NOTE TO USERS

Page(s) not included in the original manuscript and are unavailable from the author or university. The manuscript was scanned as received.

90-92

This reproduction is the best copy available.

UMI®

Presence of Community of Practice:
Its Effect on Social Capital and Competitive Advantage of the Firm

Minita Sinha

A Thesis

in

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements for the degree of
Master of Science in Administration (Management Information System) at
Concordia University
Montréal, Québec, Canada

July 2004

Canadä

Abstract

Presence of Community of Practice: Its Effect on Social Capital and Competitive Advantage of the Firm

Minita Sinha

The current shift to knowledge economy has focused the attention on the importance and significance of tacit and explicit forms of knowledge. The focus of organization has shifted to harnessing and sustaining the tacit knowledge possessed by individuals. Community of practice is one of the knowledge management initiative in which tacit knowledge can be cultivated and sustained. The purpose of this research is to find out whether existence of community of practice in a certain domain helps the organization to achieve competitive advantage. Also, the other aspect that this research aims to explore is whether existence of community of practice enhances interpersonal relationships and individual networks i.e. social capital in an organization. The social capital has been viewed in three dimensions: structural, relational and cognitive dimension. The influence of power distance and individualism (dimension of national culture) and computer-mediated communication on the relationship building among individuals has also been studied. A web survey was conducted and it has been observed that there tends to be no significant correlation between existence of community of practice and competitive advantage. The analysis also reveals that existence of community of practice could significantly improve the social capital and its dimensions in a particular domain. The results indicate that power distance significantly affects the relationship building between individuals and individualism significantly affects the shared understanding of norms and rules of organization. It was also observed that computer-mediated communication is not vital to build connectivity among professionals in a particular domain.

Dedicated to
My precious and lovely daughter, Priyasha
And
My loving husband, Purnendu

Acknowledgements

Finally, I would like to thank my husband Dr. Purnendu Sinha who inspired me to pursue graduate studies. He believed in my potentials to do research work and encouraged me to write papers. He provided useful feedback and insight that helped me to focus on my study. He gave lots of love and emotional support that helped me go through the rough time.

TABLE OF CONTENTS

List of Figures

List of Tables

Chapter 1: Introduction

This chapter presents the observations and motivations that led to the research in the area of community of practice. The research objectives and the contributions of this research will be discussed. Finally the chapter will conclude with summary of the organization of the thesis.

1.1 Knowledge and its Importance

There is almost a consensus that knowledge is an important factor that determines the competitive position of the firm (Brown and Duguid 1991; Kogut and Zander 1992; Drucker 1993; Davenport, Jarvenpaa et al. 1996; Grant 1996). This is emphasised by the shifting of focus from production economy to knowledge economy where organizational knowledge is considered to be an integral part of the organization that needs to be utilized to gain competitive advantage (Drucker 1993). Organizational knowledge is defined as "the capability that members of an organization have developed to draw distinctions in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations (propositional statements) whose application depends on historically evolved collective understanding and experiences" (Tsoukas and Vladimirou 2001). This definition illustrates that organizational knowledge is a combination of two distinct but inseparable forms of knowledge: explicit, which can be formally articulated or encoded and tacit, that is developed from direct experience and action by individuals. Tacit knowledge is highly pragmatic, situation specific, difficult to articulate and it is argued that its possession may be a source of competitive advantage. Tacit knowledge cannot be

completely converted into explicit knowledge and vice versa as each component does work that the other cannot (Collins 1993; Cook and Brown 1999).

Another characteristics that is illustrated in the definition of organizational knowledge is that knowledge cannot be disembodied from the people who carry it or from the situations in which they engage (Sierhuis and Clancey 1997). Along the same line Spender and Grant emphasises that "...knowledge which is embodied in individual and organizational practices...cannot be readily articulated" (Spender and Grant 1996). Such knowledge is of critical strategic importance because, unlike explicit knowledge, it is both inimitable and appropriable (Spender 1996). These characteristics demonstrate the social nature of knowledge and because of these characteristics, tacit knowledge is usually created and shared through highly interactive conversation and shared experience, or socialization process (Nonaka 1994).

