What Makes Knowledge Sharing in Organizations Tick? –
An Empirical Study

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Abstract

This study aims to understand the social and organizational factors that influence knowledge sharing. A model of knowledge management and knowledge sharing was developed inspired by the work of Nahapiet and Ghoshal (1998). Data on demographics and various social capital measures were collected from a sample of members of a tertiary educational institution in Singapore in 2003. Reward & recognition, open-mindedness and cost concerns of knowledge hoarding turned out to be the strongest predictors of knowledge sharing rather than pro-social motives or organizational concern. Individuals who are highly competent in their work abilities are less likely to share what they know when they perceive that there are few rewards or when sharing is not recognized by the organization. Overall, the findings provide evidence for the importance of a conducive organizational climate and state-of-the-art performance management systems to ensure a successful transition from a ‘knowledge is power culture’ to a high-performing organization where knowledge sharing represents a key enabler of improved business performance.

1. Introduction

There has been a proliferation of literature on knowledge management with the advent of the knowledge economy (Beck 1992; Stehr 1994; Krogh 2003; Evers & Menkhoff 2004) as indicated by an increasing body of work in organizational studies, information systems, marketing and the social science disciplines of sociology, psychology, and economics. However, notwithstanding the substantial insights generated about knowledge management issues in contemporary business organizations (Nonaka 1994; Krogh 1998; Menkhoff, Chay and Loh 2004), the development of robust theoretical concepts and models, which could explain why members of organizations do share knowledge, has been slow. It seems that the phenomenon of knowledge sharing, identified as an important component in the management of knowledge workers in organizations, is still something like a black box.

This essay seeks to address this gap by theorizing about knowledge sharing in contemporary organizations based on empirical data collected in a tertiary educational institution in Singapore. The theory we propose in this article is rooted in the concept of social capital, and draws together perspectives from the sociology of organizations, economic sociology, social psychology, and the broad umbrella of organizational studies, which encompass literature such as knowledge management, organizational behavior, and strategic theory of the firm. The key objective of the essay is to identify some of the key factors that influence knowledge sharing behavior in organizations and to provide plausible theoretical explanations of such behaviors based on empirical data.

1 The authors gratefully acknowledge the support of the Singapore Management University (SMU Research Grant 02-C207-SMU-012 “Building an Intelligent Organization”).
2. Dimensions of Social Capital

Bourdieu defines social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network or more or less institutionalized relationships of mutual acquaintance or recognition” (1985:248). This definition focuses on the benefits accruing to individuals by virtue of participation in groups and on the deliberate construction of sociability for the purpose of creating this resource. Bourdieu argues, “the profits which accrue from membership in a group are the basis of the solidarity which makes them possible” (1985:249). The definition implies that social capital is a major aspect of social structure and that it can be put (like other forms of capital) to productive use (Coleman 1990:302). As Putnam has pointed out, “Social capital here refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated action” (1993:167).

As a resource, social capital facilitates actions of individuals “who are within the structure” (Coleman 1990:302) in different ways. Firstly, network ties (Granovetter 1992) can provide individuals with useful knowledge about opportunities and choices otherwise not available (Lin 2001). Network ties may prompt an organization and its members on the availability of such knowledge resources. Secondly, these network ties play an important part in influencing decision-making depending upon the strategic location of actors within a network (Burt 2002, 2004). Thirdly, social credentials of an individual (Lin 2001) reflect his or her social standing in the network, and other members may seek to acquire the resource of such credentials by forming alliances with such individuals. And finally, social relations are expected to reinforce identity and recognition to gain public acknowledgement of his or her claim to resources (Lin 2001).

In order to structure the various social and organizational factors that influence knowledge sharing with the help of the social capital concept, this essay adopts three dimensions, namely structural, agency and relational. The following section highlights the different components of these dimensions of social capital, the significance of which will be elaborated upon later in the essay.

**Structural dimension.** The structural dimension of social capital, in this essay, refers to organizational climate factors that can aid such interactions and networks. Among the most important facets of this dimension are organizational care (Krogh 1998, 2003; Krogh et al. 2001) that examines conditions of low-care and high-care environments in facilitating social exchange, and recognition and rewards (Bartol & Srivastava 2002).

**Relational dimension.** This essay looks at the relational dimension of social capital though the concept of relational embeddedness, which has been described by Granovetter (1992) as the kind of personal relationships people have developed
with one another through a history of interactions. This concept focuses on the
building of trust into the relations individuals have that influence their behavior
(Putnam 1993; Fukuyama 1996, 1999; Cohen & Prusak 2001). Among the key
facets of this dimension are competence (Blau 1964; Schurr and Ozanne 1985),
integrity (Hosmer 1995; Luhmann 1979) and open-mindedness (Tjosvold, Hui &
Sun 2000).

