Chapter 7

Trust: its different facets as antecedents of knowledge sharing in virtual communities of practice

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Abstract

Understanding the role of trust in facilitating knowledge sharing behaviour within virtual communities of practice is an area that lacks both theoretical and empirical investigation. This research attempts to fill this gap by conceptualising trust across three dimensions: competence, integrity, and benevolence; testing hypotheses as to the effect of these facets of trust on knowledge sharing by surveying a virtual community of systems thinking practitioners within a global organisation that engages in information systems integration and IT outsourcing. The results indicate that all three dimensions of trust are positively related to knowledge sharing behaviour. The findings suggest that the dimensions of trust buttress each other. However, we highlight that further research is required to better understand the dynamics of trust within online communities. Nonetheless, this research challenges system developers to integrate trust-building functionality to enable history and transparency of data which provides confidence in future behaviours. Knowledge management practitioners also have to encourage competence, integrity and benevolence in employees, who are potential members of on-line communities of practice.

Key words:

Knowledge sharing, trust, communities of practice, knowledge management, on-line communities.

Introduction

The management of the knowledge base of organisations is becoming an area of strategic focus for many knowledge-intensive organisations (Ruggles 1998; Beaumont and Hunter 2002). Indeed, knowledge is unique as an organisational resource in that most other resources tend to diminish with use; the potential for growth in knowledge resources increases with use, as "ideas breed new ideas, and shared knowledge stays with the giver while it enriches the receiver" (Davenport & Prusak 1998: p. 16-17). Hence, understanding key knowledge management (KM) processes is a growing area of organizational research efforts (Scarbrough et al. 1999).

Within the KM field, there is a widespread acceptance of the role of communities of practice (CoPs) as a key KM enabler (Wenger et al. 2002; Scholl et al. 2004). CoPs have been described as groups of people "informally bound together by shared expertise and passion for a joint enterprise" (Wenger and Snyder 2000: 139), "playing in a field defined by the domain of skills and techniques over which the members of the group interact" (Lesser and Storck 2001: 831). Such communities provide a rich locus for the creation and sharing of knowledge both within and between organisations (Brown and Duguid 1991; Lesser and Everest 2001). Information and communication technologies are now extending the boundaries of traditional face-to-face communities by creating virtual communities that enable global asynchronous and real-time collaboration (Hildreth and Kimble 2000). These communities may exist primarily, or solely, online and become largely dependent on computer-mediated communication to connect members.

However, the availability of information systems does not automatically induce a willingness to share information and develop new knowledge (Nahapiet and Ghoshal 1998). Indeed, research has found that social interaction that is mediated by online technologies can be less effective than face to face meetings (Preece 2000). Despite such limitations of technology, research has shown that emotional attachments can develop online, despite a lack of face-to-face contact (Rheingold 1993; Sharp 1997; Preece 2000). The building of trust is an important social process that is widely accepted as a prerequisite to cooperation (for example: Gambetta 1988; Ring and Van de Ven 1994; Mayer et al. 1995;

Nahapiet and Ghoshal 1998; Wang and Ahmed 2003). Research has shown that levels of trust influence the exchange of resources between intra-organisational business units (Tsai and Ghoshal 1998) and research investigating knowledge sharing has found trust to be important in the receipt of useful knowledge (Levin et al. 2002). It logically follows that virtual communities that fail to develop trusting relations will restrict the development of knowledge-sharing activities.

While Levin et al.'s research focused on the receipt of knowledge, there appears to be little current understanding as to the importance of trust in the provision of knowledge in general, and specifically within the context of virtual communities of practitioners. Ardichvili et al. (2003) conducted an exploratory study into the factors that affect knowledge sharing within intra-organisational virtual communities of practice. Their findings identify a lack of understanding of the role of trust in the provision of knowledge. Our paper takes up this challenge by investigating the role of trust, in its many guises, in the provision of knowledge within a virtual community of practitioners.

The following section sets out our operational definitions of knowledge sharing and trust. This leads to the development of a number of hypotheses as to the relationship between three facets of trust and knowledge sharing. We discuss the design of the empirical research, and test the hypothesised relationships. Findings are then presented and reflected upon. We conclude the paper with future research directions and discuss the implications and limitations of this study.

Operational definitions

Knowledge is an intangible resource and is thus difficult to measure. Indeed, a review of the literature has established that knowledge sharing in not well defined for the purposes of empirical research. In order to understand knowledge sharing, it is necessary to define what we mean by knowledge, and how this relates to information and data.