The effectiveness of socialization process, as revealed in its positive impact on business performance, depends on the firm's *social capital*, i.e., "the resources embedded within, available through and derived from the network of relationships possessed by an individual and social group" (Nahapiet 2000). Social capital is seen to facilitate the creation of intellectual capital, and organization possessing these capitals gain a competitive advantage over other firms (Nahapiet and Ghoshal 1998). When individuals socialize they form *communities of practice* and it is a vehicle through which network of relationships possessed by a social group are bought together.

At group level, it has been pointed out that communities of practice are a company's most versatile and dynamic knowledge resource and form the basis of a firm's ability to create and share tacit knowledge and to learn form experience (Wenger 2000).

Having identified the main factors that affect the effectiveness of tacit knowledge creation and sharing at firm's level, i.e., social capital, and at group level, i.e., the existence of communities of practice, the question now is "are these two factors interrelated and in what way do they affect each other?"

1.2 Observations and Motivation

Understanding the dynamics of social capital and community of practice is crucial for understanding the dynamics involved in knowledge creation and utilization (Nonaka and Takeuchi 1995) and in understanding organizational learning process (Crossan, Lane et al. 1999). It was observed that there are only two published papers that investigate the relationship between communities of practice and social capital. In the first paper, it was hypothesized that communities of practice are valuable to organizations because they contribute to the development of social capital, which in turn is a necessary condition for knowledge creation, sharing and use (Lesser and Prusak 1999). In the second paper, Lesser and Storck (2001) investigated the issue of how communities of practice create organizational value, by conceptualizing a community as an engine for the development of social capital. Based on a case study of seven companies in which communities of practice are acknowledged to create value, they argue that the social capital resident in communities of practice leads to behavioral changes, which in turn positively influence business performance.

Community of practice is seen to improve the social capital and organizational performance (Lesser and Storck 2001). While Lesser and Storck's framework provides the bases for studying the interrelation between organization's communities of practice and its social capital, it does not consider the influence of communities of practice on the

3

dimensions of social capital, i.e., structural, relational and cognitive. They argue that with regard to the structural dimension, community of practice provides opportunity for individuals to develop and identify a network of individuals who have similar interests by providing reference points and consequently help individuals to know "who knows what". With regard to the relational dimension, community of practice provides a meeting point to bring people together to create and share knowledge and an opportunity to foster trust and obligation s necessary to building social capital that is critical for building social capital. Lastly, with regard to the cognitive dimension, community of practice would "help shape the actual terminology used by group members in everyday work conversations". Communities of practice are instrumental in maintaining the shared terminology and artefacts used by group members and generate stories to communicate the norms and values of the community and organization.

However, while the work of Lesser and Prusak (1999) and Lesser and Storck (2001) were the first that point out the possible relation between organization's communities of practice and its social capital, the lack of theoretical foundations hinders a closer examination to the recursive and dynamic nature of such relation. To address the lack of theoretical foundation, a structuration model was conceptualized that explains dynamic nature of an organization's communities of practice and its social capital (Abou-Zeid and Sinha 2004). This model provides a theoretically grounded approach to closely explore the interaction between human action and social capital of the firm and these interactions are mediated through firm's communities of practice. In this model, social capital is seen as one of the possible manifestations of the structural properties of an organization and communities of practice are conceptualized as the means for realizing

4

the different types of modality between social capital and human action.

Since community of practice consists of individuals, cultural issues possessed by these individuals will affect the formation and effectiveness of these communities. This factor cannot be overlooked in the era of globalization and multinational corporations. In fact, culture is seen to be an important factor to increase the competitive advantage of the firm (Rafeal and Zemsky Summer 2002). If the national culture does not support and encourage the use of common language, norms and trust building, then the social capital will not have a positive improvement in the firm's competitive advantage. Moreover, research on knowledge management initiatives has shown that knowledge and culture are inextricably linked in organizations (Parkhe 1991; Lam 1997; Inkpen 1998; Lam 1998; De Long and Fahey 2000; Gupta and Govindarajan 2000; Robert 2000; Gill 2001). Therefore, the impact of context-specific factors in general, and cultural-specific factors in particular, on the effectiveness of socialization process cannot be overlooked. Culture is seen as the integral feature of the human species and involves what people think, what they do, and the products they produce.

