IS - 2006-02
Delft Innovation System Papers

To share or not to share, that is the question.

Conditions for the willingness to share knowledge

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ABSTRACT

Sharing knowledge is an important aspect of most modern organisation. Ideas about how to stimulate knowledge sharing abound, but without much theorising. The objective of this article is to link basic motivation theories to empirical studies of knowledge sharing and its conditions. The paper starts with an orientation on company strategies to stimulate knowledge sharing, and the role of various types of incentives. It appears that these incentive schemes are based on various assumptions concerning human motivation. We turn then to work motivation theory to search for underlying processes that may explain why people would or would not share their knowledge. Understanding these processes and conditions can promote organisational strategies that support knowledge sharing. The findings are combined in an overview and motivational model that identifies the interaction of several psychological and organisational processes. From this overview a checklist is derived to assess the motivation for knowledge sharing and the conditions that may influence this motivation. Organizations that want to improve knowledge sharing may use this instrument to identify the issues they have to give attention to.

KEYWORDS

knowledge sharing ▪ information and knowledge management ▪ motivation ▪ organisational conditions

Introduction

The potential benefits of knowledge sharing for the organisation are clear: knowledge is spread through the organisation, it can be used for innovative services or products, the wheel is not re-invented, products and services may be of higher quality, customer will be better satisfied and so on (see Krogh, 1998; APQC, 1999). But for the individual who shares, why should (s)he do it? The thought that all people are social or even altruistic beings who freely share their knowledge, is too simplistic and does not fit with practice.

Many companies have realized that knowledge sharing is not widespread. They have been faced with the disappointing fact that experiences and insights developed in one part of the organization never reach other parts. Sophisticated and costly information storage and retrieval systems generally do not change this state of affairs, not even when they are called "knowledge systems". Several organizations have therefore introduced incentive schemes to motivate employees to share their knowledge.

If we talk about knowledge sharing we have to take into account the difference between knowledge and information, i.e. between knowledge sharing and information exchange. Information is basically a collection of facts and figures, while knowledge consists of insights and interpretations, is personalized and refers to specific situations. It is also important to differentiate interpersonal sharing of knowledge with 'sharing' knowledge by entering it in and retrieving it from a knowledge system. From research (e.g. Huysman & Wit, 2002) it is known that people are much more willing to tell about their ideas and solutions to others than to put them in a database. But even in interpersonal interaction people sometimes appear to withhold information. Why is that and when are people inclined to share their experiences and insights?

This paper starts with an orientation on the practices and experiences in companies. It discusses various company strategies to stimulate knowledge sharing, and the role of incentives, rewards and recognition. It appears that these incentive schemes are based on assumptions concerning human motivation. We turn then to motivation theory to search for underlying processes that may explain why people would or would not share their knowledge. What type of intentions can be found and what are motivating or demotivating conditions? When we better understand why people share their knowledge and why not, we are better able to encourage knowledge sharing.

Finally we combine the findings in an overview and model of motivational factors and conditions. From this overview the building blocks for a checklist are derived to assess the motivation for knowledge sharing and the conditions that may influence this motivation. Organizations that would like to improve knowledge sharing may use such an instrument to identify the issues they have to give attention to.

Concrete practices

Stimulating knowledge sharing in companies

First, let us look at what happens in practice. How do companies motivate and stimulate their employees to share knowledge? Several sources can be found that provided examples of more or less extensive reward schemes (APQC, 1999; Hall, 2001a).

Siemens ICN is known for its ShareNet initiative, the global collaboration and knowledge-sharing network for the sales force. Contributions such as documents to ShareNet are rewarded with ShareNet “Shares”. Through peer ratings the quality and (re)usability of the contributions are assessed. Siemens not only rewards the contributors, but also the re-users of ShareNet content. The “Shares”, which can be compared to air miles, can be exchanged for

real (Siemens) products. Besides that, top ShareNet contributors are rewarded with an invitation to the ShareNet global knowledge-sharing conference. This (expensive) shares system is recently replaced by a reward system where excellent participants receive an expert or master status (Kugel & Schostek, 2004). This new system seems not to have the same effects as the monetary system: there appears to be a considerable decrease in traceable knowledge sharing activities.

Hewlett-Packard Consulting gives so-called 'Knowledge Masters Awards' for those employees who contribute significantly and measurably to the success of the company. Award winners receive company-wide recognition and cash or a paid trip. Scott Paper gives financial incentives, e.g. increased pay, bonuses, and stock options. And at IBM a bonus is split between the knowledge originator and the knowledge user.

Chevron takes a different approach. It tries to build knowledge management into the work process. Metrics around sharing and reuse of knowledge are part of the annual performance evaluation and are used in relation to promotion, career ladders, and job-posting processes. Schlumberger argues that since the advantages of knowledge sharing are clear for team members, they are intrinsically motivated to share knowledge with each other. Contributors to the intranet 'news' pages are recognized for their efforts in having their name highlighted in the text.

McKinsey has no special rewards because knowledge sharing is seen as a matter of course among colleagues. A so called Rapid Response Team emerged to link anyone facing a problem with others who might have useful, related knowledge. It is their target to do this within 24 hours and the individuals involved take pride in knowing who knew what in the organization and in their ability to find the right people to solve problems.

Looking critically at these practices it appears it appears that they can be clustered in certain groups of incentives. Some authors distinguish between *tangible* incentives for knowledge sharing, such as money, gifts, promotion, access to information, and *less tangible* incentives such as enhancing reputation and public praise. The APQC calls the first category *rewards* and the second *recognition*. Recognition implies that colleagues and management are perceiving employees as experts. Hall (2001a,b) makes a rather similar distinction between *hard* and *soft* rewards. Hard rewards are the tangible, economic rewards and soft rewards are for example enhanced reputation and personal satisfaction.

It is remarkable that most cases with hard rewards concern knowledge sharing in the sense of placing and retrieving an item of knowledge/information on an intranet or other database system. This is, after all, quite understandable, because knowledge sharing in the interpersonal way, in face to face contacts or over the telephone, is hardly traceable and rewardable through a formal system. This difference between codified and interpersonal knowledge sharing is obviously quite basic in this discussion. It will be discussed later in the article again.