Knowledge, Information and Data

Knowledge can only exist in the mind of the individual (Van Beveren 2002). It is through knowledge that we perceive the world around us; knowledge largely determines how we interpret and respond to external

stimuli. Hence, knowledge often determines action. Knowledge is acquired through a process of action and reflection (Argyris & Schon 1978). Within this process, the interaction and communication of two or more individuals can lead to the exchange and sharing of knowledge. Here, information facilitates this process and acts as a communicatory representation of knowledge.

Data is the raw component of information. Intrinsically, data contains no meaning; data becomes information when framed within a meaningful context. On their own, the numbers 56 and 1648 are just items of data. Framed within a context, such data may provide information, for example, the number 56 bus is due at 16:48 hours. Hence data is transformed into information. It is knowledge which provides the context that creates information from data and it is through the interpretation of such information that new knowledge may be acquired. Hence, information and knowledge intrinsically facilitate the knowledge-sharing process.

Knowledge Sharing

As we have described, knowledge per se cannot exist outside the mind of the individual. Knowledge sharing involves a process of communication whereby two or more parties are involved in the transfer of knowledge. This is a process that involves the provision of knowledge by a source, followed by the interpretation of the communication by one or more recipients. The output of the process is the creation of new knowledge. Hence, knowledge sharing is defined as a process of communication between two or more participants involving the provision and acquisition of knowledge. Indeed, the communication can take many forms, using both verbal and non-verbal mechanisms, with or without the use of technology.
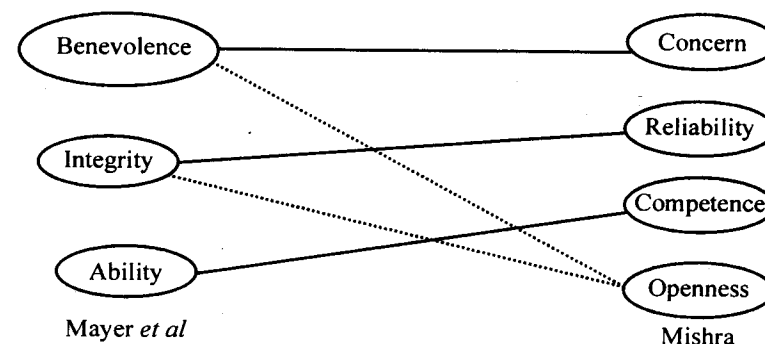
Trust

Trust is a concept about which there is much debate (Kramer & Tyler, 1996). The definition of the concept lacks consensus in the scientific community (Fisman and Khanna 1999; Adler 2001), although there appears to be agreement that the construct of trust is both complex and

multifaceted (Simons 2002). Fukuyama (1995) views trust as "the expectation that arises within a community of regular, honest, and cooperative behaviour, based on commonly shared norms, on the part of the members of the community" (p. x). This view of trust based on the expectation of honest and cooperative actions is shared by many (for example, Gambetta 1988; Mishra 1996; Bhattacherjee 2002). Mayer et al. (1995) define trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (p. 712). Both definitions above relate to a confidence in others' future actions, with Mayer et al. extending their definition by arguing that in order to be vulnerable, one must be willing to take a risk based on the trusting relationship. An important distinction is that Fukuyama views trust as based on shared norms within a group whereas Mayer et al. approach their definition from a dyadic level, analysing the existence of trust between two individuals.

Simons (2002) agrees with Mayer et al.'s (1995) definition of trust which definition is often cited in literature. Mayer et al. identify three attributes of another party in which perceptions of trust can be based, namely, benevolence, integrity and ability. This can be seen to extend Fukuyama's definition of trust by incorporating ability as a specific antecedent to trust. Mishra (1996) goes further by defining four dimensions of trust: concern, reliability, competence and openness. While concern, reliability and competence can be seen to mirror benevolence, integrity and ability, respectively, Mayer et al. (1995) highlight the overlap of the openness dimension with their benevolence and integrity dimensions, arguing that "Mishra's openness is measured through questions about both the trustee's general openness with others and openness with the trustor, which could be expected to be related to either integrity or benevolence, respectively" (p. 722). Figure 1 presents the overlap (mapping) of the two definitions of trust. Given the discussion in this section, and in the interests of parsimony, we adopt Mayer's conceptualisation of the three characteristics of another party in which trust may be held.

