Impact of Trust in Colleagues and Management on Knowledge Sharing within and across Work Groups

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Abstract

Knowledge sharing is crucial for firms in order to be able to develop skills and competences, increase value, and sustain competitive advantages. The ability of transferring knowledge from one unit to another increases firm performance. Several elements influencing the decision whether to share or conceal knowledge can be identified.

In this paper we analyse the impact of trust on knowledge sharing within and across work groups. Regarding trust we consider two levels of trust, firstly, trust in management and secondly, trust in colleagues. We argue that trust in colleagues has a stronger impact on intragroup knowledge sharing and trust in management is more important for external knowledge sharing. We also take the level of knowledge codification and its influence on both intragroup and external knowledge sharing into account. The analysis is based on an empirical study in an Austrian company in the utility industry.

Keywords: Knowledge sharing; Knowledge transfer; Interpersonal trust; Work Groups.

Suggested track:

C. Knowledge sharing within and across organizations and cultures e.g., in off-shoring arrangements

Introduction

Knowledge sharing is crucial for firms in order to be able to develop skills and competences, increase value, and sustain competitive advantages (see for example Grant, 1996; Spender, 1996). It is evident that the ability of transferring knowledge from one unit to another significantly contributes to the organizational performance of firms (Argote et al., 2000). According to Nonaka and Takeuchi (1995) knowledge sharing is a prerequisite for converting general ideas and concepts into products and services. Firms introduce interdisciplinary work groups where people are sharing their knowledge and expertise in order to cope with complex tasks in the workplaces (see Grant, 1996). However, knowledge sharing is a fragile process comprising conflict of interest among the people involved (von Krogh, 1998; von Krogh et al., 1994). Several elements influencing the decision whether to share or conceal knowledge can be identified. An important factor in this respect is the role of interpersonal trust.

In this paper we analyse the impact of trust on knowledge sharing within and across work groups. Regarding trust we consider two levels of trust, firstly, trust in management and secondly, trust in colleagues. We also take the level of knowledge codification and its influence on both intragroup and external knowledge sharing into account. The analysis is based on an empirical study in an Austrian company in the utility industry.

In the first section of the paper we briefly address the properties of knowledge and knowledge sharing: why is the distinction of different types of knowledge relevant; why is knowledge sharing of significant importance for organizations and what are the particularities of knowledge sharing within and across work groups. The second section of the paper illustrates the role of trust in knowledge sharing in the organizational context: are there any differences within and across work groups. Based on evidence in the literature we hypothesize the causal model which we are testing in an empirical study. In the third part of the paper we outline the details of our study and present the results. In the final part of the paper we draw the conclusions and discuss limitations of the analysis.

Properties of knowledge and knowledge sharing

Knowledge sharing happens when experience, know-how etc. of one unit of an organization has an impact on another unit. Knowledge can be shared explicitly when, for example, one team communicates with another team about a particular practice

which has turned out to be successful. However, knowledge can also be shared implicitly without being able to articulate the knowledge acquired, for example, one can benefit from increased productivity in the tool without necessarily understanding or being able to articulate how the tool has been modified (Argote et al., 2000). At this point the particular knowledge properties have to be considered. Knowledge properties influence how easily knowledge can be shared and accumulated, how much and where it is retained, and how easily it diffuses within and across the organization (Argote et al., 2003, p. 574). In specifying knowledge properties the distinction between knowledge and information is crucial. Knowledge differs from information in that

> "[I]nformation is a flow of messages, while knowledge is created by that very flow of information, anchored in the beliefs and commitment of its holder. … *knowledge is essentially related to human action*." (1995, p. 58f).

Distinguishing knowledge from information leads to the following distinction which received much attention in the management literature and in knowledge management in particular.