The pro and cons of hard rewards

It is argued (APQC, 1999) that hard rewards only have a temporary effect, which means that these incentives slowly loose their effectiveness. Moreover, as the Siemens example shows, when hard rewards are not given anymore, the effect may be gone completely. Due to crises in the telecom market, the company had to look for cheaper solutions. As Kugel and Schostek (2004) state, Siemens opted for a reward system based on non-monetary (or soft) rewards that was expected to work on the long run. However, they found out what may happen when one withdraws hard rewards: the desired behaviour stopped.

Secondly, financial rewards may stimulate undesired behaviour, i.e. distributing information (perhaps even of inferior quality) only with the intention to receive a reward. The knowledge that is given is not complete, is old or is just one item in a row, so the rest can be given another time (resulting in another bonus). McLure, Wasko & Faraj (2000 p. 162) warn that "… introducing tangible rewards in return for the provision of a public good promotes self-interested behaviour, reduces intrinsic motivation, and destroys the public good". Tangible rewards only provide temporary compliance, but may inhibit organizational learning. Hall (2001b) however argues that they can be useful to get projects started.

Our own studies in a multinational chemical company suggest that many employees do not like hard rewards. We found that the majority of community moderators were not in favour of having incentives for community work. Some of the arguments were that incentives depart from the actual scope of the community, that knowledge sharing should be part of the job and that it gives administrative overload.

Nevertheless, several of the above mentioned companies have used hard rewards for quite some time and with success, if we may believe the reports. So we can conclude that there is no single best solution. Companies have different strategies, each of which may be successful, but not suitable for another company, because the conditions are different. APQC (1999) has concluded that knowledge sharing is tightly linked to the core cultural values of the company. Each culture seems to ask for another way of stimulating and motivating. Therefore, the choice for tangible or intangible rewards has to fit the corporate culture. Intangible rewards seem to be better on the longer term, but are not easy to implement.

It appears that the various incentive schemes are based on assumptions concerning human motivation and corporate conditions. We turn then to theory to search for underlying processes that may explain why people would or would not share their knowledge. In the following section we will discuss the main motivation theories and their implications for

knowledge sharing. After that the issue of the differential effects of organizational conditions is discussed.

Theories concerning motivation and incentives for sharing knowledge

What is motivation ?

Motivation theories deal with the forces that make people behave in a certain way and with the factors and mechanisms behind their intentions. Social and organizational psychologists have studied this phenomenon intensively, discovering various mechanisms that could be turned into theories. Managers in organizations have developed practical insights, more or less aligned with the scientific theories.

In theories and practice the notion of 'motivation' appears to have two different connotations. Some people relate the concept to the very personal internal force to act. Doing something because one is motivated is in this view completely different from doing something because one is paid for it. In this context the concept of motivation is limited to what is elsewhere called 'intrinsic motivation'. In motivation theory however, a broader meaning of the concept of motivation is used. It is regarded as the tendency or force to act, and this tendency or force can be the result of both intrinsic factors (such as having a strong need to discover new things or to achieve something) and extrinsic factors such as pay. In a recent handbook Pinder (1998, p11) defines work-motivation as 'a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work related behaviour and to determine its form, direction, intensity and duration'. The concept of 'intention' has the same meaning and is used in this publication interchangeably with the concept of 'motivation'.

This discussion on the concept of motivation has a parallel in the discussion on the concept of ‘incentives’ or ’rewards’. In this publication the terms ‘incentives’ and ‘rewards’ denote all things people derive from behaving in a certain way, i.e. all things that, in anticipation, motivate people to behave in such a way. This includes not only money or recognition but also fun, satisfaction or learning something new.

With Pinder’s definition we have made the connection with *work* motivation. This is done on purpose, since we discuss knowledge sharing in the context of organizations in which the (non-) willingness to share knowledge is strongly related to motivations concerning other work behaviours. Moreover, in organizational psychology many insights concerning work motivation have been developed and we intend to tap this knowledge and try to ‘translate’ it to the field of knowledge sharing. We compare this with theories concerning knowledge sharing itself and will derive certain conclusions with regard to the appropriateness of certain interventions that organizations apply to support this knowledge sharing motivation.

Traditionally two types of motivation theories are distinguished, i.e. content theories, that focus on WHAT incentives (and needs) lie at the basis of motivated behaviour, and process theories, that specify HOW needs, incentives, expectations and intentions combine to result finally in behaviour.

Content Theories

Content theories identify the kinds of factors (incentives) that drive human behaviour, generally without specifying how this driving process actually works. Always there is a search for a parallel between certain intrinsic needs of people and external factors (incentives, rewards) that satisfy those needs. For example most people have a basic need for social contact. This need can be satisfied by being appreciated by colleagues, so explicit

appreciation by colleagues can be a strong incentive to act in a certain way, e.g. in sharing knowledge. These theories are also known as ‘need gratification’ theories.

The theory of Maslow (1968) is one of the most popular examples of such theories. It points to the existence of many individual needs, which are clustered into five categories: physiological needs, need for security, need for belongingness, need for recognition, status and power and need for self-actualization. The theory further contains a hierarchy principle: the latter needs can only become motivational when former needs are satisfied.

Although its popularity is still high, both the five-cluster categorization and the hierarchy principle are not strongly supported by empirical research. Alderfer (1972) concluded on the basis of extensive studies that the five clusters should be folded into three: Existence, Relatedness and Growth. His theory states that people basically want (1) to safeguard their existence, through food, shelter, job and income (Maslow’s first two needs), (2) to relate to other persons meaningfully through social contacts, friendship and recognition (Maslow’s third), and (3) to grow and develop their abilities, through achievement, and self-actualization (Maslow’s fourth and fifth). McClelland (1987) concluded from his experiences in many companies that the need for affiliation, the need for achievement and the need for for power are the most important motivating factors in working life.

Although not applied yet to the field of knowledge sharing, these theories seem to be useful in this field. People may share knowledge to safeguard their jobs, to support their relations with others, to increase their reputation, status and power, and to strengthen their own knowledge and abilities.