Figure 1 : Mapping between Mayer et al. (1995) and Mishra's (1996) definitional components of Trust

Mayer et al   Mishra

Conceptual Model: Trust as an Antecedent to Knowledge Sharing

In virtual communities, trusting relations can emerge without any direct social interaction due, in part, to the transparency of online communications. A newcomer typically has access to an electronic record of previous discussions and access to knowledge-based assets held in the community's common repositories. Perceptions of trustworthiness based on competence, honesty, benevolence and behavioural reliability provide confidence in future actions, and can be fostered by the high degree of openness and visibility surrounding online communications within virtual communities. This in turn fosters greater levels of cooperation, and discourages opportunistic behaviour (Fisman & Khanna, 1999).

Ability- or competence-based trust exists when an individual believes that another party has knowledge and expertise in relation to a specific domain (Jarvenpaa et al. 1998). This facet of trust can be related to the fear of losing face that Ardichvili et al. (2003) identified as one of the main barriers to knowledge sharing in online communities of practice. For example, if a member's perception of her own competence is significantly lower than the level of competence that she associates with the virtual community, then the motivation to publicly share her knowledge may be affected due to the fear of criticism or ridicule. This suggests a causal link between one's perceptions of the community's

ability and engagement in knowledge sharing, whereby high levels of competence-based trust could restrict the knowledge shared with a community. However, whereas this argument appears to make logical sense. the converse does not logically hold. Where a member perceives a community to be of low competence, such a perception is unlikely to encourage knowledge sharing. In fact, such perceptions are more likely to discourage any form of voluntary participation in the community.

Another dynamic emerges when we consider the perspective of competence-based trust in motivating community participation. According to Lave and Wenger's (1991) theory of situated learning, a newcomer to a community of practice becomes involved in a transition, over time, from peripheral participation in the practice towards becoming a masterful practitioner. This process involves a member learning by becoming situated within the field of the community's practice. Within virtual CoPs, the process of situating in the community's practice involves members creating and sharing knowledge by engaging in intellectual exchange through their participation in the community's computer-mediated communications. By sharing and developing ideas, by testing and validating assumptions, by discussing, problem solving and generally striving to become more competent practitioners, the community members are able to engage in the mutual development of both their own knowledge and the community's pool of expertise. With this ongoing process, members engage in the development of cooperative and trusting relations whilst simultaneously developing knowledge of what it means to be a competent and masterful practitioner (Nahapiet and Ghoshal 1998). Within this process, we define a member's passion for the practice as the desire to become a more competent practitioner and to engage in the community's practice. Where a member's passion for the practice is high, the member will be more likely to seek engagement and interaction with a community of competent practitioners.

From this perspective, the role of competence-based trust can be seen both as a potential enabler and barrier to community participation. When motivated by a passion for the practice, sharing knowledge with a community one perceives as highly competent becomes an intrinsically rewarding experience. The rewards derived from the consensual validation received from a community held in high regard can act as a motivator to members to share their ideas, thoughts, and insights.

MacMillan and Chavis (1986) discuss the process of consensual validation, describing how "people will perform a variety of psychological gymnastics to obtain feedback and reassurance that ... what they see is real and that it is seen in the same way by others" (p. 11). In communities of practice, consensual validation may go further, acting as a mechanism that represents a member's transition from peripherality to central participation; in effect validating a member's standing within the community. Thus, the community's consensual validation may act as a form of recognition, establishing and confirming one's status as a knowledgeable practitioner.

Conversely, sharing knowledge with a community one perceives to be of low competence will be an inherently less rewarding experience. Not only is the value derived from the community's validation reduced but member's perception of their self worth is also diminished by identifying and participating within a community perceived to be of limited competence.

From the above discussion, we have identified a different dynamic that the role of competence-based trust may play in terms of enabling and disabling community participation in general, and knowledge sharing specifically. It is possible that the motivating effect driven by the opportunity to become a competent practitioner could potentially overcome the fear of losing face identified by Ardichvili et al. (2003). Likewise, it is equally possible that fear of losing face will be the dominant force. In other words, we can consider fear of losing face as a moderating variable such that if it exists at intense levels could change from positive to negative the relationship between competence and knowledge sharing. Based on this uncertainty, we propose the following hypothesis.

H_1: One's degree of trust in the competence of a community is related to one's engagement in knowledge sharing with the community.