Agency dimension. The agency dimension of social capital examines the role of
individual motives in engaging in social interactions that would enable them to
acquire the resources available in such interactions (Archer 1995, 2003; Cicourel
1973; Rioux and Penner 2001). This dimension is a relatively new contribution to
social capital theory and has yet to be empirically tested. The adoption of
motives as a variable in the agency dimension was influenced by Portes’ (1998:5-
6) recommendation to investigate “the motivations of the donors, who are
requested to make these assets available without any immediate return” as a
research direction of social capital. Among the key facets identified to explain
motives in this dimension are prosocial motives (Rioux and Penner 2001),
impression management, altruism (Jensen1998; Conte & Paolucci 2002), and shared
values (Cicourel 1973).

3. Knowledge Sharing Defined

Helmstadter defines knowledge sharing in terms of “voluntary interactions
between human actors [through] a framework of shared institutions, including
law, ethical norms, behavioral regularities, customs and so on... the subject
matter of the interactions between the participating actors is knowledge. Such an
interaction itself may be called sharing of knowledge” (2003:11). His definition of
knowledge sharing highlights the role of social interactions which lends support
to the theory of social capital where participation in groups and the deliberate
construction of sociability is a prerequisite for the purpose of creating resource,
in this case knowledge.

However, Helmstadter’s definition of “voluntary interactions” is not
unproblematic as it fails to consider issues of politics and power in such
interactions. While knowledge sharing, particularly in the context of economic
organizations, is often encouraged through incentive systems (Bartol &
Srivastava 2002), the corollary also holds when involuntary interactions in the
sharing of knowledge are often enforced by appraisals and incentive systems
whereby employees who do not share their knowledge may be penalized and
risk retarding their career advancement in the organization. Studies on
knowledge sharing have thus far been “heavy on notion of negotiation and trust
between members of the network and exceptionally light on domination and
power-relations-independent relationships based on reciprocity and mutual trust,
where self interest is sacrificed for the communal good” (Knights et al. 1993:978).
The writers further argue that such interactions are often embedded in
institutional power relations that are hierarchical, competitive, coercive and exploitative (see also Aldrich & Whetten 1981; Walsham 1993). This aspect of politics and power in knowledge sharing will be considered later in this section as one of the conditions whereby involuntary knowledge sharing can occur.

4. Tacit and Explicit Knowledge

A definition of knowledge sharing needs further clarification as to what type of knowledge is shared, and it is necessary at this point, to make a slight digression to explain the nature of knowledge itself. Knowledge by its very nature exists in both tacit and explicit forms. Polanyi (1967) is often cited when describing tacit knowledge. Polanyi proposed a concept of tacit knowledge based on three main theses: Firstly, true discovery cannot be accounted for by a set of articulated rules or algorithms; secondly, knowledge is public but is also to a large extent personal and socially constructed; and thirdly, all knowledge originates from tacit knowledge. Therefore, Polanyi argues that tacit knowledge is knowledge that is known but cannot be told. It is the kind of knowledge that cannot be articulated because it has become internalized in the unconscious mind. Explicit knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language and can be shared in the form of data, scientific formulae, specifications, manuals and so on (Nonaka 1994).

In his analysis of knowledge creation, Nonaka (1994; see also Nonaka & Takeuchi 1995; Nonaka, Konno & Toyama 2001) examined the concept in terms of a knowledge spiral encompassing four basic patterns of interaction between tacit and explicit knowledge – socialization, externalization, combination, and internalization. In socialization, Nonaka uses the term to emphasize the importance of social interaction and joint activities in converting tacit knowledge to explicit knowledge. He argues that since tacit knowledge is context specific and difficult to formalize, transferring tacit knowledge requires sharing the same experience through joint activities such as being together, spending time, or working in the same environment. The next process in his theory of the knowledge spiral is externalization, which is the process of articulating tacit knowledge into explicit forms by sharing it through social interaction. Through externalization, tacit knowledge that is unstructured in the individual’s mind becomes crystallized through a process of reflection between sharing individuals. In combination, such explicit knowledge becomes more complex and systematic as this level of knowledge is exchanged and combined through documented media such as documents and notations. And finally in internalization, explicit knowledge is internalized or reflected by the individual and turns it back into tacit knowledge. This is closely related to the ‘learning by doing’ philosophy where what is read and understood is translated into action.