Explicit and tacit dimension of knowledge

The distinction between tacit and explicit dimensions of knowing (Polanyi, 1966; Nelson & Winter, 1982; Baumard, 1999) focuses on the way of expressing knowledge. Explicit knowledge can be articulated in writing or symbols, but only a small part of our knowledge is explicit. The knowledge to be shared is very often tacit, or embodied in routines (Nelson & Winter, 1982), which turns knowledge into a sticky element and difficult to share (Kogut & Zander, 1992; von Krogh et al., 1994). Similarly knowledge which can be articulated and codified can be shared more easily than non-codifiable knowledge (Zander & Kogut, 1995). The distinction between these two types of knowledge is important considering transferability of knowledge.

However, knowledge always consists of both, the tacit and the explicit dimension. Knowing is a process, which can be thought of an act of integrating tacit and explicit knowledge in light of a particular action (see Tsoukas & Vladimirou, 2001, p. 978; Polanyi, 1966, p. 6). The context of the particular action is decisive or as Orlikowski puts it (2002, p. 251), knowing is "inseparable from action because it is constituted through such action". Thus, knowledge sharing involves transferring and transforming knowledge from one particular context into another.

Intragroup and external knowledge sharing

Besides the explicit and tacit dimension research on knowledge management outlines the significance of several other dimensions of knowledge worthwhile to consider (for an overview see Argote et al., 2003, p. 574). One dimension refers to whether knowledge is perceived as *internal or external* to the unit analyzed.

It is clear that knowledge sharing, both within and across work groups, plays a fundamental role in the effectiveness of organizations (Argote et al., 2003; Argote et al., 2000). For example, knowledge sharing prevents organizations from re-inventing the wheel. Sources of knowledge can range from customers to experts within the organization or the team members themselves (von Hippel, 1988). As Cummings shows in his research, effective work groups engage in external knowledge sharing, i.e. exchange of know-how, information, and feedback with customers, experts, and others outside the work group (Cummings, 2004). However, empirical evidence implies that the distinction of knowledge sharing *within* (intragroup knowledge sharing) versus *across work groups* (external knowledge sharing) is of vital importance.

To summarize, knowledge sharing within (intragroup) and across working groups (external) depends on the properties of knowledge, whether knowledge can be codified or not. From this it follows

Hypothesis 1: The extent to which knowledge is codified influences intragroup and external knowledge sharing.

Trust and knowledge sharing within and across work groups

Argote et al. also argue that the fit between properties of knowledge, properties of work groups, and properties of relationships between work groups are crucial for knowledge sharing (Argote et al., 2003, p. 576). Research evidence shows how properties of relationships between organizational work groups affect knowledge sharing. For example, McEvily et al. (2003) claims that the level of trust affects the extent of knowledge sharing.

Trust within a work group refers to the extent to which group members trust each other. People trust others assuming that these others will behave in a particular way (Mayer et al., 1995). Definitions of trust are manifold, however, there are two central issues: firstly, trust is about dealing with *risk and uncertainty*; and secondly, trust is about *accepting vulnerability* (Mayer et al., 1995; Rousseau et al., 1998). In the words of Luhmann (1988) trust can be seen as a mechanism that allows people to assess

whether or not to expose themselves to a situation where the possible damage may compensate the advantage. To trust someone means that there is a situation of uncertainty in which there is also an element of perceived risk; and there are various sources of vulnerability that may be 'at risk', for example, reputation, self-esteem, financial resources etc. (Newell et al., 2002, p. 56).

Trust can be defined as "the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people" (Cook & Wall, 1980, p. 39). There is a need for developing mutual trust in order to enable people to work together more effectively (Mayer et al., 1995, p. 710). Trust increases the amount information that can be exchanged (Szulanski et al., 2004, p. 600; Carley, 1991; Tsai & Ghoshal, 1998). Trust facilitates decision making by simplifying information gathering and interpretation (McEvily et al., 2003, p. 92). Economically spoken, trust enables interaction among people and across organisations and can reduce transaction cost (Nooteboom, 2003, p. 103; Williamson, 1985). Trust is an essential ingredient for establishing a solid knowledge base in work groups that enables interaction and knowledge sharing. Research shows evidence that trust leads to increased overall knowledge exchange (see for example Tsai & Ghoshal, 1998). Additionally, trust increases the likelihood that knowledge shared is sufficiently understood (Mayer et al., 1995). The latter is of particular importance in regard with sharing the context sensitive tacit knowledge.

