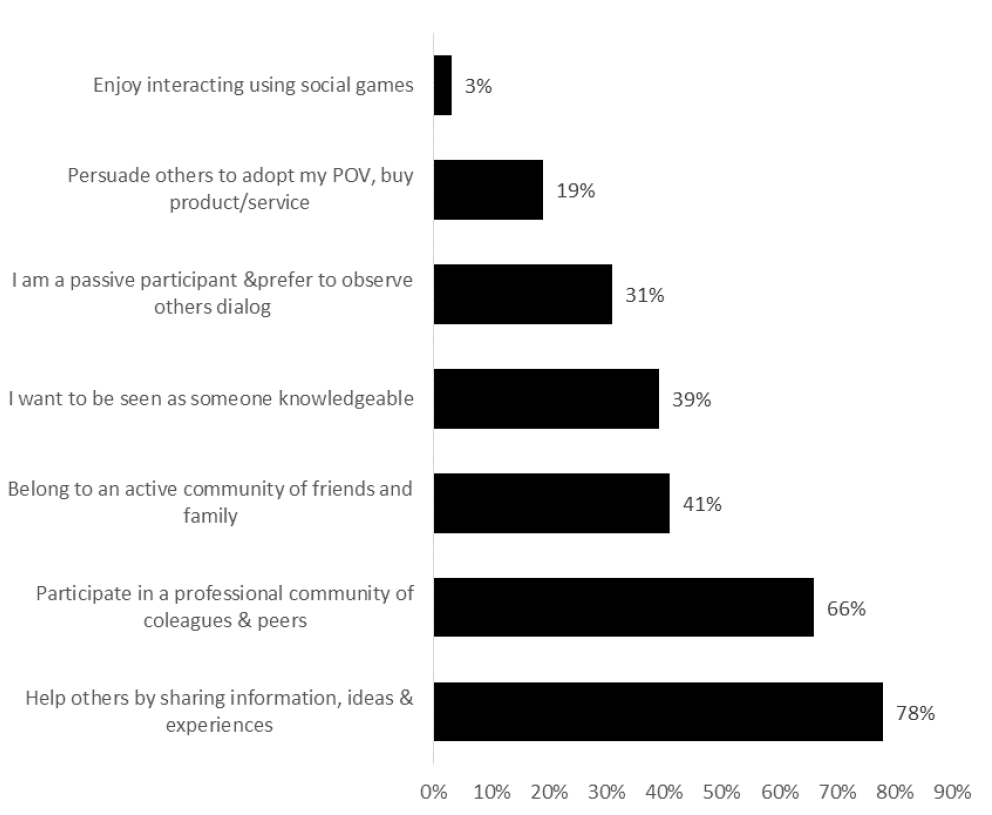
review the questions posted, choose those they are able and willing to answer, and take the time and effort to formulate and post a response (Wasko & Faraj, 2005). Nevertheless, as a solution to a certain problem is expected within a decision support social network, some potential problems need to be dealt with.

### The “Kindness” of Strangers

Within a decision support social network, the referred willingness to contribute should not be left astray or, otherwise, decision processes might be scattered in focus, hindering decision-making opportunity. In order to be useful to organizations, by taking advantage of the “wisdom of the crowds”, the decision support social network needs to encompass enough people (see Burke, et al., 2009 for a discussion on this issue, concerning generic social networks). However, most organizations do not possess

all required knowledge within their formal boundaries and might benefit from external network connections because they gain access to new information, expertise, and ideas not available locally, while interacting informally, free from the constraints of hierarchy and local rules. Even though the employing organizations may be direct competitors, informal and reciprocal knowledge exchanges between individuals are valued and sustained over time, because the sharing of knowledge is an important aspect of being a member of a technological community (Bouty, 2000; Teigland & Wasko, 2003). The problem here is that the availability of electronic communication technologies is no guarantee that knowledge sharing will actually take place (Alavi & Leidner, 2001; Orlikowski & Iacono, 2001) and, therefore, the decision support social network could be dependent of the mere willingness or “kindness” of users to participate.

Figure 3. Why do you participate in groups and communities online?; Source: Dimauro (2012)



Creating and maintaining a core of centralized individuals is of adamant importance to overcome the problem. These individuals, should possess experience in the practice by using extrinsic motivators such as enhanced reputation to actively promote contributions and sustaining the network (Wasko & Faraj, 2005). This core of individuals primarily built upon internal human resources, can be engaged in different types of incentives to participation, besides social rewards (personal satisfaction, reputation, feeling of belonging, tenure within the network, etc.), namely through economic incentives or career enhancements (Munson, 2008).

To help generating a critical mass, managers should target individuals with longer tenure and more experience in the practice. Another method to promote individual participation in

the critical mass is to develop techniques that help to build an individual's reputation in the profession. For example, it could be helpful to assign status to individuals and make this status visible. Individual reputations may become more salient when managers build bridges between physical and virtual networks, finding ways to spread reputations developed online to the profession as a whole and motivating individuals, by gaining status and recognition in this way, to participate more in electronic networks of practice (Hippel & Krogh, 2003; Wasko & Faraj, 2005).