There is a paucity of research specifically addressing the mechanisms of knowledge sharing between individuals in organizations. Nevertheless, this
essay argues that Nonaka’s conceptualization of socialization, externalization and combination is of particular importance in explaining the process of knowledge sharing. This is because these processes involve joint social interaction with two or more actors whereby tacit knowledge that resides in an individual’s mind is articulated and becomes explicit. This tacit knowledge is further refined and becomes clearer through reflection. Both these processes parallel the basic premise established by Helmstadter’s definition of knowledge sharing, which involves the “interactions between human actors [through] a framework of shared institutions...” (2003:11). This conceptualization of the knowledge sharing process is also attractive as it supports the premise of social capital that “the aggregate of the actual or potential resources which are linked to possession of a durable network or more or less institutionalized relationships of mutual acquaintance or recognition” (Bourdieu 1985:248).

5. Conditions for Knowledge Sharing

It is further argued that conditions necessary in allowing individual actors to engage in knowledge sharing through socialization, externalization and combination must be present in order for knowledge to be shared. The following is a review of important knowledge sharing conditions that has been gathered from existing literature, three of which – expected costs of not sharing knowledge, personal compatibility, and opportunistic behavior – are original inclusions based on the critique of Helmstadter’s original definition emphasizing ‘voluntary interaction’ whereby knowledge sharing can, indeed, be involuntary in nature and is fraught with issues of power and politics (Knights et al. 1993).

The first condition is that, in order to facilitate the sharing of knowledge between actors in an organization, there must exist opportunities to do so. Ipe (2003) suggests that opportunities to share knowledge in organizations can be both formal and informal in nature. Formal opportunities include, for example, training programmes, structured work teams, and technology-based systems that facilitate the sharing of knowledge. Bartol and Srivastava (2002) refer to such opportunities as ‘formal channels’ while Rulke and Zaheer (2000) call them ‘purposive learning channels’. Informal opportunities include personal relationships and social networks that facilitate the sharing of knowledge (Ipe 2003).

The second condition is communication modality, which looks specifically at the physical proximity of the social space for knowledge sharing to occur. Nohria and Eccles (1992), for example, highlight important differences between face-to-face and electronic-mediated exchanges, and they argue that such exchanges favour the use of face-to-face interactions. They argue further that electronic-mediated exchanges, such as the e-mail, requires the subsequent use of more face-to-face communication which would undermine the efficiency towards which sharing of knowledge takes place.
The third condition for knowledge sharing to take place through socialization, externalization and combination is the individual’s expectation of the benefits he or she would accrue when he or she engages in knowledge sharing. This has often been linked to an organization’s incentive system which O’Reilly and Pondy (1980) argues that the probability of actors routing information to other actors is positively related to the rewards they expect from sharing the knowledge. This relationship between sharing of knowledge and the expectation of benefits has been further supported by Gupta and Govindarajan (2000) as well as Quinn et al. (1996) who studied the incentive systems of organizations and found that significant changes had to be made to these systems to encourage organizational actors to share their knowledge.

The fourth condition of knowledge sharing is the actor’s expectation of the costs of not sharing knowledge which is based on the formulation of ‘involuntary interaction’ as established earlier and Knights’ et al. (1993) argument that knowledge sharing can, indeed, be involuntary in nature and is fraught with issues of power and politics. While individuals may not receive benefits out of knowledge sharing, the costs of not sharing knowledge, e.g. through coercive appraisals and the withdrawal of incentives, may warrant them to involuntarily share their knowledge. This formulation has not surfaced in recent literatures and remains to be tested empirically.

The fifth condition involves the context compatibility of those who share knowledge. This condition argues that actors who share certain professional similarities, e.g. work interests, values etc., tend to engage in knowledge sharing. Huang and Wang (2002), for example, found that team members who were selected based on similar work criteria or underwent the same training is an important factor leading to the sharing and creation of knowledge in organizations.

The sixth condition is that motivation must be provided to actors for knowledge sharing to occur through socialization, externalization and/or combination. Davenport et al. suggests that knowledge is “intimately and inextricably bound with people’s egos and occupations” (1998:45). Stenmark (2001) and Thompson et al. (2000) argue that actors are not likely to share knowledge without strong personal motivation. Motivational factors that influence knowledge sharing between actors can be divided into internal and external factors. Internal factors include the perceived power attached to the knowledge and the reciprocity that results from sharing. External factors include relationship with the recipient and rewards for sharing (Ipe 2003).

