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Technological and Community Factors that Influence Online Trust and Knowledge Sharing ——A Model Based on Virtual Community

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Abstract

Knowledge sharing is common place online nowadays. Drawing from trust literature, we find trust mechanism behind knowledge sharing behavior may lead to useful implications. However, there exists a gap between theoretical and managerial perspective on the role of trust especially in online knowledge transfer. This study will try to study how technological and community factors influence trust formation and lead to knowledge sharing behaviors in online virtual communities. By exploring how extrinsic drivers affect trust elements, we combine practical technology and community design issues with theoretical trust foundations. Empirical research is under way to confirm our hypotheses.

Keywords: Trust, Knowledge Management, Knowledge Sharing, Virtual Community

1. Introduction

Knowledge sharing is common place online nowadays. Traditional knowledge transfer through face-to-face communications or other indirect ways among acquaintances has been partly replaced by online knowledge sharing among those you never know before (Oudshoff et al. 2003). A virtual community is defined as an on-line social network of a group of people with a common interest (Hagel and Armstrong 1997). In a virtual community the interactions between individuals can be seen to be characterized by four factors: 1) interactions are between geographically dispersed people; 2) they use text-based communication; 3) communication is one-way with delayed response; 4) members may assume identities not their own (Lord 2002). Many web applications support such kind of interactions such as BBS, Blog, discussion lists and other information sharing and publishing media. Information can be shared and stored through questions and answers, encouraging the codification of knowledge normally held by select individual within the community.

Knowledge management and knowledge transfer has been researched extensively in organizational context (Levin 2004). Trust is one of the perspectives researchers cast a sight on in knowledge management. What is missing from current literature are that: First, little research has turned from offline to online knowledge transfer especially virtual community knowledge transfer. What factors contribute to people's knowledge sharing behavior in a virtual community? Is it similar to organizational knowledge management or is there any further issues which should be paid attention to? How can we promote or to some extent regulate this behavior? It is not only a research question but also a practical concern. Second, there is literature dealing with the importance of trust in

knowledge transfer, but there exists a gap between theoretical and managerial perspective on the role of trust. Trust is theoretically important in many fields of research such as psychology, sociology and management. Managerial discussions often see trust as a key to organizational knowledge management and set up rules to strengthen interpersonal and organizational trust, thus facilitate knowledge transfer (Abrams 2003). But it is not taken into consideration how these measures affect trust formation in organizations. Drawing from trust literature, we find trust mechanism behind knowledge sharing behavior may lead to useful implications. Yet, though conceptually appealing, trust is an elusive concept that is often difficult to influence. Moreover, empirical evidence on how it can be built in an online environment, however, has been largely an open question.

Recognizing that a vital key to online knowledge sharing in virtual communities is maintaining their trust in the community and that trust is at the heart of relationships of all kinds (Rapp 2003), this study will try to address these two limitations discussed above by studying how technological and community factors influence trust formation and lead to knowledge sharing behaviors in virtual communities. We explore the online environment as the new knowledge sharing setting. And we deal with the second limitation by exploring how extrinsic drivers affect trust elements, combining practical technology and community design issues with theoretical trust foundations. Accordingly, the objective of this research is to examine trust as a primary reason why people share knowledge in their virtual community activities by integrating trust based antecedents and the technological and community attribute based extrinsic drivers into a theoretical model which may guide practical website and community structure design. Organizational knowledge management has always stressed the role of trust in knowledge creation and transfer. Trust is a facilitating enabler of knowledge sharing among team members or organizational colleagues. However, unlike the knowledge sharing in traditional organizational settings, the primary interface with others is an information technology (IT), a Web site. Moreover, this technology is forming a new community environment, the virtual community, and communications and relationships are considerably different from organizational knowledge management system usage. Recognizing the changing of environment, we try to explore the perceived technological attributes of the IT and virtual community characteristics and their relationships with trust. How these extrinsic drivers influence trust displays the internal reasons why people share knowledge in virtual communities due to trust beliefs and the rules that guide trust formation.

The remainder of this paper is structured as follows. In Section 2, the theoretical background of this study is outlined. Section 3 presents the theoretical model of trust mediated knowledge sharing in virtual communities. The research design and methods are described in Section 4. This paper concludes with a discussion of future research in Section 5.