Kelman’s (1958) Theory of Social Influence is comparable to the model of Alderfer. He approaches the issue in terms of types of social influence processes, of which he distinguishes three:

1. *Social influence based on compliance*: person may be influenced (Kelman uses the term 'committed') through external incentives, i.e. to gain rewards or to avoid punishments. Translated to the domain of knowledge sharing it would mean that knowledge sharing is influenced by the possibility to earn credits, or because the annual evaluation is dependent on the amount of sharing. The question whether this can be a good motivation for sharing knowledge is taken up in the next section.
2. *Based on identification with others*: a person may be motivated by the need to establish or maintain relationships, the need for acceptance by peers and managers, and need for esteem; the incentive here is how the others react.
3. *Based on internalization*: a person may be motivated to act in a certain way, because that behaviour is considered congruent with a person's value system.

Although this trichotomy seems to be comparable to Alderfer's ERG model, there is a difference. In the need gratification perspective the third type of motivation refers to the need to grow and achieve, while in Kelman's theory the third type is value based: I act (e.g. I share information) because that is what I think that people in general should do (and I therefore also). This motivation is different from a motivation based on the need to grow and learn which is basically self-oriented. To distinguish the two we propose to use the concepts 'growth motivation' and 'value based motivation'.

Intrinsic and extrinsic incentives

Several theories make a distinction between two types of incentives. Already in the sixties of the last century, Herzberg (1966) distinguished between motivators and hygiene factors. Herzberg concluded from his studies concerning performance motivation that the factors in the need gratification theories do not all have the same function: some are real drivers of behaviour, others function more as a kind of barrier. He distinguished between motivation

factors and maintenance or hygiene factors for work motivation. “Factors in the latter class only contribute to motivation in a roundabout, primarily negative way. They do not motivate behaviour when they are present, but they will lead to dissatisfaction and, therefore, to a decreased motivation when absent”. Motivators are, according to Herzberg, achievement, responsibility, recognition, operational autonomy, promotional opportunities and challenge of work. Hygiene factors are for example good salary, high status and good interpersonal relations.

If this theory is valid, financial rewards for knowledge sharing would not be very effective as motivators, but only cause dissatisfaction when not being available or taken away (Hendriks, 1999). This appears to be the argument lying underneath the warning of APQC against hard rewards. Herzberg’s theory also implies that good interpersonal relations are also only a hygiene factor and that does not sound plausible in relation to knowledge sharing.

Another distinction is that between intrinsic and extrinsic rewards. Incentives such as income, promotion, but also acceptance by others and recognition, are sometimes called ‘extrinsic’ because the person depends on others to receive them. On first sight Alderfer’s first two needs and Kelman’s compliance and identification would fall under this category. Rewards that satisfy feelings of achievement and self-actualization are called ‘intrinsic’. Kelman’s influence process based on internalization is typically of the intrinsic type.

Deci and Ryan (2000; Ryan & Deci, 2000) performed many empirical studies concerning the difference between intrinsic and extrinsic motivation. Based on these studies they developed the Theory of Self determination (SDT), in which they argue that intrinsic motivation is the strongest type of motivation and that autonomy and self-determination of a person is a condition sine qua non of being intrinsically motivated. They showed that in many cases people who are intrinsically motivated persist longer, conquer more challenges, and demonstrate more accomplishments than those who are extrinsically motivated. Moreover,

extrinsic incentives tend to lead to dysfunctional behaviour, because earning the incentives may become more important than the intended behaviour. In such cases, the provision of extrinsic rewards could even decrease intrinsic motivation.

However, Deci and Ryan also identified motivation types that combined some of both and should be positioned between the extremes of complete extrinsic or complete intrinsic. Obviously, the difference between intrinsic and extrinsic is not that sharp. They distinguish between several levels of motivation, related to what they call 'perceived locus of causality' of rewards:

- External regulation: motivated exclusively through rule following and external rewards
- Introjected regulation: external factors are internalized and act as internal controls but not as intrinsic motivators; e.g. being motivated by the desire to avoid guilt.
- Identified regulation: 'Identification reflects a conscious valuing of a behavioural goal or regulation, such that the action is accepted or owned as personally important' (Deci & Ryan), i.e. motivated to act because then 'I feel great about myself'.
- Intrinsic motivation: inherent tendency to seek novelty and challenges.

Malhotra and Galletta (2003) did empirical research, based on the theories of Kelman and of Deci and Ryan. They developed an instrument to measure the various types of motivation in a health care institute. Their focus was not on the general motivation to share knowledge, but on the motivation to use a knowledge management system (KMSystem). They operationalised each of the three motivation types of Kelman and four out of five motivation types of Deci through a series of questionnaire items. They considered, strangely enough, the two models as dealing with two separate phenomena, perhaps lured by the fact that Kelman uses the term 'commitment' and Deci the term 'motivation'. They therefore performed in fact two separate analyses and did not relate the two sets of data, although coming from the same individuals.

Factor analysis of the Kelman-type data revealed that the compliance items (using the KMSystem because then one is rewarded) form a recognizable factor. The authors commented that in the setting studied, compliance motivation often resulted in "… maximizing the incentive and not necessarily on maximizing the added value by one's own contributions". And thus the danger is there that employees develop tactics to get many credits, instead of tactics to share their experiences.

The same factor analysis showed that the identification items and internalization items together formed a second factor, thus implying that social relations based motivation and value based motivation are one and the same thing. A critical observer of the questionnaire based on Kelman's theory can conclude however that the items are very abstract and sometimes not very representative of Kelman's concepts. Particularly the internalization aspect is not well represented

Factor analysis of the Deci type items showed that three separate types of motivations could be distinguished:

1. external regulation: using the KMSystem is done because 'it is required', 'it is compulsory' and 'employees are expected to do it'
2. introjected regulation: using the KMSystem is done because the person wants the boss, the colleagues and the friends to think well of them, and because he thinks bad of himself if he does not use it.
3. intrinsic motivation, which is a combination of identified- , integrated- and intrinsic regulation: using the system because it is fun, enjoyable and likeable.