The seventh condition has to do with personal compatibility and liking. This is another original contribution to the literature. Individuals are arguably more likely to share knowledge with another whom they feel comfortable with or share similar personal interests. This is different from the fifth condition, context
compatibility, as the former is defined by more personal and intrinsic compatibility factors, while the latter is defined more by professional factors.

The eighth condition of knowledge sharing is opportunism which refers to the possibility that a decision-maker may unconditionally seek his or her self-interests, and that such behavior cannot necessarily be predicted. This argument extends the simple self-interest seeking assumption to include “self-interest seeking with guile” thereby making allowance for strategic behavior. (Williamson 1975:26). A related line of argument is Goffman’s (1969) idea of strategic manipulation of information or misrepresentation of intentions through false or empty threats or promises. The study by Wickramasinghe and Lamb (2002) provides respective insights into the world of healthcare.

6. Potential Predictors of Knowledge Sharing

By way of summary, the previous sections established the following arguments. Firstly, knowledge sharing between actors is facilitated through socialization, externalization and/or combination mechanisms in an organization. Secondly, there are several conditions that affect the knowledge resources and motivation to share knowledge through socialization, externalization and/or combination. And thirdly, in reviewing the literature on social capital and knowledge sharing, there is much evidence to support the view that socialization, externalization and/or combination of knowledge are complex social processes that are socially embedded in structural, agency and relational resources and relationships as represented in the concept of social capital.

Considering the social embeddedness of knowledge sharing, this essay suggests that such a theory is likely to be one that is grounded in social relationships. The following section explores this theory by examining the causal efficacy between the dimensions of social capital and the conditions of knowledge sharing.

While the focus of the present research considers the impact of each dimension of social capital independently from the other dimensions, it is recognized, however, that these dimensions of social capital may likely be interrelated in important and complex ways. For example, particular structural configurations, such as those with strong communication channels and reward systems, have consistently been shown to be associated with the relational aspect of work group trust (Bartol and Srivastava 2002).

We argue that social capital can facilitate the sharing of knowledge by affecting the necessary conditions for such a process. To explore this proposition, this essay now examines the ways in which each of the three dimensions of social capital – structural, agency and relational – influences the eight conditions knowledge sharing highlighted earlier.
Hypothesis Development

6.1. Structural Dimension of Social Capital as Driver of Knowledge Sharing

The main argument in this section is that, within the context of the framework of socialization, externalization and combination adopted in this essay, the structural dimension of social capital, encompassing the various facets of organizational climate factors, influences knowledge sharing by affecting the various conditions of knowledge sharing for the sharing of knowledge to occur.

Organizational care. According to Krogh, care is a social norm in human relationships and institutions “which involves the dimensions of trust, active empathy, access to help, lenience in judgment, and the extent to which the former four dimensions are shared in the community” (2003:382). In caring for another, Krogh et al. suggest that a care provider, such as a fellow colleague or senior management in the organization, may provide support and valuable knowledge for the purpose of task execution or integrate a person into the organization and network and so on. This type of support characterizes an organization as one possessing high-care (Krogh 2001:38). A low-care organizational climate, on the contrary, is where there is a low propensity to help and care is not a shared value in the organization’s culture. Thus, we hypothesized the following:

Hypothesis 1: Organizational care is positively related to knowledge sharing.

Recognition and rewards. Bartol and Srivastava (2002) as well as Thompson et al. (2000) suggest that rewards and incentives are central to the motivation of an individual to pursue resources through strategic linkages or alliances. In the context of knowledge sharing, Davenport et al. suggest that knowledge is “intimately and inextricably bound with people’s egos and occupations” (1998:45). According to O’Reilly and Pondy (1980), the probability of actors routing information to other actors is positively related to the rewards they expect from sharing the knowledge. These two different perspectives suggest that the sharing of knowledge may likely be influenced by the desire to obtain recognition or the pursuit of strategic alliances through opportunistic motives. We proposed the following hypothesis:

Hypothesis 2: Rewards and recognition are positively related to knowledge sharing.
6.2. Agency Dimension of Social Capital as Driver of Knowledge Sharing

The main argument in this section is that, within the context of the framework of socialization, externalization and combination adopted in this essay, the agency dimension of social capital, encompassing the various facets of individual motives, influences knowledge sharing by affecting the various conditions of knowledge sharing for the sharing of knowledge to occur. It must be noted, however, that this agency dimension, which has to do with the private life of the individual, is a relatively new contribution with little empirical research conducted on it.