As outlined above trust is an essential ingredient for establishing the relationship between the parties involved in knowledge sharing. Trust is a key factor for establishing and maintaining relationships between the members within and across work groups. Trust within the workplace engenders cooperation (Morgan & Hunt, 1994). Trust plays a significant role for whether people decide to cooperate or not and whether people share or conceal knowledge within and across work groups.

From the viewpoint of employees trust as willingness to ascribe good intentions to others can refer to either peers/colleagues or management (Cook & Wall, 1980). The distinction between trust in colleagues and management takes the working environment into consideration. When sharing knowledge within the work group people are referring to their colleagues in the first instance and trust in colleagues is a critical factor. However, when people are engaged in external knowledge sharing with people outside the work group, trust in management gains importance. External knowledge sharing involves people who are not members of the working group. Thus, importance of internal relationships decreases and the role of management comes into place. The

relationship with management an intermediate to reduce the inherent uncertainty and risk as well as the vulnerability increasingly matters. As a consequence trust in management gains in importance. From this it follows:

Hypothesis 2: Trust in management has a stronger impact on external knowledge sharing than trust in colleagues.

Hypothesis 3: Trust in colleagues has a stronger impact on intragroup knowledge sharing than trust in management.

Empirical Study

Sample

To test the relationship between trust and knowledge sharing, we collected data from an Austrian company in the utility sector. A standardized self-administered questionnaire was sent to 665 employees of that company. All the employees selected for this study were part of project teams. The employees received an e-mail from the research team explaining the scope of the study, the questionnaire was attached. The employees were asked to complete the questionnaire which the employees dropped in one of the boxes that were placed on a central place in the building and was picked up one week later by a member of the research team. Anonymity and a confidential treatment of the answers were guaranteed. 131 fully completed and usable questionnaires were returned within one week, this corresponds to a return rate of approximately 20 percent.

Measures

Trust in management and trust in colleagues was measured using Cook and Wall's (1980) interpersonal trust at work scale. From the questionnaire the subscales capturing faith in intentions of peers and faith in intentions of management were chosen, measuring the items on a five-point Likert scale (from "strong approval" to "strong disapproval"). Knowledge sharing within the work group and across work groups was measured using Cumming's (2004) intragroup sharing and external sharing scales. Five types of knowledge sharing have been identified (Hansen, 1999; Cummings, 2004; Szulanski, 1996; Zander & Kogut, 1995): (1) general overviews (f.ex. the projects in general, responsibilities within the team), (2) specific requirements and data, (3) techniques (f.ex. project management, Know-how, training, process, tools), (4) progress and reports (f.ex. updates on project, budget, employees, etc.), and (5) project results (f.ex. preliminary and final reports, etc.). On a five-point-scale (1-never;

2-rarely; 3-sometimes/on request; 4-regularly; 5-a lot) the frequency of knowledge sharing within and across the core team was assessed. Finally, it was measured how well knowledge that was created and shared within the work group and outside the work group using Hansen's (2002) scale to measure codified knowledge (e.g. How well documented is knowledge that was created within your team? 1=not at all, 5 = very well). In the first step, scale reliability was tested calculating Cronbach alpha and item-to-item correlations. Items that increased Cronbach alpha when deleted, were excluded. After this analysis the following scales were extracted (see table 1): Faith in management (3 items, α = .79), faith in colleagues (3 items α = .90), intragroup knowledge sharing (3 items, α = .77), external knowledge sharing (3 items α = .80), and codification of knowledge (4 items, α = .87). These purified scales were then used to test the causal relationships.