A shared interest in the community's practice can foster the development of a sense of community amongst members through a process of identification between members. The process of identifying with a community enhances the individual's concern with collective processes and group outcomes (Kramer, 1996, in Nahapiet & Ghoshal, 1998), and has been found to relate to expectations of benevolent behaviour and com-

munity participation (Chavis & Wandersman, 1990). Where the sense of community is strong and benevolence is high, community members are more likely to perceive knowledge as a public good, owned and maintained by the community. Wasko and Faraj (2000) note:

"With a public good, the economically rational action is to free-ride. [However,] the motivation to exchange knowledge as a public good goes beyond the maximisation of self-interest and personal gain. People do not act only out of self-interest, but forego the tendency to free-ride out of a sense of fairness, public duty, and concern for their community ... People often behave altruistically and pro-socially, contributing to the welfare of others without apparent compensation" (Wasko & Faraj, 2000: 161-2).

From the public good perspective, knowledge sharing can be viewed as self-motivated through a sense of moral obligation and a general desire to be part of something larger. Such pro-social behaviours lead to the emergence of trust based on the perceived benevolence of the community, whereby members expect that help will be reciprocated should it be requested.

Conversely, if one's sense of a community's benevolence is low, expectations of future reciprocity may likewise be low, and knowledge sharing is unlikely to be fostered. Furthermore, if low perceptions of a community's benevolence are combined with high perceptions of the community's competence, this may exacerbate the fear (of losing face) barrier discussed above. Benevolence-based trust will contribute to overcoming the fear of losing face by creating the confidence that one will not be criticised or made to look foolish when engaging publicly in sharing one's knowledge.

Further to this, knowledge sharing can be viewed from the perspective of Bar-Tal's (1976) theory of Generalised Reciprocity. From this perspective, the beneficiaries of knowledge-contributions are likely to seek to reciprocate benevolent actions with the collective, where direct reciprocation is not possible. Hence, we put forward the following proposition:

H_2: One's degree of trust in the benevolence of a community is positively related to one's engagement in knowledge sharing with the community.

Integrity is a much debated concept within the trust literature. Sitkin and Roth (1993) discuss how perceptions of integrity-based trust are

engendered within organisations by the perception of congruence between an individual's values and the core cultural values of the organisation; the authors' premise being that perceptions of value incongruence will foster feelings of distrust. This perspective sits close to Mayer's et al.'s definition of integrity-based trust based on "perceptions that the trustee adheres to a set of principles that the trustor finds acceptable" (p. 719). Mayer et al. elaborate on this understanding by defining a number of factors that influence the creation of integrity-based trust, such as: the independent verification of the trustee's integrity from reputable third parties; perceptions that the trustee holds an acceptable level of moral standards; and demonstration of consistent behaviour including congruence between a trustee's actions and words. The focus on the alignment between an actor's actions and words is defined by Simon's (2002) as behavioral integrity; he describes this as the extent an individual is perceived to "walk her talk", adding that, conversely, it reflects the extent to which she is seen to be "talking her walk" (p. 19). Hence, trust in the integrity of a virtual CoP might be thought of as based in part on the compatibility of the community's cultural values with those of the trusting member, the credibility of the community's reputation, and the consistency of community members' past behaviour which includes the extent to which actions are congruent with words.

What can be derived from this understanding of integrity is that such perceptions are rooted in past behaviour. Consistent and reliable past behaviour creates confidence in future actions. If a member expects that other members' future behaviour may lack integrity, for example, by acting dishonestly, unreliably or in a manner that is otherwise incongruent with her personal values, she is not likely to readily engage in sharing knowledge with the community. Conversely, she is likely to be more willing to engage in cooperative interaction where perceptions of honesty and expectations of behavioural reliability are high. Hence,

H_3: One's degree of trust in the integrity of a community is positively related to one's engagement in knowledge sharing with the community.

