LIMITS TO MANAGING KNOWLEDGE SHARING:

ENGINEERING OR EMERGENCE?

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INTRODUCTION

From a management perspective, knowledge is one of the most important resources an organization has in today's knowledge economy (Conner and Prahalad, 1996; Davenport & Prusak, 1998; Drucker, 1993; Nahapiet and Ghoshal, 1998). This resource is often described as an organization's "intellectual capital" (Bontis, 2001; Stewart, 1997), an form of capital that is of increasing importance for an organization's competitive advantage. For such intellectual capital to exist at an organizational level, individual members of the organization (who, after all, are the actual possessors of this knowledge), must share their knowledge in order to make it part of something collective (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). An important question that arises is what factors enable, promote or hinder such sharing of knowledge. From a management perspective, a related (and at least as important) question is to what extent such factors can actually be influenced. In other words, the question: can knowledge sharing be managed?

In this paper, we approach this question from two different, yet related, perspectives: an *engineering* or managerial perspective (focusing on infrastructural measures) and an *emergent* or social capital perspective (focusing on interpersonal dynamics and social capital). In the next section, we present these two perspectives and explain which different factors that influence knowledge sharing can be derived from each of them. The starting point for this discussion is the distinction we make between an individual's intention and their actual behavior based on literature in the area of the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and the Theory of Planned Behavior (Ajzen, 1991). Our argument that both the engineering and the emergent perspective point towards variables that influence the extent to which a positive intention towards knowledge sharing is actually translated into behavior. This leads to a theoretical model in which both perspectives are integrated, and which was tested in a survey study in six different organizations. We present the results of this study and draw a number of conclusions in terms of the limits we see in the actual manageability of knowledge sharing.

KNOWLEDGE SHARING INTENTIONS AND BEHAVIOR: ENGINEERING VERSUS EMERGENCE

In explaining knowledge sharing behaviors in organizations, we first turn to an individual's *intention* as an explanation for his or her behavior. With this, we follow in the tradition of the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and the Theory of Planned Behavior (Ajzen, 1991).

These theories (TPB being an extension of TRA) both consider an individual's *intention* to perform a given behavior as a central factor in explaining volitional behavior. An intention is defined as the cognitive representation of a person's readiness to perform a given behavior (Ajzen, 1991). According to TPB, intentions are influenced by an individual's attitude toward the behavior, by the subjective norm (beliefs about relevant others' attitude towards and perception of the behavior) and by an individual's perceived behavioral control (perceptions of ability to perform a given behavior: facilitators and barriers).

In our study, we don't follow the TPB religiously. The main ideas we derive from it are that (1) intentions influence behaviors, (2) that social influence mechanisms in the form of an individual's relationship to the collective of which he is a part are important (subjective norm), and (3) that there are certain facilitators and barriers influencing both intentions and behaviors.

One of our starting assumptions is that knowledge is related to practice. Therefore, we assume that an individual's task is one of the central drivers of the intention to share. The equivocality of an individual's task (Daft & Lengel, 1986) is especially relevant here. Where a task is characterized by "ambiguity, the existence of multiple and conflicting interpretations about an organizational situation" (Daft & engel, 1986: 556), by confusion and a lack of understanding, exchanging knowledge is crucial in order to get a better interpretation of the situation at hand and reduce ambiguity. This variable, we propose, influences an individual's intention to share: the higher a task's equivocality, the higher the individual's willingness to share knowledge. Therefore, we expect task equivocality to be positively related to the intention to share knowledge.

Next to task equivocality, we expect a number of different variables to influence intentions and behavior in terms of knowledge sharing. With regard to such variables,

we distinguish: (1) an *engineering* perspective, which focuses on facilitators and barriers that can be influenced or even created in a top-down fashion, and (2) an *emergent* perspective, in which the central assumption is that the main facilitators and barriers to knowledge sharing emerge from the social dynamics within and between groups. We will now elaborate each of these perspectives.