Prosocial motives. The concept of prosocial motives is more commonly used as a psychometric variable in the field of psychology and has been used in recent years in the study of organizational citizenship behavior (Rioux & Penner 2001). We argue that prosocial motives of an individual may have important relevance to explain why individuals may pursue resources available in interactions characterized by social capital. Prosocial motives, in this case, are defined by the sociability and the propensity of individuals to relate to another because of personal compatibility or liking, and may volunteer knowledge to help another as a result of this compatibility. Based on this formulation, we proposed the following hypothesis:

Hypothesis 3: Individual prosocial motives are positively related to knowledge sharing.

Impression Management. The formulation of this variable is a response to Portes (1998) suggestion to investigate the motives behind individuals to volunteer information or resources in a social capital transaction. Impression management is postulated here to be influenced by the expected costs of not sharing knowledge, e.g. withdrawal of incentives, that may lead the individual to share his knowledge to ‘keep up appearances’. We hypothesized that:

Hypothesis 4: Impression management influences opportunistic behavior and is positively related to knowledge sharing.

6.3. Relational Dimension of Social Capital as Driver of Knowledge Sharing

In the following section we argue that the relational dimension of social capital, encompassing the various facets of work-group trust, influences knowledge sharing by affecting the various conditions of knowledge sharing for the sharing of knowledge to occur.

Competence. It has been argued by Blau (1964) as well as Schurr and Ozanne (1985) that the ability to perform work tasks, also known as proficiency or competence, builds trust with the colleagues the individual interact with in an organization. This is based on the assumption that ability fulfils some measure of trust on the particular individual in successfully completing a given task; in terms of
knowledge sharing, it denotes an ability to relay trustworthy information to the work group. In order to understand the influence of ability as a facet of trust in social capital, we hypothesized the following:

**Hypothesis 5:** Competence will be positively related to knowledge sharing.

*Open-mindedness.* Tjosvold, Hui & Sun (2000) suggest that open-mindedness integrates people in a community and confers harmony and trust that new ideas and practices will not be discounted but accepted. In the context of knowledge sharing, we hypothesized the following:

**Hypothesis 6:** Open-mindedness is positively related to knowledge sharing.

### 7. Method

#### 7.1. Sample

In understanding the social and organizational factors that influence knowledge sharing, a model of knowledge sharing was developed based on the work of Nahapiet and Ghoshal (1998). The model is presented in Figure 1.

![Figure 1: A Model of the Antecedents of Knowledge Sharing](image)

To assess the various social capital dimensions, several standard scales were identified, analyzed and used to measure knowledge sharing, organizational concern, open-mindedness and so forth. In July 2003, an online survey was developed and subsequently administered in a tertiary educational institution (academic staff, administrators and students) in Singapore. A total of 262 persons responded to the survey, which assessed various demographic variables and traits as well as the three social capital dimensions highlighted above. 42% of the respondents were male (N=110) with 74.4% (N=195) of Chinese ethnicity. Indians made up 11.1% (N=29), Malays 3.8% (N=10) with the remaining 10.1% belonging
to other ethnic races. 81.3% (N=209) of the sample was involved in education with the remaining respondents drawn from private sector companies in banking and finance, IT, and service industries. The academic community of respondents comprised 30.9% students, 40.8% administrative staff, and 10.3% faculty members (see Tables 1 and Table 2).

Table 1: Sample Distribution by Organization

<table>
<thead>
<tr>
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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
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<tbody>
<tr>
<td>Valid</td>
<td>1 HEI*</td>
<td>213</td>
<td>81.3</td>
<td>81.9</td>
</tr>
<tr>
<td></td>
<td>2 Banks</td>
<td>4</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>3 Consulting Firm</td>
<td>3</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>4 IT</td>
<td>6</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>5 Others</td>
<td>30</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>6 Not Reported</td>
<td>4</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>260</td>
<td>99.2</td>
<td>100.0</td>
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<tr>
<td>Missing</td>
<td></td>
<td>9</td>
<td>.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>262</td>
<td>100.0</td>
<td></td>
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</tbody>
</table>

* HEI = Higher educational institution.