2. Literature Review

2.1 Trust in Organizational Knowledge Transfer

Trust is an interpersonal mechanism for dealing with the uncertainty in predicting behavior. Trust as a social phenomenon has been studied in the psychology, sociology, economics, marketing, and management literature. Psychologists define trust as a personal tendency to trust others (Rotter 1971). Social psychologists define trust as cognition about the trustee (Rempel et al. 1985). Sociologists define trust as a characteristic of the institutional environment (Zucker 1986). Some management researchers conceptualize trust as a belief about certain traits of the trustee, or as an attitude toward the trustee (Mayer et al. 1995, McKnight et al. 1998). In the marketing field, trust is defined as a psychological state comprising intention to accept vulnerability based on one's positive expectations of the intentions or behaviors of another (Singh and Sirdeshmukh 2000), or willingness to rely on an exchange partner (Ganesan 1994). In EC research, trust has been conceptualized as a set of beliefs about an Internet vendor (Bhattacharjee 2002, Gefen et al. 2003, McKnight et al. 2002). Following previous trust research (Gefen et al. 2003, Kumar et al. 1995), this study defines trust as the belief that the other party will behave in a dependable manner in an exchange relationship.

Trust, though a rather elusive concept, is, however, highly important for the efficient operation of a knowledge-based economy, since the market exchange of knowledge gives rise to a high level of risk and uncertainty. These risks and uncertainties are reduced by the presence of a high level of trust (Roberts 2000).

Knowledge transfer occurs when knowledge is diffused used from the individual to others. Organizations and institutions have a central role in the transfer of knowledge. Firms can be viewed as repositories of knowledge, which affect the transfer of knowledge through the activities of management, and personnel more generally, and through the establishment of routines (Penrose 1959, Nelson et al. 1982).

2.2 Trust Online

Online trust or website trust is discussed mainly in e-commerce. Researchers explore the factors or elements or determinants of online trust.

Without attempting to identify the elements that are pertinent to the formation of online trust, it is difficult to derive effective and reliable design principles or implications on enhancing consumer trust in e-commerce. These trust elements are often referred to interchangeably as antecedents, underlying dimensions, determinants, or principles of online trust. In general, these terms all refer to factors that can produce a sense of trustworthiness or even determine whether consumers will trust an online merchant's web site.

Gefen (2002) examined trust from a multi-dimensional perspective. According to the researcher, the specific beliefs of integrity, ability, and benevolence were seen as antecedents to overall trust. In the case of e-commerce, integrity was the belief that the online merchant adhered to stated rules or kept promises. Ability was the belief about the skills and competence of the online merchant to provide good quality products and services. Benevolence was the belief that the online merchant, aside from wanting to make legitimate profits, wanted to do good to the customer without regard to making a sale.

While holding a similar view, Ang, Dubelaar, and Lee (2001) proposed that three dimensions of trust were important for enhancing the perception of trust on the Internet. These three dimensions were the ability of the online merchant to deliver a product or service that performs as promised, the willingness of the online merchant to rectify should the purchase not meet the customer's satisfaction, and the presence of a privacy policy or statement on the web site.

Based on the literature from multi-disciplines, Kim, Song, Braynov, and Rao (2001) investigated the determinants of online trust and divided the determinants into six dimensions, namely information content, product, transaction, technology, institutional, and consumer-behavioral dimensions. These dimensions, which were further broken down into many sub-dimensions or properties, formed a theoretical framework of online trust.

3. Theoretical Development and Research Model

Literature review shows that researches have already done much in trust in knowledge transfer and trust online. But these perspectives have been examined independently by IS researchers. Integrating these two perspectives and examining the factors that build online trust in an environment that lacks the typical human interaction that often leads to trust in other circumstances advances our understanding of these constructs and their linkages to behavior.

There are significantly displayed differences between real organizations and virtual community in knowledge transfer. Trust is generally crucial in many of the organizational activities that can involve undesirable opportunistic behavior. This is even more the case with virtual community because the limited Web interface does not allow people to judge whether others are trustworthy as in a typical, face-to-face interaction (Gefen 2003). Moreover, virtual community knowledge exchange is not accompanied by economic rewards or job promotions which may be the case in real organizations if there is related corporate mechanism. On the other hand interactions in virtual communities are often anonymous and provision of false information may not lead to any punishment or other bad consequences to the sharer, this weakening of identity and lack of regulation may facilitate knowledge sharing. Thus online knowledge transfer is more complex than real organization knowledge transfer.