Engineering perspective

According to the engineering perspective, knowledge sharing can be managed by providing the context and means to do so in a top-down fashion. There is a considerable body of literature in this area that focuses on the analysis of the role that organizational and technical infrastructures play in optimally facilitating the sharing of knowledge among individuals (Davenport, DeLong & Beers, 1998; Davenport & Prusak, 1998; Egan & Kim, 2000; Ellis & Rumizen, 2000; Gold, Malhotra & Segars, 2001; Hinds & Pfeffer, 2003; Zack, 1999).

Organizational infrastructure relates to creating an organizational context in wich knowledge sharing is facilitated. Gold et al. (2001) make a distinction between structural and cultural infrastructures within the organizational domain. Structural infrastructure concerns the extent to which an organization's structure facilitates knowledge sharing: clear roles and responsibilities in terms of knowledge sharing, reducing structural barriers (hierarchical and functional divisions) to knowledge sharing, etc. Cultural infrastructure concerns establishing a knowledge-friendly culture (Davenport et al. 1998): a culture characterized by a positive orientation towards knowledge and creativity, and a lack of inhibitions to knowledge sharing. Although culture is of course something that is largely created by actual interactions within the organization (Schein, 1990), there is also a top-down element to it: as Gold et al. (2001) state, establishing a clear vision and objectives, as well as clear values, is an effective way of influencing organizational culture.

Next to the organizational infrastructure, there is of course the technical infrastructure. This concerns the use of Information Technologies such as knowledge repositories, personal yellow pages, e-mail, and bulletin boards in order to facilitate the exchange of knowledge. Although the contribution of ICTs to knowledge management is the subject of many discussions (Alavi & Leidner, 2001; Hislop, 2002; Huysman & De Wit, 2002), there is a general agreement that, at least in terms of

enhanced efficiency and given the right conditions, these technologies can indeed play a supporting role in knowledge sharing. Such conditions are, for instance, mutual trust, a shared know-how and a sufficient degree of “explicitness” of the knowledge being shared (Hislop, 2002).

In this managerial or engineering approach, the central assumption is that knowledge sharing can be managed by providing the right conditions and means for people to exchange knowledge – and if these are indeed provided, knowledge will be shared. So, if management provides optimal organizational and technical infrastructures, it will be able to positively influence the extent to which individuals in the organization share knowledge.

Emergent perspective

A second body of literature perceives knowledge sharing as emerging from existing interpersonal dynamics . In this view, whether or not individuals share their knowledge is much more determined by the interpersonal and group relationships than by management interventions in terms of organizational and technical infrastructures. In this literature, the concept of *social capital* is prominent (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). Bourdieu and Wacquant (1992: 119) define social capital as “the sum of the resources, actual of virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition". Social capital comrpises both the network and the assets that may be mobilized through that network (Nahapiet & Ghoshal, 1998). Social capital’s impact on knowledge creation is based on the understanding that it enhances both knowledge availability and the knowledge sharing process (McFadyen & Albert, 2004). Nahapiet and Ghoshal (1998) explictly relate social capital to the development of intellectual capital. According to Nahapiet and Ghoshal, intellectual capital is created through two generic processes: (1) combination, the creation of knowledge through (a) incremental change and development of existing knowledge and (b) innovation or double loop learning; and (2) exchange, social interaction and coactivitiy. Social capital, they argue, creates positive conditions for both these processes and, consequently, positively influences the creation of intellectual capital.

In order to analyze this influence on knowledge sharing in more detail, Nahapiet and Ghoshal define three dimensions of social capital:

1. the structural dimension, the overall pattern of connections between actors – who you reach and how you reach them;
2. the relational dimension, those assets created and leveraged through relationships: trust, norms and sanctions, obligations and expectations, identity and identification;
3. the cognitive dimension, those resources providing shared representations, interpretations, and systems of meaning among parties – shared language, codes and narratives.