Although the operationalisations may at certain points be debatable and the authors do not relate the two analyses, the two sets of data result in outcomes that fit the central ideas of the previous sections. Employees obviously distinguish between three types of incentives and motivating factors: external compulsion, expectations of valued others and the intrinsic value

of the behaviour. However, Kelman's value motivation (internalization) was not well measured, so it is still uncertain whether this is a separate fourth dimension. Some people may be more motivated by one type of factor, others by another type. It may also be that some environments and conditions (including management style) may enforce one type of motivation and other environments other motivation.

Finally, Bock and Kim (2003), starting from different theoretical viewpoints, arrived at more or less the same conclusions. They explicitly studied reasons for knowledge sharing and results from their field survey of 467 employees in four large organizations showed that 'anticipated reciprocal relationships' and 'perceived personal contribution to the organization' were the major determinants of the individual's attitudes towards knowledge sharing. 'Anticipated extrinsic rewards' were not significantly related to the attitudes towards knowledge sharing. As expected, positive attitudes towards knowledge sharing are found to lead to a positive intention to share knowledge and, finally, to actual knowledge sharing behaviours.

Process theories

While content theories draw attention to factors that act as satisfiers of basic human needs, or of incentives for work behaviour, other theories focus on the way these factors are interrelated and on the way the final motivation and behaviour is realized, i.e. on the process of motivation. Major theories of this type are the Expectancy Value theories and Social Exchange Theory.

Originally stemming from economic utility theory, various versions of these Expectancy Value theories have become quite central in social and in organizational psychology. They have been validated in many empirical studies (Vroom, 1964; Thierry, 1998). The basic tenets of these theories are that the intention to behave in a certain way depends not only on the

attractiveness (importance) of certain incentives as identified by the content theories, but also on the expectation that this behaviour, e.g. sharing information, will indeed lead to these attractive outcomes. The theories differ in the further complexity of the factors involved.

The actual behaviour of people is then a function of people's intentions (what they want), of their competence (what they themselves can do) and of situational constraints (what the environment allows them to do). In short, the actual behaviour is a function of situation, competencies and intentions, and the intentions are a function of the attractiveness and expectation concerning certain outcomes.

The Expectancy Value Theory enjoy a high popularity and are supported in many empirical studies. Their very rationalistic view on human behaviour has however been criticized. There is ample evidence that people's choices are not always derived from explicit goal setting and expectancies. According to several authors (e.g. Weick, 1979) persons often justify their behaviour by formulating *after the fact* the goals they (think they) pursued and the expectations they (think they) had. This after-the-fact motivation is then reported when asked about expectations or outcomes.

Empirical studies have resulted in the expansion of the original model. A well-known example of an extended model is the Theory of Reasoned Action (TRA) and its successor, the Theory of Planned Behaviour (TPB) (Ajzen, 1998). According to these theories, people’s intention is not only based on all kinds of beliefs about various aspects of their behaviour - together called attitude toward performing the behaviour -, but also by social pressure that is perceived by the individual to act in a certain way. Therefore, the theory in its simplest form can be visualised as in Figure 1.

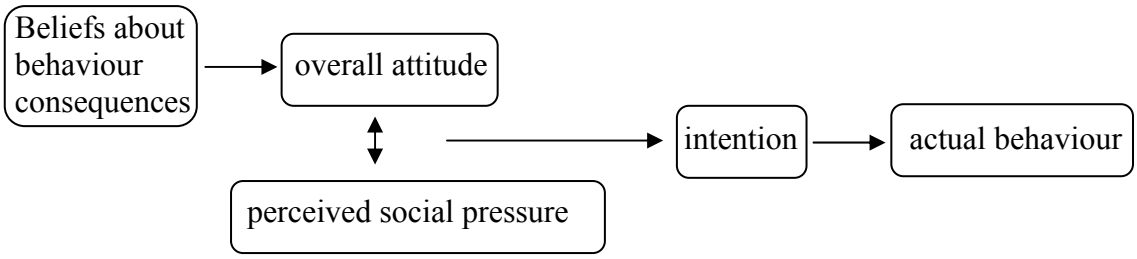

Figure 1. Theory of Planned Behaviour (Based on Ajzen, 1991)

Kolekovski and Heminger (2003) analyzed opinions about information exchange and used the TRA framework. Through literature study, they discovered a series of potentially relevant beliefs that appeared to influence knowledge sharing:

- Beliefs about information: Is the information believed to be personal 'possession' or belonging to the organization; perceived amount of information; perceived value of the information.
- Interpersonal beliefs: strength of ties between the persons involved; fear of providing wrong information; reciprocity, i.e. belief that others will also provide information to you.
- Beliefs about organisation: whether there are positive organizational norms about sharing; commitment to the organisation.
- Beliefs regarding the task: extent to which the information is believed to be related to and relevant for the task.

These beliefs are, according to the authors, determinants of the general willingness to share knowledge. They tested this hypothesis in an institute for professional training and could generally confirm it. Although the methodology applied may be criticised, the basic ideas behind this approach are quite valuable. This list of factors appears to be very useful for an instrument to assess knowledge sharing motivation.

The Social Exchange Theory (SET), developed by Kelly and Thibaut (1978) is comparable to expectancy value theory, but is particularly focused on motivation in relationships. Game theory is a very elaborated and quantified version of SET. The theory is based on, amongst others, the following principles:

- Exchange of resources is fundamental to human interaction
- People weigh costs (including time and effort) and rewards
- People anticipate on the expected behaviour of the other

Constant, Kiesler and Sproull (1994, described in Jarvenpaa & Staples, 2000) extended the original SET theory to include information sharing. They assumed that for people in organizations information and knowledge sharing are comparable to other kinds of exchange processes. In SET it is explained that exchange (of all kinds of things) is influenced by the social and organizational context in which it takes place. The theory, developed by Constant et al. called Information Sharing Theory, argues that information sharing is affected by rational self-interest as well as the social and organizational context.

Barriers

One might expect that the absence of certain of the incentives mentioned would decrease the motivation to share. The study of reasons for NOT sharing knowledge has, however, revealed that the picture is not that simple. The identification of negative factors, i.e. of barriers may enhance the understanding of knowledge sharing behaviour. These negative factors are of two types. Firstly, there is the insecurity about the value of your knowledge and fear of saying stupid things. Ardichvili and colleagues (2002) concluded from their study that the major barriers for sharing are not so much the ‘I own and keep my knowledge‘ tendency, but rather fear for criticism and not being sure that contributions are important, accurate or relevant to the discussion. Particularly (but not only) newcomers may have some of these

fears. This fear may partly be a matter of personality, partly a consequence of the overcritical reactions of colleagues.