There are also considerable differences between online trust in e-commerce transactions and knowledge sharing processes. First, knowledge sharing online is less to do with economic concerns than e-commerce transactions. E-commerce customers have more economic risks since they need to pay for what they want so economic evaluation takes a dominant role. However, knowledge shares online don't need to pay money. Thus there are other factors which guide their behaviors and can be more complex because what money cannot explain is harder to explain. Second, there are many legal structures to ensure security and privacy such as third party auditing, certifications and laws. With regard to knowledge sharing, there is almost no such assuring guard. And it is worse online in knowledge protection since no such laws ever exist. There are few laws or rules online to regulate behavior as in reality and order online is kept mainly by moral voluntariness.

With the above differences there is need to study trust in virtual community knowledge transfer. We propose the extrinsic drivers, technological and social, influence sharing behaviors with the mediating role of trust. While technological capabilities are important, having sophisticated KM systems does not guarantee success in KM initiatives (Kankanhalli et al. 2005). This is because social issues appear to be significant in ensuring knowledge sharing success. Both social and technical barriers to online sharing behaviors have been listed and calls have been made to simultaneously address both sets of issues in order to be able to reap the benefits of online sharing that have been experienced by most web surfers.

3.1 Trust and Knowledge Sharing Behavior in Virtual Community

Based on two lines of research, trust online in e-commerce and organizational knowledge management especially knowledge sharing, we propose the initial model. The initial model is that extrinsic drivers will lead to knowledge sharing behavior by influencing trust beliefs. Trust is an interpersonal mechanism for dealing with the uncertainty in predicting behavior. Discussions on knowledge sharing often refer to the importance of trust as an enabler of effective knowledge sharing. One has to be able to trust the other party will not misuse or corrupt his valuable asset and that it will be properly attributed to himself and will not be used against himself (Truch 2001). Based on prior work, it is hypothesized that heightened levels of trust, as specific beliefs about the community are also associated with heightened levels of intended sharing behavior. When a social environment cannot be regulated through rules and customs, people adopt trust as a central social complexity reduction strategy. By trusting, people reduce their perceived social complexity through a belief that may, at times, be irrational, and that rules out the risk of undesirable but possible future behaviors on the part of the trusted party.

Trust is a significant antecedent of participation in knowledge sharing in general and even more so in online settings because of the greater ease with which knowledge receivers can behave in an abusing or misusing manner. Trust helps reduce the social complexity a knowledge sharer faces in a virtual community by allowing the sharer to subjectively rule out undesirable yet possible behaviors of the receiver including inappropriate use of the shared knowledge. According to the social psychology paradigm (specifically, the theory of reasoned action, Fishbein and Ajzen 1975), beliefs lead to certain intended behavior. In this way trust encourages online knowledge sharing behaviors.

H1: Trust is positively related to knowledge sharing Intention in virtual community.

H2: Knowledge Sharing Intention is positively related to knowledge sharing behavior in virtual community.

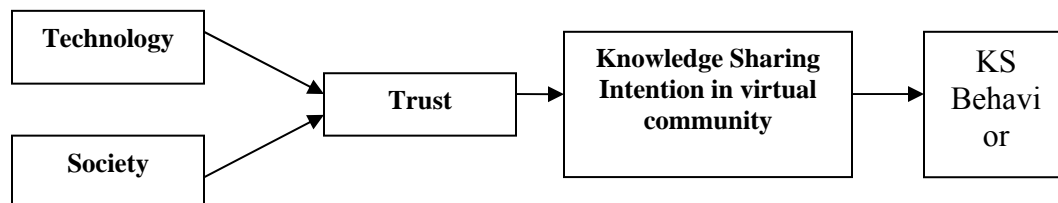


Figure1 Initial Model

3.2 Antecedents of Trust

Trust has been conceptualized by previous research in a variety of ways, both theoretically and operationally, and researchers have long acknowledged the confusion in the field. In trust literature on knowledge management, researches focus on two kinds of trust: competence-based trust and benevolence-based trust. This line of thought is drawn in that knowledge transfer processes, tacit knowledge in particular, are related to individual ability as well as benevolence. However, online trust literature on virtual community activities or on e-commerce deals is more concentrated on knowledge-based trust and role-based trust because e-commerce transactions need more experiences and knowledge on the vendor and laws or rules regulating the deal. We combine these two lines of research to form our model of the role of trust in online knowledge transfer.