The *structural* dimension influences the development of intellectual capital primarily through the ways in which it affects access to parties for exchanging knowledge and engaging in knowing activities. Network ties provide access to resources, making a social capital a source for information benefits: (1) access (to information and parties), (2) timing (providing information sooner than without contacts), and (3) referrals (available opportunities and people in the network). The *cognitive* dimension provides the shared context that is essential for intellectual capital (as being embedded in a social context). This sharing of context takes place through (1) shared language and codes and (2) shared collective narratives. These facets particularly affect the combination capability. The *relational* dimension influences three of the conditions for exchange and combination in many ways: access to parties, anticipation of value and motivation. Trust is crucial here, because this makes people more willing to engage in social exchange in general and cooperative interaction in particular. Cooperation, in turn, breeds trust – hence, potentially generalized norms of cooperation. Norms represent a degree of consensus in the social system and can be a significant influence on access and motivation. Obligations and expectations influence both access and motivation. Identification influences the anticipation of value and motivation.

Thus, social capital can be assumed to positively influence knowledge donating and collecting through (1) providing access to people with relevant knowledge or relevant needs and questions, (2) providing a common interest and an atmosphere of mutual trust and appreciation with regard to the value of others' knowledge as well as one's own contributions, (3) sharing a 'common know-how'

which facilitates understanding of others' knowledge and as well as a correct intepretation and assessment of one's own knowledge.

So, where the engineering or infrastructural approach seems to assume that top-down management of knowledge sharing is possible, the emergent (or social capital) approach focuses much more on the horizontal relationships and dynamics – which are much harder to manage.

In figure 1, we reconcile both views in a model that builds on the literatures described before, as well as on the Theory of Planned Behavior or TPB. One of our central assumptions is that infrastructures on the one hand, and social capital on the other, work in different ways as to their influence on knowledge sharing. Our central hypothesis is that social capital primarily influences intentions to share knowledge (together with task equivocality), whereas infrastructure primarily influences the extent to which these intentions are translated into actual behavior.

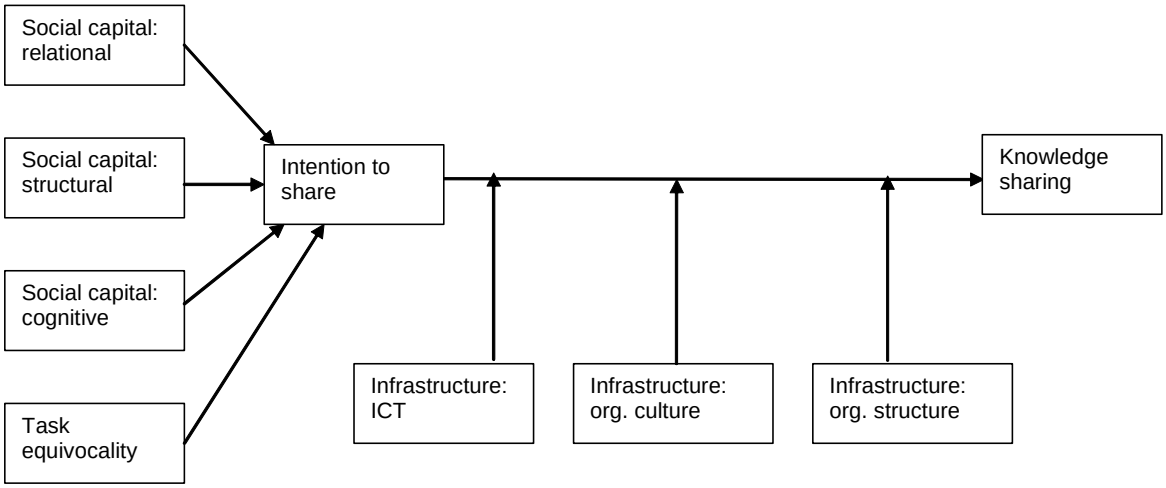

Figure 1. Theoretical model

We expect all three dimensions of social capital to be positively related to the intention to share knowledge. Knowing where knowledge can be found and where it is needed (the structural dimension), an atmosphere of mutual trust and appreciation (the relational dimension) and relative ease of explanation and understanding (the cognitive dimension) will each enhance an individual's readiness to share knowledge with others in the collective. The extent to which these intentions can be translated into actual behavior, however, is assumed to be determined by the organizational and

technical infrastructure – in other words, by the organizational culture and structure as well as by the ICT's used to facilitate knowledge sharing.