The other aspect that cannot be ignored in the era of multinational companies is the influence of computer-mediated communications as a tool to build relationship in communities of practice. It is very important that the firm's management create an environment that will allow time and space for relationship building among individuals by emphasizing work activities to build rapport. As computer-mediated communications enhance the communication among individuals, and thus affect the structural dimension of social capital, it becomes imperative to know whether there is an influence of computer-mediated communications on the relationship between communities of practice

5

and the structural dimension of the social capital.

1.3 Research Objectives

With the advent of information technology, the focus of organizations has shifted from measuring business performance to competitive advantage. Nowadays, firms are devising ways to differentiate themselves from others by investing in quality customer service. Community of practice and social capital are seen to improve organizational performance (Lesser and Storck 2001), but the question of whether they contribute towards competitive edge remains. Our specific aim in this thesis is to see whether communities of practice enhance social capital and thus improves the competitive advantage of the firm. We further elaborate on these aspects to elucidate an influence of computer-mediated communication to boost the communication between individuals and that of national culture to enhance the relationship between individuals.

A part of structuration model (Abou-Zeid and Sinha 2004) dealing with community of practice and social capital has been considered to address this question. It is further extended by introducing the effect of national culture and computer-mediated communication on the relationship between social capital and communities of practice (Sinha and Abou-Zeid 2003). Towards this objective in mind, this research will address the following questions:

a) Whether the existence of communities of practice improves the social capital of the organization by providing resources and capabilities that provides competitive advantage to the organization?

b) Whether there is an influence of communities of practice on how the connectivity among individuals is established and thus having a common understanding of organization's norms and values and thus improving the structural and cognitive dimensions of social capital respectively?

c) Whether having communities of practice improves the relationship aspect like trust, obligation and identification among employees thus improving the relational aspect of social capital?

d) Whether there is an influence of computer-mediated communication on the relationship between structural dimension of social capital and community of practice?

e) Whether power distance and individualism, dimensions of national culture have any influence on the relationships between communities of practice and the relational and cognitive dimension of social capital?

Overall, the research will explore the impact of community of practice and social capital on competitive edge of a domain. This research will focus on the impact of communities of practice by providing a fine-grained approach to study the impact of its elements, i.e., shared repertoire, mutual engagement and joint enterprise, on the structural, relational and cognitive dimensions of firm's social capital. The research will also explore how the factors like computer-mediated communications and organizational culture influence community of practice and social capital, thereby improving the competitive advantage of the firm.

1.4 Contributions

The main contribution of this research is the development of the valid and reliable instrument to measure the construct of communities of practice. Till now, research on

7

communities of practice was done through case study and this is first attempt to do a web survey on this topic.

We believe that this study would provide a unique framework for the researchers to explore and understand the functioning of communities of practice with regard to the social mechanisms of the organization. One of the major contribution is the conceptualization of structuration model (Abou-Zeid and Sinha 2004) and empirical confirmation through web survey of one of the influence of community of practice and social capital.

This research empirically confirms the model proposed by Sinha and Abou-Zied (2003) by showing that existence of community of practice would significantly improve the social capital of the organization in a particular domain. The results done in this research indicate that power distance significantly affects the relationship building between individuals and individualism significantly affects the shared understanding of norms and rules of organization. The results also showed that there tends to be no positive correlation and influence of existence of community of practice on competitive advantage.

1.5 Organization

The rest of this thesis is organized as followed: Chapter 2 lays down the conceptual background. The proposed model along with hypothesis and its rationale is discussed in detail in Chapter 3, followed by research methodology and operational definition of the constructs in Chapter 4. Analysis of the data is explained in Chapter 5. Chapter 6 summarizes the contributions of the thesis, highlights practical implications and concludes with discussions on future research directions.

Chapter 2: Conceptual Background

This chapter will lay down the conceptual background of two of the main constructs community of practice and social capital used in this research. A brief description of structuration model is presented for better understanding of the dynamics between communities of practice and social capital.

2.1 Social Capital

Social capital is gaining acceptance in organizations, as the success of organization is dependant on the interpersonal relationship of the employees in the organization. The way individuals interact with each other, the level of trust and obligations they have with one another and the common understanding of the goals of the organization make it possible for work to be done effectively, and are thus essential for the organizations to remain competitive in the market. Leana and Van Buren (Leana and Van Buren 1999) define social capital as "...collective goal orientation and shared trust, which create value by facilitating successful collective action". Social capital thus comprises both the network and the assets that may be mobilized through that network (Burt 1992; Nahapiet and Ghoshal 1998). Social capital is developed both by individuals (Baker 2000) and organizations (Cohen and Prusak 2001). In simple term, social capital can be seen as the relationships among workers in organization. An organization is considered to be investing in social capital when it creates a healthy work environment that affects the worker's preferences and relationship. The organization faces the challenge of identifying management actions required to build the social capital necessary to achieve a healthy work environment.