Results

Model fit

The hypotheses were tested using structural equation modelling with AMOS 5.0. First, the overall fit of the observed data to the model was tested. The first test yielded a chi-square value of 107.979 (df = 90, n.s.; χ^2/d.f. = 1.200), implying that the model was adequate.

Another appropriate fit index is the RMSEA (Root mean square error of approximation). It evaluates approximate rather than exact fit of the model and it attempts to correct for the tendency of the Chi-square statistic to reject any model with a large sample size. Recently the RMSEA has been recognized as one of the most informative criteria in covariance structure (Byrne, 2001) with values less than .08 being acceptable. In our model, the value of .039 therefore clearly indicates a superior model fit and even meets stricter recommendations, whereby the RMSEA should be <.05 (Hu & Bentler, 1999). The goodness-of-fit index (GFI) with a value of .910 our model complies with the required values of > 0.9. Our measurement model showing a CFI value of .982 well exceeds the lower bound of .90 and therefore can be considered as an indicator for good model fit. Also the Tucker-Lewis index (TLI), which is less susceptible to nonnormality of data (West et al., 1995) and sample size (Marsh & Balla, 1988), yields a corroborating value for good model fit of .976. The adjusted goodness-of-fit-index, which is sensible to sample size (Byrne 2001) was .864. Summarizing, the hypothesized model can be regarded as to fit the sample data.

Reliability and validity

In the next step, reliability and validity of the measures were tested calculating the composite reliability (CR) of the constructs and the average variance extracted (AVE) (Fornell & Larcker, 1981), resulting in the following values: Trust in management (CR=.80, AVE=.59), Trust in colleagues (CR=.91, AVE=.76), Intragroup sharing (CR=.75, AVE=.50), External sharing (CR=.76, AVE=.52), Codification of knowledge (CR=.89, AVE=.67). These results clearly show that the measures used in this study were reliable and valid (see table 1 for details).

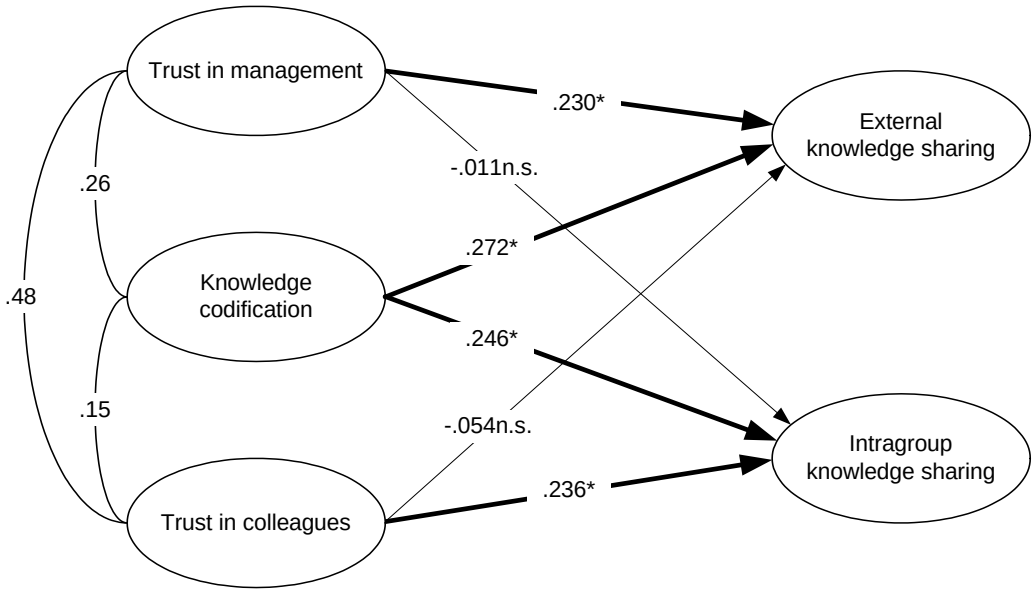
Construct	Indicator	IR	α	CR	AVE
Trust in management	Management at my firm is sincere in its attempts to meet the employees' point of view.	.53	.79	.80	.59
	I feel quite confident that the firm will always try to treat me fairly.	.93			
	Our management would be quite prepared to gain advantage by deceiving the employees (reverse coded).	.29			
Trust in colleagues	If I got in difficulties at work I know my colleagues would try and help me out.	.84	.90	. 91	.76
	I can trust the people I work with to lend me a hand if I needed it.	.90			
	Most of my colleagues can be relied upon to do as they say they will do.	.55			
Intragroup sharing	General overviews (e.g., project goals, milestone estimates, or member responsibilities)	.34	.77	.75	.50
	Analytical techniques (e.g. statistical tools, detailed methods, or testing procedures)	.43			
	Project reports (e.g. status updates, resource problems, or personnel evaluations)	.73			
External sharing	Specific requirements (e.g., numerical projections, market forecasts, or order requests)	.36	.80	.76	.52
	Analytical techniques (e.g. statistical tools, detailed methods, or testing procedures)	.46			
	Project reports (e.g. status updates, resource problems, or personnel evaluations	.75			