STUDY SITES AND METHODS

The data used to test our hypotheses were collected using an online survey at six different organizations: a municipality, a telecom provider, a beer brewer, a research organization, a networking hardware supplier and a law firm. The total sample consisted of 541 participants, with the number of respondents per organization ranging from 164 for the beer brewer to 32 for the networking hardware supplier. Table 1 presents the number of respondents per organization.

Table 1. Response per organization

Organization	N	% of total response
Municipality	96	17.74
Telecom provider	96	17.74
beer brewer	164	30.31
research org.	42	7.76
networking hardware	32	5.91
law firm	111	20.52
Total	541	100

Measures

All variables, unless otherwise reported, were measured using 1-5 point (strongly disagree – strongly agree) Likert-type scales. The task equivocality scale was derived from Goodhue (1995), the other measures used in this study were all newly created scales.

Table 2. Scales: descriptives and reliabilities

Scale	M	SD	Alpha
intention to share	4.1	0.4	0.76
task equivocality	3.3	0.7	0.72
knowledge sharing	3.5	0.5	0.72
social capital: relational	3.9	0.5	0.73
social capital: structural	3.1	0.6	0.76
social capital: cognitive	3.4	0.6	0.78
infra: organizational culture	3.1	0.6	0.75
infra: organizational structure	3.1	0.8	single item
infra: ICT	3.3	0.8	0.72

Table 2 gives the descriptives and reliabilities for each of these scales. Appendix I lists the full wording for the items for each of the scales used in this study. For organizational structure, no reliable scale could be constructed. Therefore, this variable was measured by a single item. The Cronbach's alpha scores on the other scales were satisfactory.

In order to be able to analyze the moderating influences of organizational structure, organizational culture and ICT infrastructure on the relationship between intention to share and knowledge sharing behavior, interactions between these variables and intention were computed. First, all scores for the variables involved were standardized, and then, the product of these standardized scores was computed. The results of this computation was subsequently entered into our structural equation model analysis. Structural equation modeling using AMOS was employed to test the full model shown in Figure 1.

RESULTS

The results for the model in figure 1 were quite clear: the model had an insufficient fit to the data. Chi square was significant (246.4, df = 25, $p < .001$), the Adjusted Goodness of Fit Index was well below the critical value of .900 at .836, the Tucker-Lewis Index should be close to 1 but scored well below this at .454, and finally, the Root Mean Sqare Error of Approximation (RMSEA) should be below .05 but scored .128. All in all, the theoretical model has to be rejected in the form it is presented in figure 1.

The analysis also pointed out that a number of relationships in our theoretical model were not significant:

- for *intention to share* as a dependent variable, the cognitive and structural

dimensions of social capital were not found to have a significant influence;

- for *knowledge sharing* as a dependent variable, the following moderators were not found to have a significant influence on the relationship between the intention to share and sharing behavior: ICT and organizational structure.

Furthermore, modification indices in AMOS pointed out that the relationships concerning the influence of the structural and cognitive dimensions of social capital were quite different than assumed in our theoretical model: these are not determinants of intention, but of behavior: both dimensions directly influence knowledge sharing. Also, the modification indices indicated that task equivocality not only influences intention, but there is also a direct influence on behavior.

At this point, of course, the question arises whether it makes theoretical sense to make such adaptations to the theoretical model. As will be argued in the discussion section of this paper, we felt that these changes could well be justified on the basis of our theoretical argumentation, so the proposed changes to the model were made.

All in all, the changes to our theoretical model on the basis of parameter estimates and modification indices lead the structural equation model that is presented in figure 2. This model has a sufficient fit, indicated by both the absolute (Chi square = 17.3 (df = 10), p = .065) and the relative fit statistics (AGFI = .975, TLI = .965, RMSEA = .037). All the relationships in this model are significant at the .05 level, and the model explains 27% of the variance in knowledge sharing.