One of the most cited and popular definition of social capital is provided by Nahapiet and Ghoshal (Nahapiet and Ghoshal 1998) who have defined it as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal 1998). Social capital is characterized in terms of three interrelated dimensions: structural, relational and cognitive (Nahapiet and Ghoshal 1998).

The *structural dimension* refers to the overall pattern of connections that enable individuals to identify others with potential resources that they may not have at their own disposal. Structural dimension of social capital defines the ways in which individuals form the connection between them. Network ties provide access to resources and hence influence the exchange of knowledge so that time is saved to gather valuable information to provide a basis for action. Ties provide channels for information transmission, but the flexibility and the ease with which information exchange takes place is provided by effective network configuration. Face-to-face meetings, chartooms, discussion forums and e-mail are few of the examples of the techniques used to build ties and relationships among employees.

The *relational dimension* refers to "those assets created and leveraged through relationships" (Nahapiet and Ghoshal 1998) that people have developed with each other through a history of interactions such as trust, obligations, expectation, identification. There are four components to the relational dimension: obligation, trust, norms and identification (Nahapiet and Ghoshal 1998). Obligations refer to a sense of mutual reciprocity, for example, the willingness to return favour with a favour. Norms include the settings of common standards and behaviour that individuals are willing to abide by.

10

Trust involves the predictability of another person's actions in a given situation, whereas identification refers to the extent to which an individual identifies with other individuals.

The final dimension is the *cognitive dimension* which deals with the content of the social capital and refers to "those resources providing shared representations, and systems of meaning among parties" (Nahapiet and Ghoshal 1998) p. 244) such as shared codes, language, and narratives. Cognitive dimension is the extent of common interests and shared understanding of the norms of the organization between the individuals. The different forms of cognitive dimension that are seen in day-to-day interactions in an organization are the use of common language and codes, underlying assumptions and shared narratives. The extent to which people share language facilitates their ability to gain access to people and information. Codes organize data and provide a frame of reference for observing and interpreting the organization environment. The emergence of narratives within a community enables the creation and transfer of different forms of tacit knowledge.

2.2 Communities of Practice

Communities of practice are collections of individuals who associate and work with each other on a topic of common interests and understanding. Lesser and Prusak have defined communities of practice as "collections of individuals bound by informal relationships that share similar work roles and a common context" (Lesser and Prusak 1999). Similarly Wegner et al. have defined them as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on a ongoing basis" (Wenger, Snyder et al. 2002).

According to Wegner, a community of practice defines itself along three dimensions (Wegner June 1998):

- **What it is about:** its joint enterprise as understood and continually renegotiated by its members.

- **How it functions:** mutual engagements that bind members together into a social entity.

- **What capability it has produced:** the shared repertoire of communal resources (routines, sensibilities, artefacts, vocabulary, styles, etc.) that members have developed over time.

Communities of practice are often confused with teams, work groups and knowledge networks. However, there is an important distinction between work groups, teams, and community of practice and knowledge networks. Teams and work group form one end of the spectrum (Allee 2000) and knowledge networks the other end of the spectrum with community of practice lying in between. Work groups and teams are defined by tasks, and members are assigned to the task by the management whereas in communities of practice, members are self-selecting. In work groups and teams, management defines the major goals and the basic nature of the project whereas in communities of practice, the goals and issues are discussed and set among the individuals. In work groups and teams, the members assigned are tightly coupled and can only move when the management permits. On the other hand, knowledge networks are loosely coupled, informal and the relationship among the members is continuously shifting. The primary purpose of knowledge network is to collect and pass information.