Figure 2 : The Antecedence of Trust to Knowledge Sharing
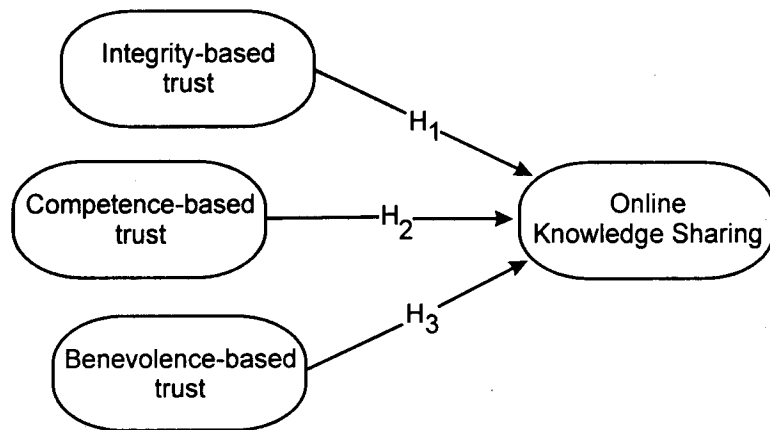
Methodology

Data Collection

For the fieldwork, CSC, a Fortune 500 global IT services organisation provided access to a suitable virtual community of practitioners. CSC employs over 79,000 people worldwide specializing in business process and information systems outsourcing, systems integration and consultancy services. The company have been focussed on knowledge management, and have been operating multiple online 'knowledge communities', for a number of years.

Interviews with a number of community leaders were held to develop an understanding of the role of the communities and the mechanisms used to share knowledge. Access was granted to survey the organisation's Systems Thinking Community, a global online competence-based group of over 400 members that had been in existence for over 4 years. The community's main purpose is to improve the organisation's business performance by applying the tools of systems thinking. The community develops decision simulation models by running online systems thinking courses via the Portal. with online workshops using Lotus SameTime. Membership and participation is entirely

voluntary. and when the survey was conducted. 120 of the members were actively engaged in the current course. Members received a link to the survey sent out by email.

Measurement Development

Knowledge sharing

As knowledge sharing involves two or more participants engaged in the provision and acquisition of knowledge, it can therefore be measured from the perspective of both the source and the recipient of the exchange. However, this research addresses the role of trust in the provision of knowledge. Given that in the context of online communities there may be multiple recipients of shared knowledge, some of whom the provider may be unaware of, a logical approach to measuring knowledge sharing would be to understand how to tap into the construct from the source's perspective. Hence a number of metrics were devised to measure the provision of knowledge from the perspective of the knowledge source .

When measuring specific behaviour, frequency of engagement in that behaviour is often used as an indicant (for example, Yoo et al. 2002). However, we argue that in relation to knowledge sharing, such an approach in itself is deficient. Knowledge is intangible; therefore it cannot be easily quantified. The frequency of engagement in knowledge sharing behaviour does not indicate the quality, usefulness or value of the knowledge provided or acquired. For example, a single contribution could have more value than ten contributions combined. Hence, measures that tap into both the quality (A5-A8) and quantity (A1-A2) of an individual's provision of knowledge were developed. Finally, the degree to which an individual feels that they engage in knowledge sharing will provide an indication of the individual's knowledge sharing orientation. Hence. knowledge sharing focus was measured as a third dimension of knowledge sharing behaviour; two measures were developed to tap into this dimension (A3-A4).

Trust

McKnight et al. (2002) developed the Trusting Beliefs Scale. which measures the degree an individual believes another party to be trustworthy. The original scales were designed for examining levels of trust held

in online vendors and have been adapted to fit the context of this study . C1-C3 measure the degree to which one perceives a community to be highly benevolent, C4-C7 measure the degree to which one perceives a community to behave with high integrity, and C8-C11 measures the trusting belief in the competence of the community.

Data Analysis

After partially completed and spoiled questionnaires were removed, 75 usable responses were left, representing a response rate of 18%. This response was appreciated given that only 27% of the community members were actively engaged in the current course. Furthermore, Saunders et al. (2000) have pointed out how time poor modern organizations can be with regards to research, and this is emphasized with multi-national organizations such as this study was based. The responses were received from members primarily based in the US (45%), UK (34%) and Australia (11%). Members based in Switzerland, Spain, Denmark and India made up the remaining 10%. The respondents were predominantly male (81%), with the average length of tenure being 5 years, 10 months.

Validity and Reliability of Measures

By ensuring that the measurement scales are both valid and reliable, we can increase the credibility of the conclusions that can be drawn by minimising the risk of measurement error confounding the results. The validity of a measurement scale is "the degree to which it is free from any systematic or non-random error" (Hair et al., 1998: 90). In other words, the extent to which the measures accurately represent the construct that they are intended to measure. David and Sutton (2004) describe construct validity as "assessing how well the measurement conforms to the theoretical model. The assessment of construct validity is dependent upon the strength of the original theory" (pp. 172-3).