Table 2: Sample Distribution – Higher Educational Institution

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>1 Students</td>
<td>81</td>
<td>30.9</td>
<td>30.9</td>
</tr>
<tr>
<td></td>
<td>2 Admin Staff</td>
<td>107</td>
<td>40.8</td>
<td>71.8</td>
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<tr>
<td></td>
<td>2 Faculty</td>
<td>27</td>
<td>10.3</td>
<td>82.1</td>
</tr>
<tr>
<td></td>
<td>4 Others</td>
<td>47</td>
<td>17.9</td>
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<tr>
<td>Total</td>
<td></td>
<td>262</td>
<td>100.0</td>
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</tbody>
</table>

7.2. Measures

The outcome measure was knowledge sharing. Knowledge Sharing: A 5-item measure adapted from Liebowitz (1999) was used to measure knowledge sharing orientation. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. Sample items are ‘Ideas and best practices are shared routinely’ and ‘It is part of the culture of this organization to share knowledge’. The scale’s alpha reliability in this study is .93.

Organizational concern and recognition & rewards were the main organizational climate variables assessed (structural dimension). Organizational Concern: A 4-item scale developed by Rioux and Penner (2001) was used to measure the extent to which staff valued the organization.
items are ‘I care about this company’ and ‘The organization values my contributions’. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. The scale’s alpha reliability in this study is .91.

**Reward and Recognition:** the authors developed this 4-item scale. Sample items are ‘Our appraisal/staff evaluation system encourages knowledge sharing’ and ‘People who share knowledge are given due recognition in this organization’. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. The scale’s alpha reliability in this study is .92.

**Prosocial motives and impression management** were the main motivational factors assessed (agency dimension).

**Pro-Social Motives:** A 6-item measure adapted from Rioux and Penner (2001) was used to measure prosocial motives and altruistic behaviors. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’ for each of the items. Sample items are ‘People here always put themselves first’, and ‘I want to help my colleagues in any way I can’. The alpha reliability in this study is .95.

**Impression Management:** We constructed a 4-item measure based on insights gained by Goffman (1969) and Portes (1998). Sample items are ‘I want to avoid looking bad in front of others as if I did not contribute’, and ‘I want to avoid being blacklisted by my boss’. The alpha reliability in this study is .89.

**Competency and open-mindedness** were the main trust-related factors assessed (relational dimension).

**Competence:** This 4-item scale was adapted from Gefen (2000). It measures the competency and knowledge of co-workers. Sample items include “My colleagues are competent in what they do at work”, and “My colleagues are knowledgeable about their job”. The scale’s alpha reliability in this study is .95.

**Open-mindedness:** A 4-item scale adapted from Payne and Pheysey (1971) was used. Response options ranged from (1) ‘not at all likely’ to (5) ‘extremely likely’ for one of the items and, (1) ‘strongly disagree’ to (5) ‘strongly agree’ for the other three items. Sample items are ‘One of the most important values emphasized in my workgroup is open-mindedness’ and ‘My co-workers speak out openly’. The scale’s alpha reliability in this study is .76.

Other variables included **costs of hoarding knowledge as well as costs & benefits of knowledge sharing.**

**Costs of Knowledge Hoarding:** We constructed a 4-item measure. Sample items are ‘I might be excluded from information within the organization if I do not engage in knowledge sharing’, and ‘It will be very difficult to create new knowledge if I do not exchange knowledge with others’. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. The alpha reliability in this study is .85.

**Costs of Knowledge Sharing:** We constructed a 4-item measure. Sample items are ‘Sharing knowledge in this organization may lead to criticism and ridicule’, and ‘Sharing knowledge in this organization is like ‘pointing a gun at your face’ and
may imply all kinds of disadvantages’. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. The alpha reliability in this study is .93.

Benefits of Knowledge Sharing: the authors constructed a 4-item measure. Sample items are ‘Knowledge sharing makes innovation easier’, and ‘I make more informed decisions with the inputs of my colleagues’. Response options ranged from (1) ‘strongly disagree’ to (5) ‘strongly agree’. The alpha reliability in this study is .95.

8. Analysis

Controls. Three demographic variables, age, full-time work experience and gender were employed as control variables. Gender was coded (0) ‘male’ and (1) ‘female.’

Hierarchical regression analysis was used to examine the predictors of knowledge sharing. Explanatory (independent) variables were entered into the regression in a specified order as a means of determining their individual and joint contributions to explaining the outcome variable.

9. Results

The means, standard deviations and intercorrelations of measures of knowledge sharing and the various social capital dimensions are given in Tables 3 and 4.