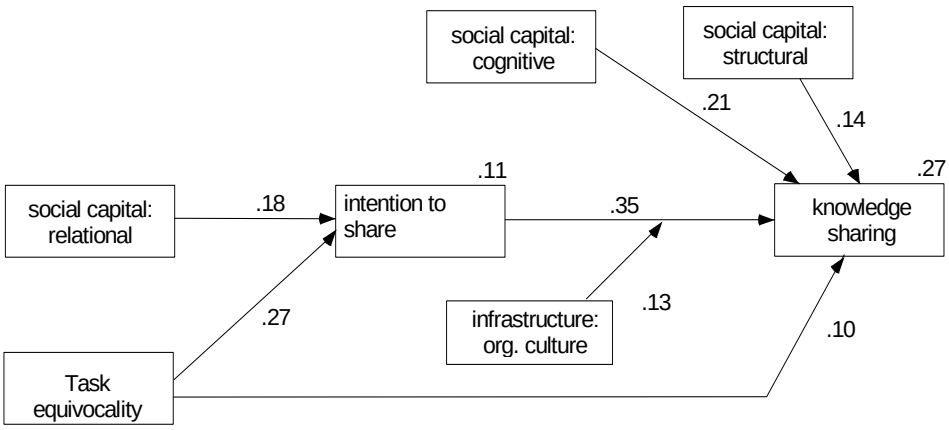

Figure 2. Tested model

The model in figure 2 provides support for four of our theoretical assumptions:

- the intention to share is an important determinant of knowledge sharing behavior: there is a significant positive influence of intention on behavior, in line with the assumptions derived from TRA and TPB;
- the relational dimension of social capital is a determinant of this intention: a signficant and positive relationship was found between this dimension and the intention to share;
- task equivocality is also a determinant of this intention: a significant and positive relationship was found with intention to share;
- the relationship between intention and behavior is moderated by organizational culture – in other words, the extent to which the intention to share is translated into actual knowledge sharing behavior, is positively influenced by the extent to which a knowledge friendly culture is present in the organization.

No support was found for the moderating influences of the other infrastructure dimensions derived from the engineering perspective (organizational structure and ICT), and the influence of the structural and cognitive dimensions of social capital was found to be different than we assumed. Also, task equivocality was found to not only influence the intention to share, but also knowledge sharing behavior.

CONCLUSION

From our results, three important conclusions emerge. First of all, task equivocality does indeed determine the intention to share knowledge – but also actual knowledge sharing behavior. So, this variable is quite central in explaining knowledge sharing, because it influences both intention and behavior. In other words, even if a positive intention to knowledge sharing does *not* exist, a high degree of task equivocality may lead an individual to share his or her knowledge – independently of their intentions.

Secondly, social capital is indeed an important driver of knowledge sharing, but the different dimensions of social capital have differential impacts on knowledge sharing. Where the relational dimension (involving trust, reciprocity and such) influences individuals' intentions to share, the cognitive and structural dimensions directly influence behavior (contrary to our expectations). In other words, interpersonal relations are an important influence on one's positive intention towards knowledge sharing, but knowing who knows what and who needs to know what (the structural dimension) and being able to explain and understand (the cognitive dimension) positively influence the extent to which knowledge is actually exchanged.

Secondly, the role of managerial infrastructural interventions (the engineering perspective) is very limited. The only variable that significantly moderates the relationship between intention and behavior (in other words, facilitated translating intentions into behavior) is organizational culture. So, the only element of the engineering approach that was found to have an influence here, is the one that is most directly related to stimulating fruitful social exchanges within the organization: creating a knowledge-friendly culture, which, it can be argued, in turn facilitates the creation of social capital. This is in line with Nahapiet and Ghoshal's (1998) argument that organizations can be conducive to the creation of social capital, among others because they offer a strong identity and social boundaries, accumulated history and continuity, mutual obligations and expectations, and interactions – which could all be perceived to be part of an organization's culture.

The results lead us to conclude that that managing organizational knowledge sharing is not a matter of concrete organizational or technical measures (the engineering perspective), but much more one of stimulating and supporting interpersonal and group interaction such that social capital formation is supported (the emergent perspective). Basically, this implies that managing knowledge sharing is a

difficult task – the direct influence of measures taken by management may be limited at best, since it is primarily the social group interactions between coworkers that stimulate knowledge sharing.

In the closing section of this paper, we will seek explanations for some of the results we found, discuss the contribution of these findings to theory and practice in knowledge sharing, and offer some recommendations for future research in this area.