Firstly, the operationalisation of constructs was firmly rooted both in theory as well as existing literature, and the measures used for trust were adapted from previously validated scales. Secondly, content validity, which provides additional foundation upon which to establish the validity of construct measurements, was tested by asking two of the community leaders and two senior academics for feedback on the

validity of the scales. Following this feedback, a number of the measures were reworded to aid clarity. A negatively loaded question was incorporated into the survey as a reliability check.

Convergent and Discriminant Validity

Convergent validity is a measure of the degree to which two measures that are purported to measure the same construct are correlated; discriminant validity measures the degree to which two conceptually similar constructs are distinct (Hair et al., 1998). Convergent and discriminant validity can be evaluated via the loadings of each indicator (Wasko & Faraj, 2005).

Table 1 demonstrates that each item loads higher on the expected construct than on other constructs. The cross-dimension loadings are high (.66 - .80) across the four dimensions of our knowledge-sharing construct, which is conceptually interesting as this clusters together the qualitative and quantitative aspects of knowledge-sharing. However, the cross-dimension loadings are also high (.48 - .70) across the three facets of trust, which demonstrates that the three trust sub-constructs are only mildly discriminant from each other. In order to better understand the relationship between the theoretical constructs, a principal components analysis was conducted. As we hypothesised a relationship between the trust and knowledge sharing constructs, an oblique rotation was used (McKnight et al., 2002). Following theory and specifying one knowledge sharing and three trust factors we have the results in Table 2.

Considering Table 2, the items generally cluster at their expected factor groupings except the integrity item "The community would keep its commitments" (6 T_INT) which rather loads on the benevolence factor (0.70). A follow up interview is a possible means of discovering why the respondents apparently understood that item to refer to community benevolence rather than integrity. Meanwhile, the discussion section has provided some explanation why this could be the case.

Table 1.   Factor Analysis. Constructs and Item Wording

Item	Quantity of Contributions	Knowledge Sharing Focus	Quality of Contributions	Knowledge Sharing Value	Benevolence-based Trust	Integrity-based trust	Competence-based trust
A1: I frequently share my knowledge with others in the community.		0.79	0.81	0.79	0.34	0.40	0.33
A2: I am one of the more active contributors within the community.		0.71	0.71	0.71	0.35	0.32	0.24
A3: I make a conscious effort to spend time engaged in activities that contribute knowledge to the community.	0.78		0.76	0.80	0.37	0.42	0.40
A4: I try to share my knowledge with the community.	0.69		0.81	0.72	0.31	0.46	0.42
A5: Other community members find my knowledge-sharing contributions to be useful.	0.71	0.70		0.70	0.28	0.38	0.32
A6: My contributions to the community enable others to develop new knowledge.	0.72	0.78		0.71	0.27	0.41	0.29
A7: I am a knowledgeable contributor to the virtual community.	0.78	0.78		0.76	0.17	0.33	0.27
A8: The knowledge I share with the community has a positive impact on the business.	0.66	0.73		0.69	0.33	0.47	0.42
A9: Overall, I feel the frequency and quality of my knowledge-sharing efforts are of great value to the community.	0.80	0.82	0.80	0.90	0.23	0.34	0.28
C1: I believe that the competency group's virtual community would act in my best interest.	0.26	0.28	0.17	0.14		0.60	0.53
C2: If I required help, the community would do its best to help me.	0.23	0.27	0.19	0.10		0.67	0.48
C3: The community is interested in my well-being, not just its own.	0.43	0.39	0.37	0.34		0.57	0.54
C4: The community is truthful in its dealings with me.	0.43	0.53	0.54	0.46	0.53		0.66
C5: I would characterise the community as honest.	0.21	0.32	0.33	0.20	0.56		0.67
C6: The community would keep its commitments.	0.36	0.39	0.30	0.25	0.70		0.57
C7: The community is genuine and sincere.	0.27	0.33	0.31	0.23	0.63		0.64
C8: The community is a competent and effective source of expertise.	0.29	0.42	0.36	0.24	0.57	0.69	
C9: The community performs its role of sharing knowledge very well.	0.34	0.41	0.32	0.30	0.58	0.67	
C10: Overall, the community is a capable and proficient source of expertise and knowledge.	0.24	0.40	0.29	0.23	0.54	0.67	
C11: In general, the community is very knowledgeable.	0.21	0.34	0.34	0.24	0.50	0.67	