Figure 1 presents a snapshot of the degree of connectivity and relationships to make community of practice. When individuals have tight connectivity and simple relationships then they are the members of work groups. The boundaries of the work groups are clearly defined. As the degree of relationship among individuals becomes complex and the degree of connectivity becomes loose, the collection of individuals becomes a knowledge network. The boundaries of knowledge networks become hard to be defined and sometimes it overlaps with community of practice. Community of practice lies between groups and knowledge network because the degree of relationship among individuals is not so complex and the degree of connectivity is loose, and this boundary is somewhat fuzzy as it lies between groups and knowledge networks.
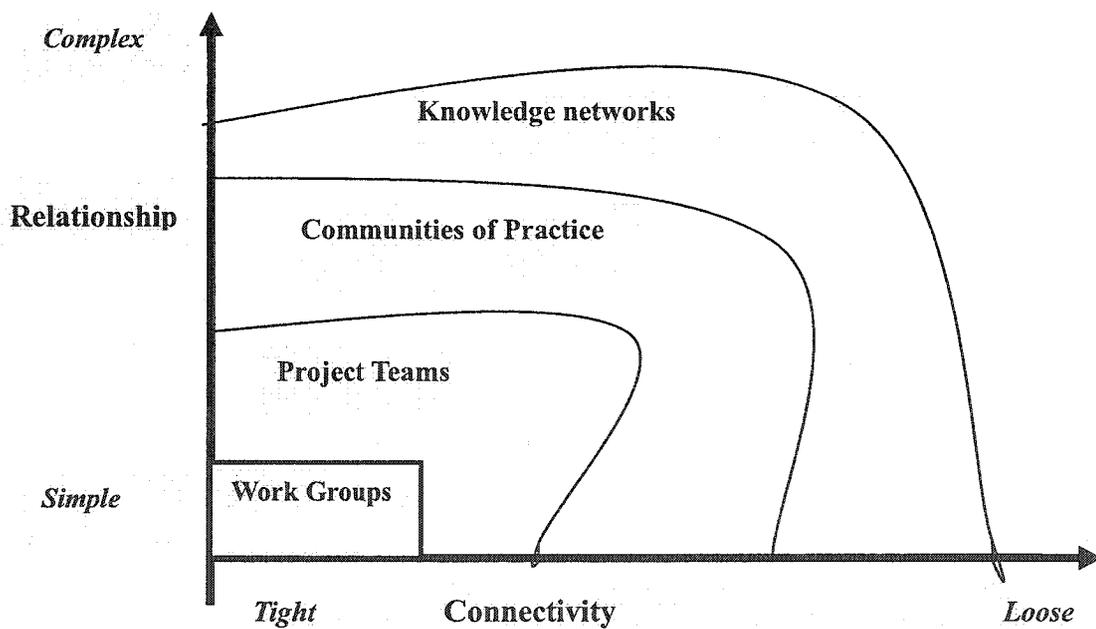
Figure (1): Structure of community of practice (Adapted from Allee 2000)

Community of practice however, requires a sense of mission that people want to accomplish or do tasks together that arises from their shared understandings. Communities of practice generally emerge when the members from other teams and knowledge networks interact. It is also evolved when the individuals build connection among themselves by sharing, storing and transferring knowledge. It is seen that organizations put emphasis to enhance the social production of knowledge and collective know-how by organizing knowledge (Brown and Duguid 1998). Organizing and sharing knowledge across organization is important as it produces highly specialized knowledge within the community, which makes it possible for the firm to outperform in the marketplace by continuous generation and synthesis of collective organizational knowledge, and is not replicable in the marketplace. Community of practice helps to develop a shared understanding and use of this organizational knowledge by overcoming the barriers erected through division of labour and knowledge.

Community of practice evolve over the period of time and move through various stages of development characterized by different levels of interaction among the members and different kinds of activities (Wenger, Snyder et al. 2002). The community begins when a group of people meet to discuss a particular issue of their interests. The community is forming and is said to be at potential and coalescing stage. The potential and coalescing stage is more concerned with the sharing a common issues and interests and having a common agreement on that particular issue and defines the joint enterprise of community of practice (Wenger, Snyder et al. 2002). When the members start defining the guidelines and measure to conduct the meeting, the community is said to be at a mature stage. The members engage in joint activities and develop relationships with each

other and it defines the mutual engagement of community of practice (Wenger, Snyder et al. 2002). When the community starts to use the previous documents and database to reintroduce the ideas behind the issues, the community is said to be in an active stage. This represents the shared repertoire of community of practice (Wenger, Snyder et al. 2002). And finally, when the purpose of the community is solved, the members of this community move on and maybe would form a different group with different issues.