Drawing from several theoretical streams, research on trust has identified a number of trust antecedents: knowledge-based trust, calculative-based trust, benevolence-based trust, competence-based trust, cognition-based trust, personality-based trust, affect-based trust and institution-based trust (Gefen 2003). The first five types of trust antecedents are the focus of this study and will be discussed extensively below. Because we will focus on how the extrinsic drivers influence knowledge sharing behaviors, personality-based trust is irrelevant, which is embedded in a person and is independent of extrinsic drivers but depends on the individual. We will not deal with affect-based trust since this study is according to the theory of reasoned behavior. And we don't use institutional-based trust and explore the online institution-the community-in a deeper manner to reveal embedded community characteristics. With such distinctions in mind, the current study has adopted the conceptualization of trust as a set of specific beliefs.

Although there is extensive research on trust classification, no universal definition of these different kinds of trust exist. Existing taxonomy and definitions overlap or correlate, so we need to specify these trust elements in this paper to better explore different facets of trust formation and impact. Figure 2 shows the full model.

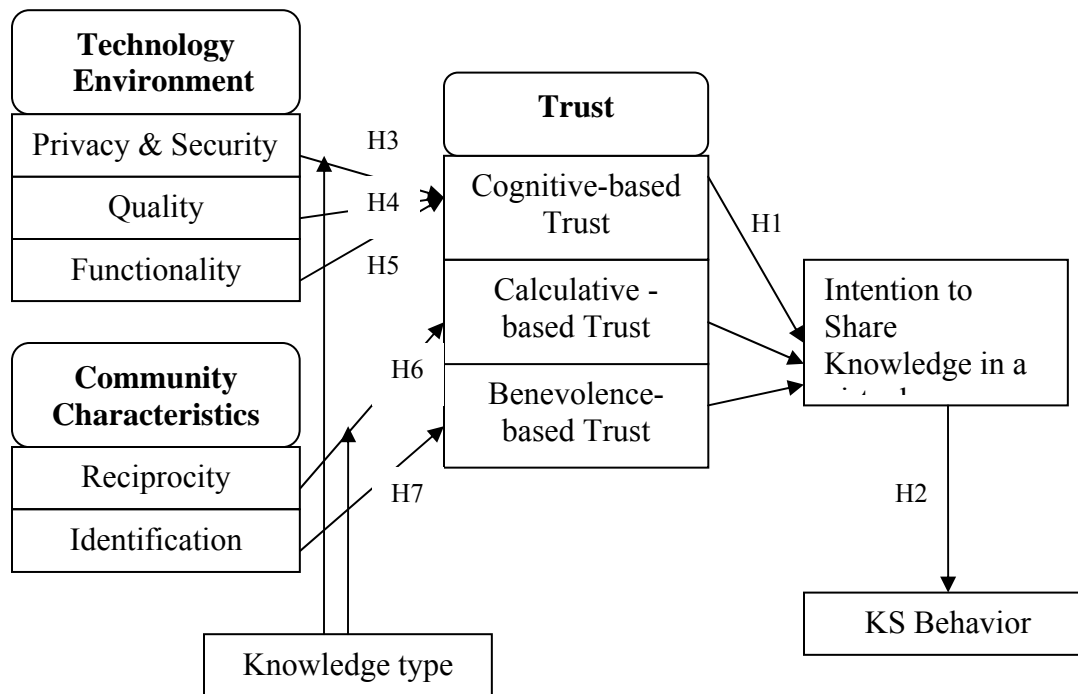


Figure 2 Full Model

3.3 Technological Drivers of Knowledge Sharing

The Role of Technology in Knowledge Transfer

Information technology is regarded as a critical enabler for knowledge management. Information and Communication Technologies (ICTs) have a central role in the emerging knowledge-based economy in which the generation and exploitation of knowledge are seen to play a predominant part in the creation of wealth.