Secondly, there are external factors that act as barriers for the motivation. These factors are already mentioned above, i.e. the situational constraints of the Expectancy Value Theory.

The literature, (e.g. Hendriks, 1999) suggests four major (clusters of) barriers for knowledge sharing: lack of time, geographical distance, lacking abilities and cognitive distance. Cognitive distance, i.e. having different perspectives, can be related to differences between people in nationality or language, but also to differences in mental and conceptual frames, due to diversity in e.g. discipline or organizational department. It is well known that e.g. marketeers and production men, or social and natural scientists, can have great difficulties in understanding each other's concepts and arguments. All four factors taken together imply that people may be hindered to share knowledge because they do not have sufficient time, are not face to face with each other, lack the necessary skills, or do not understand each other.

The research of Aken, Camps en Jurgens (1997) points at the relevance of two of these barriers in certain Dutch and American companies, where they asked employees about the barriers for exchanging experiences in communities. They found that time pressure and lack of skills were among the top five factors mentioned as barriers for knowledge sharing. Skills, at least the lack of them, are mainly a problem in The Netherlands. Probably this refers to language skills of employees in an international company.

Summarising, the theories discussed above point at various factors and processes, beliefs and expectations that together determine the intention to share knowledge with others in an organization. In several cases the discussion converge on a relatively small set of incentive clusters that motivate knowledge sharing: personal growth, reputation, the moral

value of sharing, relations with others and extrinsic rewards. However, the actual incentives and behaviour within each of these clusters may be quite diverse (see table 2). Money, but also promotions or other rewards may all satisfy the need for existence, or fall into the cluster of extrinsic commitment. So the identification of a few basic processes should be augmented by the identification of concrete outcomes and incentives, in order to be useful for the manager who is considering how to stimulate knowledge sharing.

Organizational Conditions

The previous section focused strongly on the individual's needs and intentions, on motivations and attitudes. However, in earlier sections an inventory of organisational strategies and incentives to stimulate those motivations were explicitly brought forward as the stimuli that evoke attitudes and trigger needs.

Is it possible to identify certain general organisational strategies that have influence on the motivation for knowledge sharing, in a positive or negative way? In this section, we will first refer to studies that identified specific and separate factors, while after that we focus on studies that present general organizational strategies and philosophies regarding knowledge management, and in particular regarding knowledge sharing.

The concept of 'organizational conditions' is used here in a rather broad sense. It refers to the context, but in first instance this refers to the group, department or business unit the employee is working in. Knowledge sharing motivation is determined by the characteristics of the direct environment of the employee. The general context of the organization as a whole is only relevant in so far as it determines the direct context.

Van Aken, Camps and Jurgens (1998) asked Dutch and American employees directly about barriers for knowledge sharing. The reactions of their respondents can be summarized as in table 1.

Barriers in the USA	*Barriers in the Netherlands*
1. Poor corporate policy	1. Pressure of time
2. Pressure of time	2. Lack of skills
3. Lack of support from management	3. Lack of involvement in decision-making process
4. Lack of involvement in decision-making process	4. Lack of support from management
5. Lack of support from staff	5. Fear of failure

Table 1 Perceived barriers for sharing in USA and The Netherlands (Van Aken et al. 1998)

It is striking that the number one barrier in the United States, i.e. poor corporate policy, is not mentioned at all as top-5 barrier in The Netherlands. A study of APQC (1999) agrees with the barriers in the USA, though in different order (time pressure first, corporate policy second). The barrier 'lack of time' indicates the fact that the intention to share knowledge often has to compete with intentions and motivations related to the primary work processes. An employee may be strongly motivated and capable to share, but if he is under an even stronger pressure to finalise his present project, the sharing may be postponed to a later moment, or even completely omitted.

In both countries, certain general strategies are perceived to be involved, indicated by central aspects of management style such as lack of involvement in decision making and lack of support from management. If lack of management or staff support is a barrier for knowledge sharing, the question is in what specific way management cóuld support employees in knowledge sharing. Hall (2001b) analysed the practices of many companies and identified the following concrete enhancing activities:

- Make knowledge sharing an explicit responsibility of employees;
- Encourage experimentation;
- Value all contributions, regardless of the originator's status;

- Promote communities for knowledge sharing
- Furnish employees with appropriate information and communication technology tools

The activities together reflect a management strategy that encourages and values knowledge sharing and facilitates this in various ways.

A more general approach to the analysis of knowledge management strategies is the one by Hansen, Nohria and Tierney (1999), who distinguish between a *codification* strategy and a *personalization* strategy. Great advances in the eighties in information and communication technology persuaded management to develop a codification strategy. Knowledge processes were considered to benefit enormously from investing large sums of money in 'knowledge technologies'. Procedures to elicit knowledge from employees, converting it into a systematized form, storing it in company wide repositories and stimulating people to make use of these repositories are the core activities of this strategy. And indeed, information storage, retrieval and exchange can benefit strongly from digital information systems. However, knowledge is often very implicit and tacit, it is build upon personal experiences and reflected in skills.

The codification approach with regard to knowledge has seen many failures. The reasons are diverse, but an important one is that certain knowledge, such as skills and insights, is often difficult to explicate. How do you report on the way you have painstakingly succeeded to solve a failure in a client's intranet, and the way you persuaded that client to use another system? You cannot and you do not want to do it, because you are already overburdened with the next project. Secondly, there is a psychological resistance against making this knowledge impersonal and removing it from its context. Moreover, it then rarely provides personal rewards and others may use your experiences without you knowing it. The 'knowledge is power' idea is determining your behaviour, in this case meaning 'knowledge keeping is power'. Thirdly, there may be a psychological resistance against using such a

knowledge system. Of course, basic standard documents have to be available, preferably over the company intranet. But to find solutions for specific problems people often have to search wide and far. And even then it is quite uncertain whether that piece of information is applicable to their situation. The ‘not invented here’ notion often prevents people to search for solutions in repositories of best practices filled in by unknown others.