Table 2 : 4 Factor Extraction - Oblimin

	1	2	3	4
K-SHR7	0.92			
K-SHR9	0.91			
K-SHR6	0.90			
K-SHR1	0.88			
K-SHR2	0.82			
K-SHR3	0.82			
K-SHR4	0.81			
K-SHR5	0.79			
K-SHR8	0.79			
11 T_CMP		0.90		
8 T_CMP		0.89		
10 T_CMP		0.86		
9 T_CMP		0.82		
1 T_BEN			0.85	
2 T_BEN			0.73	0.45
6 T_INT			0.70	
3 T_BEN			0.67	
5 T_INT		0.38		0.57
4 T_INT	0.33	0.37		0.50
7 T_INT			0.40	0.47

Rotation Method: Oblimin with Kaiser Normalization.
a   Rotation converged in 11 iterations.

Discussion, limitations and future research directions

All the three trust factors positively relate to knowledge sharing in on-line communities of practice thus upholding all the three hypotheses of this study. Each will now be discussed in this section, but before

then, let us consider the limitations of this study. Future research directions are included in the subsections.

Limitations

Knowledge sharing was measured from the sharer's (giver's) perspective but the receiver's point of view can be complementarily interesting. A future research could endeavour to tackle this and perhaps compare and contrast the two perspectives.

This study also inherits the usual survey limitation, namely, reliance on the honesty of free-willed respondents. Besides, it could be argued that the sampling frame was to some extent predisposed to exhibit positive values of trust in knowledge sharing bearing in mind that they voluntarily joined the virtual community for the purpose of sharing knowledge. Though difficult, it perhaps would be interesting to include in the sample dropout members of the community. Nonetheless, we cannot dismiss the findings of this study since it primarily examined the subcomponents of trust rather than the causes of low or high trust levels.

Finally, this study centred on a single community of practice. It may be instructive and complementary to repeat the study in other communities of practice.

Competence-based Trust

The positive hypothesis tests true that competent-based trust positively influences knowledge sharing in virtual communities. This finding is in line with recent organisational research that regards integrity (and competence) as paramount to trust (Adler, 2001). As pointed out by Ardichvili et al (2003, p 73) there was need to verify that competence (and integrity) are major components of trust in virtual communities of practice. This verification is what this finding of the study has done. Of the three trust factors, competence is the one that has all its original items clearly clustered together. The more a virtual community is competent (knowledgeable, capable and effective), the more its members will be inclined to share knowledge.

At least from the sample used, it can be said that the passion for knowledge had a greater effect than fear of losing face. It is however

suggested that a future study takes a closer look at the moderating influences of these two variables. Figure 3 outlines how their influences could be conceptualised.

Figure 3 : Moderating influences of fear of losing face and passion for knowledge
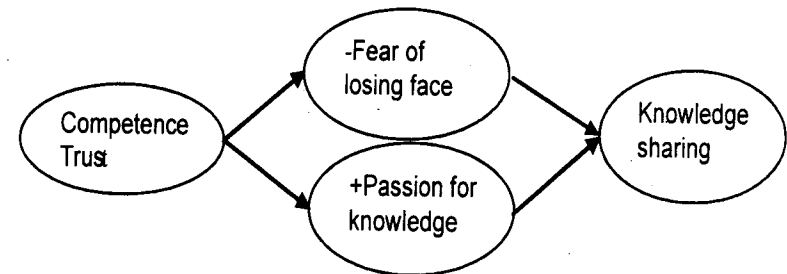
Fear of losing face should dampen the positive influence of competence trust on knowledge sharing whereas passion for knowledge should do the opposite (cf Ardichvili et al. 2003; Nahapiet and Ghoshal 1998). For arguments supporting the existence of these moderating variables, please refer to section 3.

Benevolence-based Trust

Items C1 (community would act in my best interest) and C3 (community is interested in my well-being, not just its own) clearly cluster together and support hypothesis 2 that benevolent trust positively affects the level of knowledge sharing. When it comes to C2 (if required, the community would do its best to help me), the highest loading (0.73) is on the benevolence factor but another loading (0.45) is on the integrity factor. This might suggest that respondents perceived the community's willingness to do the best to help its members as not only benevolence but also an integrity attribute. However, this suggestion should not be taken too seriously as the loading of 0.45 is not statistically significant.

On the whole, benevolence stands out as a component of trust that affects knowledge sharing in on-line communities of practice. This finding is in consonant with earlier research that include benevolence as a component of trust (cf Tschannen-Moran, 2000, pp 314, 318).