### Time is of the Essence

A decision made out of time is generally a bad decision. When it comes to decision-making, timely decisions are of the essence. As in any

problem within a decision support social network, management should set a foreseeable time for solving a problem, i.e., disseminating the problem in hand throughout the network, gathering enough people around it and performing the decision process until a solution is attained. Within a decision support social network, management opportunities for decision are, therefore, closely tied to the speed of the process, meaning that problems (or types of problems), people and decision processes need an adequate time framework to unveil.

To address this problem it is necessary: an information cascade, where messages spread throughout the network; that the information spreads quickly, aided by the affordances of social network platforms; and that the process enables a broad reach by bridging multiple networks. The sum of these characteristics provides us nonetheless than the definition of viral information.

A viral information event creates a temporally bound, self-organized, interest network in which membership is based on an interest in the information content or in belonging to the interest network of others (Hemsley & Mason, 2013). In the case of decision support social networks, management should focus on spreading the information about the decision problem quickly and widely, making it a viral event.

However, how exactly is this done? Once again, managers should target individuals with longer tenure and more experience in the practice to generate a critical mass of people, responsible for pushing the information, at least in the early stage of its propagation. It is known that if individuals are scattered throughout the network, then the information is unlikely to diffuse. If, on the other hand, they are close together, then information has an increased chance for propagation (Leskovec, Adamic, & Huberman, 2007). Therefore, the critical mass plays an important role in gathering and bringing closer external individuals.

According to Hemsley and Mason (2013), to go viral, events are subject to two decisions by individuals in a social media network. The first is whether to watch/read the message and

the second is whether to forward a viewed message. Each person who participates in a viral event has effectively voted on the content twice through his or her dual decisions, so that the resulting event has been deemed relevant and worth spreading in some way. Repeated viral events filtered in this way may result in the formation of interest networks that will grow or decay based on the accumulated social capital within the interest network. Over time, the interest networks initiated (or reinforced) by the viral event may evolve into more stable communities of practice.

## Language and Electronic Literacy

As a major new means of global communication, the Internet is bound to have a great impact on language use. When discussing a problem within a large or expanding online network of people, there is the need to ensure that a common language is used or, otherwise, linguistic barriers may occur. Participation will be likely hindered if people are not comfortable in expressing themselves using a certain language. In the extreme case, participation will not even take place if people do not know the used language.

If the idea is to promote participation and information propagation, then language selection should not be a trivial issue. The use of a specific language can inhibit or promote participation and, consequently, the network expansion might be tied to this matter. To broad the network, the use of English language (even if it is bad English) seems proper for developing the network to its full extent, as English remains a dominant force within certain Internet realms. A study conducted by the Organization for Economic Co-operation and Development found that while some 78% of Web sites in OECD countries were in English, 91% of Web sites on "secure-servers" were in English, and a fully 96% of Web sites on secure servers in the .com domain were in English (Warschauer, Said, & Zohry, 2002).

The solution for this problem is twofold. Firstly, it relies outside management boundaries.

The use of automated translation mechanisms (some browsers already integrate such features) might ease the problem, although users need to be informed that automatic translation is not perfect and translation mistakes are often made. Secondly, if management knows the knowledge sources that it is trying to reach, the discussion language should be the one of such knowledge sources. If management is not aware of the whereabouts of the knowledge resources, the language selection should be the one with a broader scope, namely English.

### Confidentiality Boundaries

On one hand, when a decision support social network is only built upon internal human resources, the confidentiality expectation around problem solving is naturally bounded by corporate confidentiality agreements (implicit or explicit). On the other hand, if external human resources are implied in the process of problem solving or idea discussion, the ability for controlling the level of confidentiality is likely to be diluted.

As internal and external human resources do not share the same set of motivation factors, it is not likely that they abide to confidentiality concerns in same way. Therefore, firms should be aware that open forums, are able to gather a larger amount of knowledge on a specific problem, but this is done at the expense of confidentiality loss. As a result, management should weight, beforehand, the importance of expanding the network outside the boundaries of the firm with the loss of control over confidentiality, thus expanding or restricting the network (using adequate profiles, for instance) accordingly to its needs.

### CONCLUSION

Starting from the existing connections between social network sites (SNS) and decision support, the motivations for people to engage in SNS were reviewed. There are extrinsic and intrinsic factors. People contribute to social networks when they understand that it enhances their

reputation and recognition and to some extend because they feel it is enjoyable to help others.

The participation or contribution of people engaged in social networking is not without problems. Considering that a solution to a certain problem is expected within a decision support social network, some potential problems may arise: the network can be dependent of the mere willingness or “kindness” of users to participate; decisions can emerge out of time; a common language may not be easy to find; and confidentiality can be out of control. These potential problems were framed and several tactics or policies were put forward so that firms can overcome them.

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