Another way of dealing with sharing, applying and developing knowledge in organizations is what Hansen et al. (1999) called the 'personalization strategy'. In this strategy, the focus is on the exchange of tacit knowledge. That strategy emphasizes people meeting each other, interpersonal knowledge sharing through for instance master-apprenticeship relations, and so-called ‘communities of practice’. For the transfer of skills, competencies and insights, it is important to have social networks with other people. These networks generally consist of people from different and geographically distributed units of the organization and often also from outside the organization. The ‘knowledge is power’ idea here means ‘knowledge sharing is power’, because it enhances your status and position when others consult you for your expertise.

Hansen et al. (1999) suggest that an organization should not pursue a combination strategy, but choose one strategy on the basis of the type of work processes and business strategy they have. If a company focuses on a rather standard type of work processes (they give Andersen Consulting as an example) it should opt for a codification strategy. In the case of companies with customized solutions, such as McKinsey, one should opt for a personalization strategy. Others (e.g. Bruijn & Neree tot Babberich, 2000) realize that these two approaches imply competing values. Most large modern organizations are complex organizations that contain both standardized and customized processes. These companies therefore have to strike a balance between the two strategies and should be able to manage the tension between the two types of values involved.

In the view of Brink (2003), the codification and personalization strategies are reflected in certain choices with regard to three organizational dimensions, each with a series of sub dimensions:

- *Social dimension*: care, trust, empowerment, competence leverage, appraisal, knowledge crew;
- *Organizational dimension*: climate of openness, dialogue, community, organically structured organization, collaboration, learning organization, slack, knowledge champion, system integrated into daily work process, and metrics to evaluate;
- *Technological dimension*: knowledge repository, knowledge route map, and collaborative platform.

The author has tried to validate the relevance of the various (sub)dimensions in several case studies. The coherence within the three dimensions has not been substantiated, so we prefer to cluster the various sub dimensions slightly differently (see summary of this section)

The distinction between codification and personalization is also related to some studies concerning underlying philosophies with regard to knowledge and knowledge sharing, i.e. the studies by McLure, Wasko and Faraj (2000) and by Boer (2002). McLure, Wasko and Faraj (2000) identified three organisational knowledge philosophies, i.e. three ways of how knowledge can be viewed: (1) knowledge is seen as an object that can be codified and exchanged, (2) knowledge as tacit experiences imbedded in people, and (3) knowledge imbedded in communities. Each view has a different implication for motivation. In the first view knowledge is considered to be a commodity that can be exchanged and stored as other commodities. One can assume that such a view leads to a codification strategy of knowledge management. The third view leads probably to personalization approaches, but the authors go further. In this view knowledge is regarded as a public good. “When people consider knowledge as public good, people are motivated to share it with others due to a sense of moral

obligation rather than an expectation of return" (p. 156). In this way, knowledge exchange is not related to self-interest motivators, but comes from care for the community. Here again we encounter the moral value based motivation identified by Kelman (see section 3.2.1).

This view is related to Boer's (2002) 'translation' of Fiske's (1992) general model of human relationships. In Fiske's Relations Model Theory the underlying assumption is that people are fundamentally sociable. However, this sociability can have four 'faces', i.e. there are four basic forms of human relationships, that determine the way people behave towards each other: Communal Sharing, Authority Ranking, Equality Matching and Market Pricing.

- *Communal Sharing* is a relationship in which people feel to belong to a group in which each member is equal and where it is expected and natural to share resources such as knowledge.
- In an *Authority Ranking* relationship there is no such equal relation. In AR there is some sort of ranking and hierarchy. People higher in rank tell us to share knowledge, so we do so.
- *Equality Matching* is based on a balance in giving and taking. The desire for equality is then the motivator for knowledge sharing.
- In a *Market Pricing* relationship the contribution of what is given (both in terms of quantity and quality) is translated into financial or comparable value.

This theory identifies not only factors that motivate interaction, but also certain contexts that select these factors.

The Relation models theory of Fiske is 'translated' to the field of knowledge sharing by Boer (2002). In a Communal Sharing setting, knowledge is seen as belonging to all members of the group and should therefore be shared. Such a relationship is often found among professionals of the same background. Under Authority Ranking knowledge, sharing is motivated by power differences. Examples of this type of relationships are found in the

military and in many organizations. Under Equality Matching, knowledge is shared because a return is expected or someone else has shared something before, while under Market Pricing knowledge is being shared because one gets compensation for it.

Summarizing the organizational conditions for knowledge sharing, we propose the following clusters (see also Andriessen, 2005):

- Basic organizational culture, such as a tough, competitive, authoritative culture or an open, communal and learning culture
- Knowledge Management strategy: codification and/or personalisation
- Knowledge management structures: knowledge intermediaries, competence centres, communities of practice, master – apprentice relations,
- Technology support: infrastructures (intranet) and tools for exchanging information and knowledge, i.e. both repositories and communication tools.

Synthesis

A comprehensive model

The major conclusion of the preceding sections is that knowledge sharing behaviour depends on the interaction of many factors and processes. They are combined into the *Multifactor Interaction Knowledge Sharing model (MIKS model).*