It has been a research concern how ICT affects knowledge management. Codified knowledge that can be transferred at the touch of a button can be disseminated at a significantly lower cost than tacit knowledge. ICTs facilitate the rapid collection, collation, storage, and dissemination of data, thereby assisting the knowledge creation and dissemination process.

ICTs favor the transfer of knowledge that can be codified and reduced to data. Even tacit knowledge can be transferred through ICTs and this requires trust to build up the communication process (Roberts 2000). Face-to-face demonstration and the social interaction involved enable the sharing of skills and the establishment of mutual understanding and trust. Roberts (2000) suggests that trust takes a more important role in knowledge transfer with ICT.

The use of technologically mediated communication will be more successful when it is between agents who share common social, cultural and linguistic characteristics. It will be less effective when agents are from diverse backgrounds, particularly in the early stages of interaction. A virtual community is usually a group of such people.

ICT is not only a communication medium, but also forming a new environment in which people establish new and fragile relationships. Virtual community is a computer-mediated social group in which members build and maintain their inter-personal social relationships. This social relationship is derived from technology, so it has subtle connections to the characteristics of the technology, specifically Internet and online community. These characteristics refer to two types: one is the general Internet environment, which shapes a general attitude to online knowledge transfer; the other is the specific system design of a certain virtual community, which further forms people's perception of the site.

General Internet Environment and Cognitive-based Trust

The conceptual academic literature in information privacy suggests that trust could play an important role in alleviating consumers' privacy risk perceptions (e.g., Caudill and Murphy 2000). Indeed, the privacy risk has been implicitly incorporated in the extant online trust literature. For instance, many trust researchers proposed various trust models in which the privacy policies and third party seals (e.g., BBBOnline and TRUSTe seal) are considered as the structural assurances built into a Web site that might affect trusting beliefs and trust related behaviors (e.g., Gefen et al. 2003). However, the explicit involvement of privacy is frequently overlooked. There is scant research dealing with privacy in online knowledge transfer. The general Internet privacy affects people's attitude to this online environment

It is ambiguous on the meaning of cognitive-based trust. A relatively more frequent citation is that cognitive-based trust reflects technical competency and a fiduciary obligation to perform (Butler, 1983) and is based on predictability, past behavior, dependability, and fairness (Rempel, Holmes, & Zanna, 1985). It relies on a rational evaluation of another's ability to carry out obligations and contrary to affective-based trust. Another definition of cognitive-based trust is that cognitive-based trust examines how trust is built on first impressions rather than through experiential personal interactions (e.g. McKnight et al. 1998). Here we combine these two thoughts and define cognitive-based trust as a perception of the external environment due to direct or indirect information and experiences. This is different with knowledge-based trust (discussed next) in that cognitive-based trust does not need necessarily first-hand interactions or experiences and is only a generalizes perception while knowledge-based trust is formed by direct experiences and in person contact.

When a person's behavior is entirely predictable, there is no need of trust because we know how they will behave (Truch 2001). Online environment is a virtual one and people lack face-to face communications, which increase unpredictability. Virtual team literature suggests that when people who never know each other work collectively though information sharing and group communication, many people provide open access of data and information to others on the network, implying that certain level of trust may exist because the information owner's credit and privacy is at risk (Sproull and Kiesler 1991). In online knowledge transfer in a virtual community, whether people will share knowledge first depends on their perception of the general online environment. Internet is disseminating information at very low cost and almost anyone may have form perception of the general online environment. They don't necessarily experience privacy leak and abuse, which is after all not so often, but they can form a general attitude to the

environment from many channels of information such as real world communications and online browsing. If people perceive the online communication environment to risky in that what they share may be misused and expose them to undesirable conditions, they will not be willing to share knowledge in any community.

H3: Privacy and security of the general online environment is positively related to cognitive-based trust.

Specific System Design and Cognitive-based Trust

The technology embedded in a specific communication or knowledge management system in a virtual community is the interface people deal with to transfer knowledge. So it is important to build up the first-impression and long lasting trust by designing a high-quality and well-functioned system.