DISCUSSION

A number of the results we found warrant further discussion. First of all, with regard to social capital, we found that the three dimensions have different effects: the relational dimension influences intention (as predicted), but the structural and cognitive dimensions influence actual behavior. We raised the question whether these adaptations to our theoretical model would still make theoretical sense, and we argue that they do. The cognitive and structural dimensions of social capital are more facilitators than they are influences on one's intention. The relational dimension concerns strong, positive characteristics of relationships with others – such relationships can well be expected to positively influence one's intention: if I feel positively towards my coworkers, I will be more willing to share knowledge with them.

The cognitive dimension concerns the cognitive capability to explain and understand knowledge. This is something that comes to the fore only when knowledge is actually *being* shared – I intend to share my knowledge, but apparently I am unable to explain what I mean or understand what they mean. The structural dimension, as we use it, concerns the extent to which there is a general awareness of who knows what. Again, a variable that primarily plays a part when knowledge is *being* shared – I'd like to collect knowledge about Y, but I don't know who to turn to. Or, I'd like to tell somebody about X, but I don't know for whom that would be relevant.

Following this explanation, one would expect the cognitive and structural dimensions of social capital to be a moderator of the relationship between intention and behavior - but the analyses show that they are direct influences on behavior. In other words, these dimensions of social capital do not influence the extent to which intentions are translated into behaviors, they constitute independent influences on that

behavior – *next* to intentions. So, regardless of the extent to which an individual has positive or negative intentions in terms of knowledge sharing, high levels of structural and cognitive social capital exert a positive influence on knowledge sharing behavior. Intention to share, in other words, is "just" one of the independent variables influencing knowledge sharing – an important one, judging by the strength of the relationship, but less central than it was in our model.

Revising our model, then, would be a logical step for future research. We feel that the distinction between the engineering and the emergent perspective is a relevant one, and the results we found in this study provide support for that, but the nature of the relationships seems to be somewhat different than assumed in this study. Apart from that, future research should also improve on some of the shortcomings of our research. Of course, our study suffers from a number of limitations. First of all, we have integrated data from six different organizations into one dataset. The number of responses per organization did not allow us to perform analyses for each organization separately, whereas that would have been a good way to build a robust model – following a *replication logic* (Yin, 1989), where a theory is tested through the process of replicating the results of a first case study in consequent case studies - where the same, or comparable results should occur. So, future research should consist of more in-depth studies in different organizations, allowing for such a replication logic – and also allowing researchers to make comparisons between organizations.

A second shortcoming is related to the measures used in this study. These were all newly created, specifically for a 'knowledge management scan' of which this survey was a part. Although these measurements turned out to be reliable (except for 'organizational culture', we feel that in future research, measurements should be used that may not be literal replications of existing scales (since these could not be found in this study), but at least more directly inspired by existing measurements of similar variables. Gold, Malhotra and Segars (2001), for instance, present measurements for the different infrastructural components, and although these can be criticized on various grounds, they do offer a good starting point. The same goes for the measurements of social capital – although these are hardly ever measured in surveys (Wasko and Faraj (2005) being an exception), there are existing measurements in terms of network analysis and experiments that may provide some inspiration for scales to be used. Also, related concepts like social identification and trust (relational

social capital), cognitive distance (cognitive social capital) and transactive memory systems (structural social capital) have been measured in various settings and could offer a starting point for better measurements.

Finally, what does this mean for practice? Our results indicate that the engineering perspective on knowledge sharing, characterized by a somewhat 'optimistic' view of the extent to which managers can influence knowledge sharing, is not very valid. All variables in our model, even the remaining one from the engineering perspective, focus on the importance of actual social interaction between people for knowledge sharing. All in all, our results indicate that it is important that:

- there is a generally positive *intention* towards knowledge sharing,
- there is a climate of mutual *trust*, shared *identity* and reciprocial *expectations and obligations* that stimulates such intentions,
- there is a sufficient number of *links* with others in the organization who possess relevant knowledge or have relevant knowledge needs,
- there is a *shared context* in terms of language, understanding and stories, and
- there is an organizational *culture* in which knowledge sharing, learning and exploration are seen as important and are stimulated.