Documentation of knowledge	How well documented is knowledge that was created within your team?	.68	.87	.89	.67
	How well documented is knowledge that was created outside your team?	.61			
	How well documented is knowledge that is shared within your team?	.60			
	How well documented is knowledge that is shared with other teams?	.78			

Tab. 1 Scale reliabilities

Regression Paths

Figure 1 displays the results of the analysis. As hypothesis 1 suggests, the codification of knowledge has a significant and positive impact on knowledge sharing within and across work groups (β=.246, p <.05 and β=.271, p <.05 respectively). Trust in management has a positive and significant impact on external knowledge sharing (β=.230, p <.05) of which 13 percent of the variance is explained. The path to internal knowledge sharing, however, is not significant. Trust in colleagues, as hypothesis 3 predicts, has a positive and significant impact on knowledge sharing within the work group (β=.236, p <.05). The variance explained is 15 percent, and is rather low. The path between trust in colleagues and external knowledge sharing is not significant. Thus, the results of this study support our hypothesis. To our surprise, however, trust in management and intragroup sharing as well as trust in colleagues and external knowledge sharing is not significant.



Notes: χ^2 (d.f.) = 107.979 (90), n.s., χ^2/d.f.=1.200, CFI = .982, GFI = .910, AGFI = .864, IFI = .983, TLI= .976, RMSEA = .039

* $p < .05$, n.s. = not significant

Fig. 1. Causal relationships between trust and knowledge Sharing

Discussion

As hypothesized, we found significant paths between trust in management and external knowledge sharing and trust in colleagues and intragroup knowledge sharing. Also codification of knowledge increases significantly knowledge sharing within and across teams. Surprisingly, however, in our study trust in management does not affect intragroup knowledge sharing and trust in colleagues does not affect external knowledge sharing. Furthermore, the variance explained of intragroup and external knowledge sharing is rather low (R^2 =.13 and R^2 =.15 respectively).

In this study we focused only on the relationship between trust and knowledge sharing. We did not consider any moderating and intervening variables, for example, composition of work groups, work characteristics, demographics, and organizational context etc. Previous studies have shown that knowledge sharing is influenced by a number of factors; for example Cummings (2004) included structural diversity like geographic locations, functional assignments, reporting managers, and business units, that have not been included in our study.

Another concern refers to particularities of the organization analyzed. The culture of the organization may be special in regard with external relationships in work groups and affect the trust in management measure to a greater extent. Replicating this study in other companies is recommended to fully understand the role of trust in knowledge sharing.

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