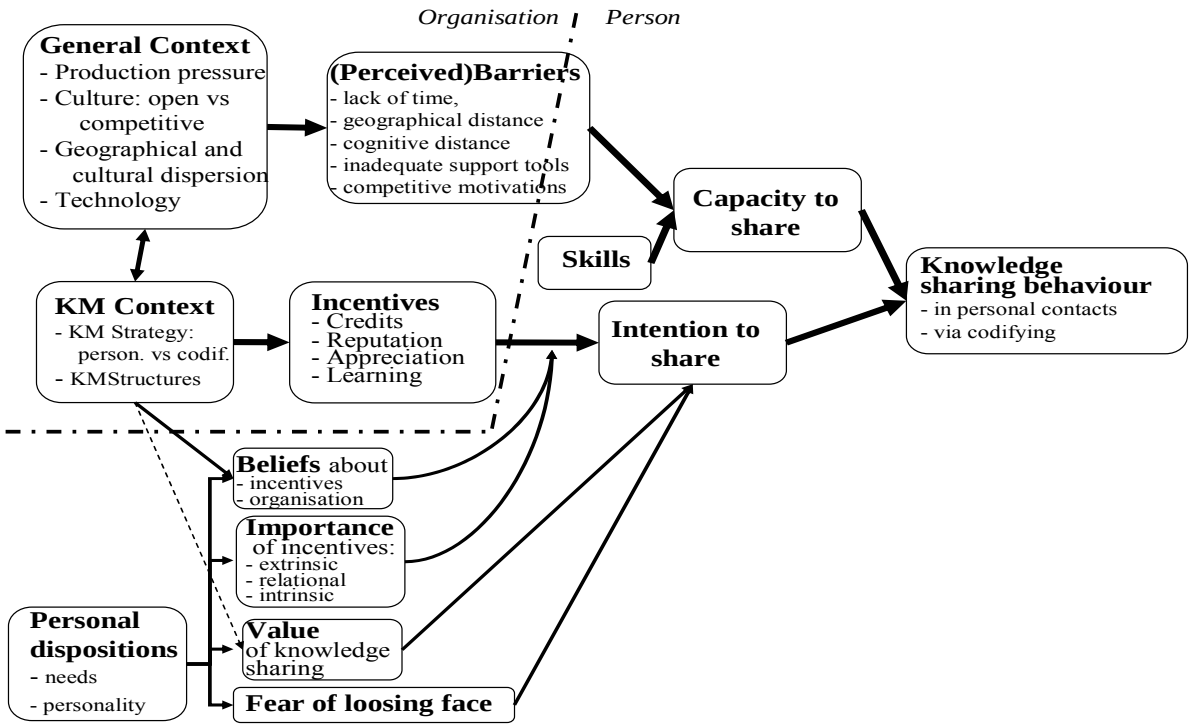

Figure 2. Determinants of knowledge sharing. The *Multifactor Interaction Knowledge Sharing model* (MIKS model):

The following basic principles govern this behaviour (see figure 2):

Principle 1. Actual knowledge sharing behaviour, whether in interpersonal contacts or by storing and retrieving repository based information, are determined by intentions and capacities.

Principle 2. Both intention and capacities are determined by the *interaction of organisational and personal factors*: intentions are determined by the interaction of incentives and beliefs / attitudes / values, capacities by the interaction of organisational barriers-as-perceived and personal skills to deal with the barriers.

Principle 3. Characteristics of the organisation have influence through two processes. Firstly the general context of production pressure, available technology and geographical and cultural distances may result in competitive motivations (high performance) and other barriers for

sharing. Secondly, the Knowledge management philosophy, strategy and structures may lead to the development of positive incentives for sharing.

Principle 4. Beliefs, value and personality have impact through several mechanisms. In this domain the following processes play a role:

- *4A: Value based motivation*: people intent to exchange knowledge because that is a basic human value and it is therefore considered as a moral obligation to do so. This value is supposed to be independent of existing incentives in the organisation (direct line between 'value' and 'intention'). However, the strength of this value may be influenced by the organisational culture concerning either competition or cooperation.
- *4B. Outcome based motivation*: Employees are motivated to share (or withhold) knowledge, because this is instrumental for attaining certain incentives such as reputation, learning (=intrinsic), acceptance or credits.
- *4C. Beliefs.* The incentives have this effect only under certain conditions: If they are considered important, if they are believed to be fair and just in comparison with what others receive and if they are believed to be the direct consequence of knowledge sharing behaviour. Such beliefs are determined by the personal feeling that one has control over the situation, and by consistency in other persons rewarding behaviour: if sharing is appreciated one moment and condemned the other, people loose the motivation to share. This conditional effect is visualised in figure 2 by the arrows from 'beliefs' and 'importance', not to 'intention' but to the relation between incentives and intention. This means that the same incentives may result in knowledge sharing by one person but not by another. The beliefs and perceived importance are to a certain degree person bound and individually different. They depend on the basic needs of a person and on certain personality aspects. Some people may have a strong disposition to suspicion or competition. They may be quite fatalistic, have a high fear of failure (=low expectation

that their behaviour leads to positive rewards) or very fearful of loosing their face. These people will by nature be less inclined to share knowledge than others, no matter how strong certain incentives may be.

- *4D. Fear of failure*. Separate attention should be given to fear of failure, also called fear of loosing face. According to some studies, this disincentive is to be found widely in organisations. This fear is the result of the interaction of personality and of the way colleagues in the organisation are accustomed to criticise each other.
- *4E.* Habit. Finally, when people have learned to share, they may continue to do so out of *habit*. This means that sharing has become almost a second nature, an automatism, which is less influenced by the existence of absence of certain incentives.

Principle 5. Organisational incentives and personal needs

As this article has shown, incentives can be of many kinds. They may be categorised in relation to the human needs discussed in previous sections.

Incentives → ***Need for*** ↓	***Positive Outcomes / Incentives*:** *People share when the following outcomes are valuable to them and when they expect that by sharing knowledge they receive those outcomes*	***Negative Outcomes / Incentives***: *People will NOT share when they dislike the following outcomes and when they expect that by sharing they will receive these outcomes*
Existence and Security	Positive annual appraisal and career opportunity / Job security / Career advancement / hard rewards	Bad performance (rating) because sharing takes time Loose job because knowledge becomes codified and used by others.
Relations	Become and remain member of a particular group / community / Accepted by others / Group commitment	Get criticism because direct colleagues do not want the person to share with others outside the group
Status	Acknowledgement of expertise / reputation	Fear of loosing face, because information may be bad or not relevant, or already well known by others.
Power	Gain power by showing expertise	Loose power because others use information given by the person
Achievement and Self actualization	learning and personal growth / fun and satisfaction	

Table 2. Knowledge sharing incentives related to needs

Principle 6. Organisational culture, structure, management and technology. The general nature of an organisation has influence on knowledge sharing, through the development of structures and incentive policies, but it has also a direct effect on beliefs, attitudes and values of the employees. In the previous sections, we have encountered the following dimensions of organisations:

- Basic forms of human relationships: Communal Sharing, Authority Ranking, Equality Matching and Market Pricing (Fiske, 1992)
- Codification and personalisation strategies of knowledge management (Hansen, Nohria & Tierney, 1999)
- Three dimensions of organising (Van den Brink, 2003): social dimension (trust, empowerment etc.), organizational dimension (existence of communities, project teams, knowledge champions etc) and technological dimension (availability of knowledge repositories, collaborative platforms etc.).