Online trust literature reveals that the usefulness of a Web site depends on both the effectiveness of its relevant technological properties, such as advanced search engines, and on the extent of the human service behind the IT, which makes the non-technological aspects of the IT effective. An easy-to-understand Web site that also explains what is going on should lead to the creation of trust (Gefen 2003). Conversely, a site that does not bother to help the user understand what is happening should, by virtue of not signaling due process, detract from accumulated trust. Moreover, well explained and easy to understand processes are a recipe for creating trust in business transactions as well as reducing the misunderstandings that undermine it (Blau 1964). In knowledge management Yu et al. (2004) find the quality and functionality of an organizational knowledge management system influence system usage and satisfaction.

McKnight et al. (2002) identified Web site quality as a significant antecedent of trust belief about an Internet store. Kim et al. (2004) use process-based trust to explore website trust, when prior experience becomes a source of trust. This is similar to knowledge-based trust. They find Web site quality (information quality, system quality) and service quality (reliability, responsiveness, assurance, empathy) as factors invoking this kind of trust.

Cognitive-based trust antecedents with the specific system suggest that trust develops over time with the accumulation of trust relevant knowledge resulting from experience with the other party. This accumulated trust-relevant knowledge and successful previous interactions lead to higher levels of trust (Blau 1964). The switch cost online is so low that people easily give up at a low-quality site and turn to another. Knowledge about a specific site is so easy to get that people don't bother to stay in a low-quality community to share information.

If the quality provided by a knowledge management system does not satisfy the users' expectations, that system will be deserted by the online users. On the other hand, an easy-to-use, responsive, and reliable knowledge management system will enhance the process and outcomes of end users' knowledge creation, sharing, and utilization. Evaluating a site's information-based and system-based qualities, people estimate whether the community is trustworthy or not based on prior experiences and accumulated knowledge, which implies that Web site quality invokes the capability process of trust building. Service quality has several dimensions, including reliability, responsiveness, assurance, and empathy (Kim, 2004). Empathy means the degree to which a virtual community adapts to the needs of individual customers. The empathy dimension of service quality may invoke the intentionality process of trust building.

H4: Quality of the system in a specific virtual community is positively related to cognitive-based trust.

A communication or knowledge management system should possess diverse and powerful functions to support or perform various knowledge management activities such as marking the most valuable information, regular collation of history discussion lists and a powerful search engine. Thus, the more functionality a knowledge management system has, the higher utilization and satisfaction we expect, leading to greater knowledge sharing intention.

H5: Functionality of the system of a specific system in a virtual community is positively related to cognitive-based trust.

3.4 Community Drivers of Knowledge Sharing

Virtual community has its specific characteristics shaping a social context for people to exchange ideas and information. People interact in this context and perceive these characteristics which will affect their impression of the community and form their trust beliefs (McKnight 1998)^{Error! Bookmark not defined.}

In trust literature institutional-based trust posits that norms and rules of institutions surrounding individuals guild behavior and trusting beliefs (Coutu, 1998). This construct refers to the opportunities available to visitors to a Web site to interact with other visitors to the same Web site by participating in a bulletin board, chat group, or similar online forum. A brand community in a computer-mediated environment has a structured set of social interactions based on a shared consciousness, rituals and traditions, and a sense of moral responsibility (Muniz and O'Guinn 2001). These community features promote information exchange and knowledge sharing and offer a supportive environment for people, thus increasing trust in the site. The effect of community features on trust may be different among different categories of Web sites. Community features are particularly useful for trust formation in situations in which the expected uncertainty about sharing and gathering of information on a Web site is high. In such situations, the shared consciousness and sense of moral responsibility and affinity enhance people's level of trust in a Web site.

Institution-based trust may also refer to belief in the proper structure of one's own role and others' roles in the situation. But, it is not specific to a person. This kind of trust does, however, relate to a specific situation and its context and is based on the effectiveness of social structures in reducing uncertainty and providing foundations for secure feelings about the future. The combination of overpowering social complexity with the inherent need to understand others leads people to adopt an assortment of social complexity reduction strategies.

Therefore, we expect that the dominance of community features' impact on online trust is greater for Web sites characterized by greater information risk and information on the Web site, such as community Web sites. Here we specify reciprocity and identification as community characteristics influencing competence-based trust and benevolence-based trust.