Table 3: Means and Standard Deviations of Major Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<td>.83246</td>
</tr>
<tr>
<td>Age</td>
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<tr>
<td>Work Experience</td>
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<td>9.19528</td>
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<tr>
<td>Gender</td>
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<td>.500</td>
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<td>Organizational Concern</td>
<td>3.6520</td>
<td>.76523</td>
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<tr>
<td>Reward &amp; Recognition</td>
<td>2.8514</td>
<td>.89349</td>
</tr>
<tr>
<td>Impression Management</td>
<td>3.2365</td>
<td>.81638</td>
</tr>
<tr>
<td>Competence</td>
<td>3.6869</td>
<td>.80927</td>
</tr>
<tr>
<td>Open-Mindedness</td>
<td>3.1216</td>
<td>.71517</td>
</tr>
<tr>
<td>Prosocial Motives</td>
<td>3.6565</td>
<td>.70850</td>
</tr>
<tr>
<td>Personal Compatibility</td>
<td>3.0878</td>
<td>.58384</td>
</tr>
<tr>
<td>Expected Costs of Hoarding Knowledge</td>
<td>3.1791</td>
<td>.69805</td>
</tr>
<tr>
<td>Benefits of K-Sharing</td>
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<td>.82160</td>
</tr>
<tr>
<td>Expected Costs of K-Sharing</td>
<td>2.8294</td>
<td>.82532</td>
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</table>
The results of the correlation analysis are consistent with the proposed hypotheses, indicating support for each of structural, agency, and relational dimensions of social capital as drivers of knowledge sharing. Furthermore, costs of sharing was negatively related to sharing; when costs of sharing was high, knowledge sharing was low.
Table 4: Regression Model of the Predictors of Knowledge Sharing\(^a\) (N=148)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4(^2)</th>
</tr>
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<tr>
<td>Intercept</td>
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<td>3.05***</td>
<td>3.05***</td>
<td>3.03***</td>
</tr>
<tr>
<td>Age</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
<td>-.01</td>
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<td>Work</td>
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<td>-.01</td>
<td>.01</td>
<td>.01</td>
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<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<td>.13</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>Organizational Concern</td>
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<td>.12</td>
<td>.12</td>
<td>.16</td>
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<tr>
<td>Reward &amp; Recognition Management</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Impression</td>
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<td>-.04</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
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<td>-.07</td>
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<td>Open-mindedness</td>
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<td>.42***</td>
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<td>Pro-social Motives</td>
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<td>-.07</td>
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<td>Costs of Hoarding Knowledge</td>
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<td>.33***</td>
<td></td>
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<td>Expected Benefits of Knowledge</td>
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<td>Sharing</td>
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<td></td>
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<tr>
<td>Expected Costs of Knowledge</td>
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<td>-.18***</td>
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<td>-.20***</td>
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<tr>
<td>Reward</td>
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<td></td>
<td></td>
<td>.12*</td>
</tr>
<tr>
<td>Recognition x Competence</td>
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<tr>
<td>Reward</td>
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<tr>
<td>Reward x Costs of Knowledge</td>
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<tr>
<td>Hoarding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( F = 3.357** \quad 25.098*** \quad 24.140*** \quad 22.773*** \\
\( R^2 = .065 \quad .647 \quad .701 \quad .721 \)

\( \Delta R^2 = .065 \quad .582 \quad .054 \quad .020 \)

\* \( p < .05 \)  
\** \( p < .025 \)  
\*** \( p < .01 \)

\(^a\) The \( \beta \) values are the unstandardized coefficients from the final regression equation, each term being corrected for all other terms.
Results of multiple regression analyses carried out to determine whether structural, agency and relational factors predicted knowledge sharing are presented in Table 4 (Regression Model, Predictors of Knowledge Sharing) and Figure 2 (Relation between Knowledge Sharing and Reward and Recognition for High and Low Competence).

As Table 4 indicates, reward & recognition, open-mindedness and cost concerns with regard to both knowledge hoarding and sharing turned out to be the strongest predictors of knowledge sharing rather than pro-social motives or organizational concern.

Table 4 includes two interaction terms, over and above the main effect model. The results from this table are used to graph the presentation of the interaction between rewards and recognition and competence (see Figure 2).

**Figure 2. Relation between Knowledge Sharing and Reward and Recognition for High and Low Competence**

Figure 2 shows relation between knowledge sharing and reward-recognition for high and low competence individuals. It graphically presents the joint influence of reward-recognition and competence on knowledge sharing. For low competence individuals (1 SD below mean), knowledge sharing remained relatively consistent irrespective of the level of reward-recognition. In contrast, this effect was very marked for high competence (1 SD above mean) individuals. The line representing high competence individuals shows that knowledge
sharing is strongly and positively related to competence; knowledge sharing is lowest when they perceive that reward-recognition is low.