Integrity-based trust

Though they mostly cluster on the expected factor, the integrity items are the most problematic. In the first place, the fact that the community would keep its commitments (C6) is perceived by respondents as benevolence instead of integrity. This could be because, even though they also acted as givers of knowledge to each other, the respondents regarded themselves more as students of the community; taking knowledge from the community to apply to their work situation (see section 4.1); thus, regarding themselves as beneficiaries of the integrity of the community. Another line of reasoning is that if the community is viewed as a personal relationship, "keeping its commitments" could be viewed at the interpersonal level, ie "The community is keeping its commitments to me (as it cares about my well-being - Benevolence)" rather than "The community is keeping its commitments (in general, due to adherence to a strict set of values - Integrity)". From this reasoning, it can be suggested that the individual relationship with a community and perhaps the size of the community affect whether "keeping commitments" is viewed as benevolence, or integrity. This suggestion can be investigated in a future study.

Moreover, honesty and sincerity of the community (C4, C5 and C7) are not perceived as only integrity but also as competence and benevolence; hence, the existence of some cross-loading on those items.

Nonetheless, overall, we can conclude that integrity is a component of trust which affects knowledge sharing in on-line communities of practice. This conclusion agrees with earlier research that recognise integrity as a trust component (cf Tschannen-Moran, 2000, pp 314, 318).

Conclusions and implications

The research has upheld the three trust factors as positively affecting knowledge sharing in online communities. As discussed earlier, the cross loading of the factors suggest that though they are theoretically distinct, practically, they buttress each other to influence knowledge sharing. However, this article has highlights areas that require further research in order to better understand the dynamics of trust within online communities.

Nonetheless, the findings of this study presents a challenge to system developers to provide transparency since a newcomer typically has access to an electronic record of previous discussions and access to knowledge-based assets held in the community's common repositories. Perceptions of trustworthiness based on competence, honesty, benevolence and behavioural reliability provide confidence in future actions, and can be fostered by the high degree of openness and visibility surrounding online communications within virtual communities. This in turn fosters greater levels of cooperation, and discourages opportunistic behaviour (Fisman and Khanna, 1999).

Another implication of this study is that KM practitioners need not be pro-active in forming and running communities of practice. Nonetheless, an understanding of the trust components would guide practitioners on how to create and support a knowledge sharing environment. This study has confirmed that trust is composed of the three components of competence, benevolence and integrity which are positively related to knowledge sharing in on-line communities of practice. The implication is that practitioners should support the three values if they are to encourage trust and knowledge sharing.

This research did not investigate how to support the three values but a priori, organisations should look for these three qualities in their would-be recruits. Also, KM practitioners can lead by example: exhibit these qualities in their dealing with other members of the organisation. They can also take advantage of every opportunity to encourage these attributes in existing employees, who are potential members of on-line communities of practice. The clearer-cut and most significant component appears to be competence but the findings show that the factors enhance each other and therefore, KM practitioners should be interested in all the three components of trust.

Acknowledgments

Appendix. Questionnaire
SECTION A: KNOWLEDGE SHARING

A1   I frequently share my knowledge with others in the community.

A2   I am one of the more active contributors within the community.

A3   I make a conscious effort to spend time engaged in activities that contribute knowledge to the community.

A4   I try to share my knowledge with the community.

A5   Other community members find my knowledge-sharing contributions to be useful.

A6   My contributions to the community enable others to develop new knowledge.

A7   I am a knowledgeable contributor to the virtual community.

A8   The knowledge I share with the community has a positive impact on the business.

A9   Overall, I feel the frequency and quality of my knowledge-sharing efforts are of great value to the community.

SECTION C: TRUST

C1   I believe that the competency group's virtual community would act in my best interest.

C2   If I required help, the community would do its best to help me.

C3   The community is interested in my well-being, not just its own.

C4   The community is truthful in its dealings with me.

C5   I would characterise the community as honest.

C6   The community would keep its commitments.

C7   The community is genuine and sincere.

C8   The community is a competent and effective source of expertise.

C9   The community performs its role of sharing knowledge very well.

C10   Overall, the community is a capable and proficient source of expertise and knowledge.

C11   In general, the community is very knowledgeable.

C12   I trust the community when I ask them not to forward or share any CSC or slient sensitive material.

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Grand Challenges in Business and Information Management Processes

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