Reciprocity and Calculative-based Trust

Early sociologists conceptualized social associations as exchanges of activities between two or more persons (Homans 1961). Blau (1964, p. 91) defines "Social Exchange" as: "voluntary actions of individuals that are motivated by the returns they are expected to

bring and typically do in fact bring from others”. Unlike an economic exchange a social exchange deals with situations where there is no explicit or detailed contract binding the parties or when the contract is insufficient to provide a complete legal protection to all of the parties involved. Thus, because rewards cannot be guaranteed in a social exchange, trust is essential and determines people's expectations from the relationship (Blau 1964, Luhmann 1979). Several attributes are important in an exchange. They are reciprocity, balance, cohesion, and power (Emerson, 1972). The need to reciprocate the benefits received acts to reinforce the characteristics of the exchange.

Trust increases the perceived certainty concerning other people's expected behavior and reduces the fear of being exploited, especially when the social exchange involves current costs invested in exchange for expected future unguaranteed rewards as is the case with online knowledge sharing. This type of trust-building mechanism involves a calculative process (Hosmer 1995). According to the calculative-based trust paradigm, trust can be shaped by rational assessments of the costs and benefits of one's own behavior or of another party cheating or cooperating in the relationship (Philipp 2001). In such exchanges, people do others a favor with a general expectation of some future return but no clear expectation of exact future return. Therefore, social exchange assumes the existence of relatively long-term relationships of interest as opposed to one-off exchanges (Molm 1997). Trust is constantly modified in the process of exchange between two parties over time (McKnight et al., 2002). The calculative process of trust building means that the trustor calculates the costs and/or rewards of the other party cheating or staying in the relationship.

Social exchange is primarily a voluntary relationship that is based on the general expectation of reciprocity. Knowledge sharing through online communities can be seen as a form of generalized social exchange where more than two people participate and reciprocal dependence is indirect. In agreement with this theory, researchers have suggested that increasing the benefits and reducing the costs for contributing knowledge can help to encourage knowledge sharing using KM systems (Kankanhalli et al. 2005).

Individuals tend to engage in knowledge sharing only if they have calculated that a potential sharing party would be willing and able to reciprocate by sharing knowledge of equal or higher value (Philipp 2001). In an online community people often first share what they know to increase their status or promote their relationships with other members for a definite or unclear future knowledge need. Those who share a lot are usually welcomed and gain a good fame for their virtual identity and can receive help or instructions when they need some kind of knowledge from others. For example those people are replied most when they raise a question or receive positive attitude from others.

H6: Reciprocity is positively related to calculative-based trust.

Identity and Trust

Social capital is believed to be a driving force of collective behavior or social activities of members within one social system (Burt 1992). These social systems include proximate as well as virtual communities (Rheingold 2000). Social capital theory posits that social capital provides the conditions, among which is identification, necessary for knowledge exchange to occur (Nahapiet et al. 1998). Identification is a condition where the interests of individuals merge with the interests of the organization, resulting in the creation of an

identity based on those interests. Identification sets the context within which communication and knowledge exchange occur among organizational members (Nahapiet et al. 1998).

Gold et al. (2001) proposed three key infrastructures that were expected to maximize social capital: a structural infrastructure referring to the presence of norms and trust mechanisms, a cultural infrastructure referring to shared contexts about creating and sharing knowledge, and a technological infrastructure addressing technology enabled ties within an organization. Similarity of values reflects the extent to which members of an organization possess joint goals and interests. Membership is the degree to which self-concept of members is linked to the organization. Under conditions of strong identification, the effects of certain costs and benefits pertaining to knowledge sharing may be nullified in the face of collective outcomes (Constant et al. 1996). Kankanhaalli (2005) finds people make more codification effort in knowledge sharing when identification is strong,

When identification is strong in a virtual community, shared values and understandings between parties in an exchange relationship facilitate meaningful communication that is essential in both the exchange and combination required for knowledge transfer (Li 2005). The presence of a relationship of trust between individuals indicates an ability to share a high degree of mutual understanding, built upon a common appreciation of a shared social and cultural context. Both trust and mutual understanding, developed in their social and cultural contexts, are prerequisites for the successful transfer of tacit knowledge (Roberts 2000).