In other words, it would seem that knowledge sharing is not something that can be 'engineered' from the top down. Management can, however, find ways to stimulate and facilitate the 'emergence' of fruitful social interactions and thus, knowledge sharing, such as:

- providing clarity about the goals the organization wants to achieve by knowledge sharing;
- consistently communicating that knowledge is an important asset and only of real value for the organization when it is shared;
- clearly appreciating and stimulating learning behavior, such as exploration, risk taking and knowledge sharing;
- stimulating interactions on all levels in the organization, in order to create higher levels of social capital;
- providing instruments that help people to find and contact individuals with relevant knowledge and relevant knowledge needs;
- designing incentive structures that promote collective behavior over individual behavior, and that stimulate trust and cohesion in the organization;

- appointing ‘knowledge brokers’ who can mediate between people from different fields of expertise, and bridge any cognitive gaps that might exist between them.

All in all, these results indicate that managing knowledge sharing is difficult, and that there are clearly limits to the influence that management has on this process. On the other hand, they also indicate that for those managers that realize that knowledge sharing is much more a process of emergence than engineering, there can still be an important role in effectively managing the organization’s intellectual capital.

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APPENDIX I. Items used in survey

knowledge sharing
When I do not possess the required expertise/skills, I ask colleagues within my department for support.
When I do not possess the required expertise/skills, I ask my personal community for support.
When I do not possess the required expertise/skills I ask my colleagues outside my department for support.
I inform my colleagues within my department about the things I am working on
I inform my colleagues outside my department about the things I am working on
I inform members of my personal communities about the things I am working on

intention to share
I think it is important that my community knows which skills/expertise I possess.
I think it is important that colleagues within my department know which skills/expertise I possess.
I think it is important that colleagues outside my department know which skills/expertise I posses.
I like to be informed of the things colleagues inside my department know.
I like to be informed of the things members of my personal community know
I like to be informed of the things colleagues outside my department know.
Maintaining up-to-date knowledge is an important part of my job
My job consists of many activities that require other people's knowledge
In order to do my job I don't need others' expertise/skills (recoded)
If I cannot stay in touch which my colleagues, this will negatively influence my work skills/expertise.

task equivocality
I usually deal with ad-hoc, non-routine problems.
Frequently, the problems I work on involve answering questions that have never been asked in quite that form before.
I usually deal with ill-defined problems.
The problems I deal with usually require knowledge that is not available within my own department.

ICT infrastructure
The company's computer environment has a positive impact on the development of my knowledge
The company's computer environment has a positive impact on my job effectiveness and productivity.
In this organization, IT enables and supports knowledge sharing

organizational culture
This organization stimulates people to share knowledge.
In this organization the general opinion is that knowledge is an important asset.
People who work here are encouraged to share their experiences with others
Knowledge sharing is one of the core values of this organization
In this organization you are allowed to make mistakes.
Colleagues give positive feedback on a regular basis.
When someone in this organization does not share their knowledge, this will be negatively rewarded by other colleagues.
In this organisation people share their knowledge when this improves their own position. (recoded)

organizational structure
The organizational structure impedes knowledge sharing. (recoded)

social capital: relational
I can rely on my colleagues when I am in need of support.
I have good contact with my colleagues with whom I share knowledge.
I trust my colleagues not to abuse my knowledge

social capital: structural
I know which expertise and skills my personal community possesses.
I know which expertise and skills other people in my department possess.
I know which expertise and skills other people in other departments possess.
This organization has a clear overview where expertise and skills are located.
In this organization we are re-inventing the wheel repeatedly. (recoded)
This department has a clear overview where expertise and skills are located.

social capital: cognitive
I find it difficult to express my expertise/skills to others in my communities (recoded)
I find it difficult to express my expertise/skills to others within my department. (recoded)
I find it difficult to express my expertise/skills to others outside my own department. (recoded)
It is easy to understand the expertise/skills of others within my department.
It is easy to understand the expertise/skills of others in my personal communities.
It is easy to get an understanding of the expertise/skills of others outside my own department.