In short, individuals who are highly competent in their work abilities are less likely to share what they know when they perceive there are few rewards or when their sharing is not recognized by the organization. Individuals who are low on competency, relative to their colleagues, tend to share their knowledge regardless of whether there are organizational incentives to do so.

10. Discussion and Conclusions

The conceptual view of knowledge sharing presented here in this essay is a social one. It has been argued that social capital facilitates the sharing of knowledge by affecting the conditions necessary for such a process. The essay examined the ways in which each of the dimensions of social capital – structural, agency and relational – influence knowledge sharing.

The findings suggest that contemporary organizations, which engage in knowledge-intensive and knowledge-generating activities, need to institute an environment conducive to the development of all three dimensions of social capital in order for effective knowledge sharing to take place. Particular emphasis needs to be put on organizational climate variables such as recognition and rewards, which turned out to be very critical predictors of knowledge sharing.

As the study’s findings show, the structural dimension of social capital matters and so does the relational dimension. The criticality of open-mindedness as another predictor of knowledge sharing implies that organizations need to implement proper recruitment and screening processes so as to attract a particular type of person who has the required demographic traits, which may make sharing easier. The plausible assumption that personal compatibility predicts knowledge sharing will have to be examined in the context of another study. Voluntary interactions between human actors aimed at exchanging information and experiences often occur when people are comfortable with each other, e.g. due to social similarities.

The study also shows that organizational members consider the possible costs of knowledge sharing and hoarding very carefully before they act. Prosocial motives or altruism do not matter much in the context of our sample which might be a function of the fact that many of the respondents were highly qualified knowledge workers who are known to have a unique orientation (e.g. they are loyal to their own profession but not necessarily to their employer). Individuals who are highly competent in their work abilities turned out to be less likely to share what they know (in contrast to individuals who are low on
competency) when they perceive that there are few rewards or when sharing is not recognized by the organization.

Overall, the findings provide evidence for the importance of an effective performance management system if an organization wants to successfully manage the transition from a ‘knowledge is power culture’ to a high-performing organization where knowledge sharing is seen as a key enabler of improved business performance and value innovation.

Some limitations were observed in the development of the framework. Firstly, the impact of each dimension of social capital had been considered independently from the other dimensions. It was noted that these dimensions of social capital might likely be interrelated in important and complex ways. As the primary objective of the analysis was to focus on the independent effects of those dimensions to the conditions of knowledge sharing, the richness of the exploration was limited. Future research, therefore, should consider the interrelationships of these dimensions as intervening explanatory factors that could further uncover the mechanisms and dynamics of why knowledge sharing takes place.

Secondly, the different facets chosen to represent the dimensions of social capital are by no means exhaustive. Various other facets such as network ties, norms, and obligations dominant in the social capital literature could have been used as well. However, as this essay attempts to relate social capital robustly with knowledge sharing, the choice of social capital variables was limited to the most relevant. An inclusion of more of such variables would have also meant that the medium of an essay or journal publication, which stresses a tight word limit, would have been unsuitable for such an exposition.

As the research was confined to just one organization, the findings (although they are highly plausible) can not be generalized. More research covering different types of organizations and sectors are necessary to further support the study approach.

Nevertheless, it is believed that this essay has made an important theoretical-empirical contribution to the rapidly progressing field of KM and the development of a stronger theoretical base. This is important since the topic of knowledge sharing is often discussed from the viewpoint of practitioners who stress more on attributes and formulas for effective knowledge sharing rather than theory-driven explanations.

There are several possible avenues where future research on the theory of knowledge sharing can embark on. More attention should be given to the agency dimension of knowledge sharing which, following Archer’s (2003) concept of the internal conversations of private individuals, could examine how different reflexivities can influence the individual’s decision-making in participating in
resource-based knowledge sharing activities that could benefit their career or life trajectories. This would entail examining the tacit-dimension of knowledge and how such knowledge is explicated and structured to explain decisions that are subsequently made. This essay points towards a psychometric tool and questionnaire, the Tacit Knowledge Inventory for Managers, by occupational psychologists Richard Wagner and Robert Sternberg (Yale University) as a reference for such a research direction.

Furthermore, it would add an interesting angle to compare the theory of knowledge sharing in different organizational settings, such as the military where a top-down hierarchical structure may elicit different knowledge sharing dynamics, and a flat-structured business organization. Different national and cultural settings may also produce different observations. The research possibilities are rich and worthy to be explored further.
Bibliography


Nohria, N. & Eccles, R. (1992) “Face-to-Face: Making Network Organizations Work”. In