Trust in a person's benevolence enable effective knowledge creation and sharing in these networks (Abrams 2003). We propose identification in a virtual community affect benevolence-based trust. Trust in the other party's benevolence to provide useful knowledge or receive knowledge in a normal way is influenced by the community's identification relationship.

Trusting a knowledge source to be benevolent should increase the chance that the knowledge receiver will learn from the interaction (Levin 2004). When identification is strong in a virtual community people share the same vision and goals and tend to trust those who receive knowledge can understand the shared knowledge and use it properly. They trust the others to be benevolent not to abuse it. Moreover based on the others' benevolence people may expect more useful knowledge from others and are willing to share more. The sharing is voluntary, often not hierarchically recognized, and the identification with a common practice offers an opportunity for the community members to refine their competencies. People tend to believe that the community will provide them with the knowledge they need (Philipp 2001). Thus knowledge sharers are assured of the condition and intended to show what they know.

H7: Identity is positively related to benevolence-based trust.

3.5 Control: Knowledge Type

Individual behaviors and their social interactions in a virtual community can be understood from two perspectives: task activities and socio-emotional activities, regardless of any detailed contents of messages. We propose trust beliefs are subjected to knowledge type. There are different ways to classify knowledge types. We tentatively differentiate between professional task knowledge and socio-emotional knowledge. In

this study we see knowledge type as a control to mediate the relationship between outside drivers and trust beliefs.

The virtual community enabled by the Internet facilitates knowledge sharing and creation for communities of practice by professional (Lin and Hsueh 2006). When a virtual community is themed professional task knowledge sharing, people in the community are likely to have some knowledge in the field or at least have interest in it. Among the community members there should be some who own expertise or skills concerning the subject. Those who have shared interest or capability on a topic are more likely to trust in others' competence. In contrast when the community is themed socio-emotional knowledge sharing, community members discuss or share their experiences, feelings and attitudes. They don't necessarily seek answers or offer solutions to their problems or worries but only regard sharing a way to express and relax. Thus they are less concerned of other's competence to understand and solve problems. Moreover, professional knowledge is more universal than socio-emotional knowledge.

4. Methodology

To examine the effects of trust on intentions to share knowledge in a virtual community, we will conduct empirical research. This study will use survey as the research method. According to Pinsonneault and Kraemer (1993), survey research is appropriate when the examination of research questions under study is in a natural setting with clearly defined independent and dependent variables for the purpose of understanding why certain phenomena occur. This study is supported by well-established theories and the constructs in the model have been validated in other studies within the literature. Thus, the use of survey method is justified.

The questionnaire will be drawn from literature review and practical analysis. Then we will select some BBS to send our questionnaires. BBS satisfies a well-demonstrated environment of virtual community and offers a more mature and popular form of platform in indirect interactions (Rapp 2003). We are currently finalizing the survey instrument. The next step is to perform pilot study. Then we will proceed to the full-scale data collection. We expect that preliminary findings should be available in one month. We anticipate that positive evidence would be found for supporting the four hypotheses.

5. Conclusions

This study try to address these the current research limitations above by studying how technological and community factors influence trust formation and lead to knowledge sharing behaviors in online virtual communities. We explore the online environment as the new knowledge sharing setting and how extrinsic drivers affect trust elements, combining practical technology and community design issues with theoretical trust foundations. We will further conduct empirical study to draw results.

Limitations of the study:

- 1) There are many discussions about knowledge type.
- 2) Another topic that requires additional study is the conceptualization of trust. Trust was defined in this study as a set of specific beliefs, in accordance with other research. These beliefs lead to intended behavior (or trusting intentions). As discussed earlier, there are alternative conceptualizations of trust in the management and psychology arenas. Examining these additional perspectives in the context of the

proposed model could shed additional light on how extrinsic drivers affect and relate to knowledge sharing in virtual communities.

3) Online knowledge transfer may be influenced by offline communications. We didn't address this point for it may be make the model too complex and not so straightforward. However, further research may analyze how online and offline communications combine to affect knowledge transfer online.

4) This study is more focused on factor rather than process analysis. Trust formation is an accumulative process. There may be differences between a new comer to the virtual community and an old "customer".

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