We have grouped these dimensions into four clusters, i.e. organizational culture, knowledge management strategy, organizational structure and technology.

Assessing knowledge sharing and its conditions

Measuring the motivation to share knowledge and the organizational incentives and barriers is useful, both for research purposes and for company management. The concepts and theories in the previous sections can provide the basis for developing assessment instruments. The type and content of these instruments will vary, depending on the objectives of researcher or manager. One can distinguish two objectives:

1. Assessing *employee perceptions*, i.e. the actual intention to share knowledge and the way employees perceive barriers and conditions for knowledge sharing in their organizational units. This assessment is performed optimally by applying a semi structured interview

schedule or a closed questionnaire to all or most members of these units. The actual intention can be measured by a scale that is part of a larger instrument assessing the functioning of communities of practice (Andriessen & Verburg, 2004). Many issues presented in the previous sections can be used as a basis for constructing interview or questionnaire items concerning the perceived conditions.

2. Assessing *structural conditions* for knowledge sharing in particular organizational units, through a checklist for a key informant in those units. This assessment could deal with two types of information:

- Measuring the existence of organizational arrangements, such as the existence of and support for knowledge communities.
- Measuring the organizational philosophy by asking normative questions, such as: "To what extent do you agree with the following statement: If you don't reward people explicitly they do not share knowledge".

The Appendix contains a list of issues that can form the basis for these assessment instruments

Conclusions and recommendations

In this article many theories concerning knowledge sharing motivation have been discussed and to some extent integrated in a comprehensive model. In this way, a number of potentially relevant factors and processes have been identified. Nevertheless, the final answers about the best way of stimulating knowledge sharing have not been given. Are direct rewards in terms of money or comparable credits effective? There are indications that they may work in the short run, but that in the long run they will evoke negative strategic behaviour. It is probably

better to develop a general culture that supports cooperation and sharing, but such a culture should be supported by concrete measures, processes, functions and structures.
Definitive and generic answers should not be expected anyhow, not only because of scarcity of research results but also because certain answers depend on the setting, i.e. on the type of company and employees, the type of knowledge and the context in which the knowledge is shared. Moreover, the concept of "knowledge sharing" appeared to be complex in two dimensions. First knowledge sharing in interpersonal contact, such as in meetings, communities or a telephone call, is quite different from knowledge sharing by codifying the knowledge in databases that can be accessed by anybody with the right kind of connection.

Secondly, providing knowledge is not the same as seeking knowledge and the conditions promoting these behaviours are overlapping but not identical. Assessing knowledge sharing behaviour and conditions should take into account these differences.

Appendix. Items regarding conditions for knowledge sharing

This checklist is based on the theoretical and practice based literature discussed in the article. It is not yet tested in the field. In its present form it can be used as a tool to make a 'first scan' concerning factors that determine or hinder knowledge sharing. The results should be used as stimulus for group discussion.

Some items may be separately formulated concerning a) sharing in personal contact, and b) storing in and retrieving information from a database.

The intention to share knowledge

- Extent to which people are willing to share knowledge with others

  - Extent to which some knowledge is so valuable to persons that they would not easily share it with others

  - Extent to which colleagues are reluctant to talk about things that have gone wrong in their projects/ work

Rewards and incentives

- Extent to which external rewards are stimulating knowledge sharing

  - Earning credits or financial bonuses.

  - Positive annual appraisal and career opportunity

  - Job security

- Extent to which relationships are stimulating knowledge sharing

  - Being appreciated well by leader or colleagues

  - Become and remain member of a particular group / community.

- Extent to which status, reputation are stimulating knowledge sharing

  - Acknowledgement of expertise / reputation

  - Gain power by showing expertise – OR: Keeping knowledge is power

  - Receive an expert or master status

  - Receive company-wide recognition and esteem

- Extent to which the achievement of novelty and challenges are the reasons why people share knowledge

  - Interesting exchanges of information and knowledge

  - Learning and personal growth

  - Fun and satisfaction

  - Achieving pride and because then 'I feel great about myself'

Extent to which sharing knowledge is considered to be a value in itself

- People feel that they have a moral obligation to share knowledge

- Knowledge is considered to be a public good

- Knowledge is considered to belong to the organisation, not as a personal possession

Beliefs about negative rewards and barriers:

Extent to which knowledge is not (optimally) shared because of:

- Insecurity about the value of the knowledge, not being sure that contributions are important, or relevant to the discussion.

- Fear for criticism

- Uncertainty about the accuracy of the information one has; fear of providing wrong information

- Difficulties in understanding each other because of differences in background, discipline, culture, etc.
- Production pressure and lack of time
- Insufficient face-to-face contact with others
- Fear of loosing job because knowledge becomes codified and used by others
- Lack of adequate skills

Positive managerial practices:

Extent to which (people know that) management …:

- encourages and supports knowledge sharing
- makes knowledge sharing an explicit responsibility of employees
- values all contributions, regardless of the originator's status
- promotes communities for knowledge sharing
- has set up special departments and/or staff members to promote knowledge sharing
- provides employees with appropriate information and communication technology tools, i.e. availability of the adequate, useful and accessible ICT tools:
    - intranet, portals
    - databases
    - expert finding tools
    - communication tools (email, chat, videoconferencing)
    - groupware for cooperative work

Organizational culture

- Authority Ranking

- People in this organisation share knowledge only when they are ordered to do so

- Knowledge sharing is a rule; employees are required to do it.

- Communal sharing

- People here share knowledge because there is a culture in which they trust each other

- People here share knowledge because they feel to belong to a group in which each member is equal and where it is expected and natural to share knowledge.

- Knowledge sharing is considered a normal part of the professional job

- Equality Matching

- People here share knowledge only as long as they also regularly receive knowledge back

- Extent to which people belief that others will easily provide information to them

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