Communities of practice benefit individuals, communities and of course the organizations. Individuals are benefited from it by developing their skills, competencies and a sense of identity. Communities are benefited from it as they aid in the retention of knowledge when employees leave the company, and help to build a common language, methods and models around specific competencies. And finally, the organization (Wegner and Snyder January-February 2000) benefit from CoP by increasing their value by contributing towards the organization's strategy, promoting the spread of best practice, and introducing new line of business. If the communities of practice are so beneficial and effective, why aren't they more widespread? It is due to the fact that it is not easy to build and sustain communities of practice or integrate them with the rest of an organization as they exist in distributed international environment (Hildreth, Kimble et al. 2000) or virtual teams. The organic, spontaneous and informal nature of the communities of practice makes them resistant to supervision and interference.

2.3 Structuration Model of Social Capital and Communities of Practice

The structuration model has been developed to show social capital as one of the possible manifestations of the structural properties of an organization and communities of practice as the means for realizing the different types of modality between social capital

and human action. The model is based on Giddens' structuration theory (Giddens 1976; Giddens 1979; Giddens 1984). It is an integrating meta-theory that recognizes social reality as constituted by both subjective human actors and by objective institutional properties and attempts to articulate a process-oriented approach that relates the realm of human action and institutional realm.

According to theory of structuration, social structure is defined as recursively organized set of rules and resources that has a virtual existence outside of time-space (Giddens 1981). The rules are social conventions where contexts of their application are well known and the resources refer to the "capabilities of making things happen...of bringing about particular states of affairs" (Giddens 1981). In addition, social structure is derived from a cumulative history of action and interaction among the members of a social system and depends upon their consent and competence. Therefore, its production and reproduction cannot be disembodied from agents who enact and interpret its dimensions. As structure is considered as an abstract property of social systems that is situated in time and space and has only virtual existence (Giddens 1984), it is thus more appropriate to speak of social systems as exhibiting "structural properties" rather than as having structures.

Three dimensions of social structure is defined: signification, legitimation and domination (Giddens 1979). Structures of signification refer to social rules that determine what constitutes meaning and govern communication process. Structures of domination are "asymmetries of resources" that agents draw upon in exercising power and in the sustaining of power relations in and between systems of interaction." (Giddens 1986). Resources reflect the capabilities of actors to act intentionally (Giddens 1982). Giddens

16

used the term "facility" for two distinct types of resources—authoritative and allocative resources. Authoritative resources refer to capability that generates power by having command over persons. Allocative resources are capability that generates power by having command over objects or material. Finally, structures of legitimation refer to norms, or rules, that actors draw upon in the sanctioning of their own and others' conduct in interaction. Norms include rights and obligations expected of actors in interaction such as codes of conduct.

The realm of human action refers to actual arrangements of people, objects, and events in the minute-by-minute flow of social life are unfolding. Giddens specifies that all human interaction be inextricably composed of structure of meaning, power, and moral framework. In other words there are three key processes of human action during interaction, namely: communication, the exercising of power and sanctioning of conduct.

The key principle in structuration theory is that of duality of structure, namely: human action is enabled and constrained by structure, but structure is also the result of human action. Thus structure is both the medium and outcome of action that it recursively organizes. The duality of structure in interaction can be understood as follows: Agents communicate, exercise power and sanction their own behaviour and that of others by drawing on modalities (stocks of knowledge, rules and resources), and in doing so produce and reproduce (with possible transformation) structures of signification, domination and legitimation (Giddens 1982).

The linkage between the realms of social structure and human action is referred to as the "process of structuration", namely, the process by which the duality of structure evolves and is reproduced over time space (Giddens 1979). This process is realized

through three "modalities": interpretive schemes, resources, and norms. Interpretive schemes are standardized, shared stocks of knowledge that humans draw on to interpret behavior and events, hence achieving meaningful interaction. Actors draw upon interpretive schemes (mutual "stocks of knowledge") that mediate communication. This not only enables (and constrains) communication, but in drawing on interpretive schemes, actors reproduce structures of signification (Giddens 1979). Figure (2) displays Giddens' conception of how the two realms of social organization, action and institution, are related.
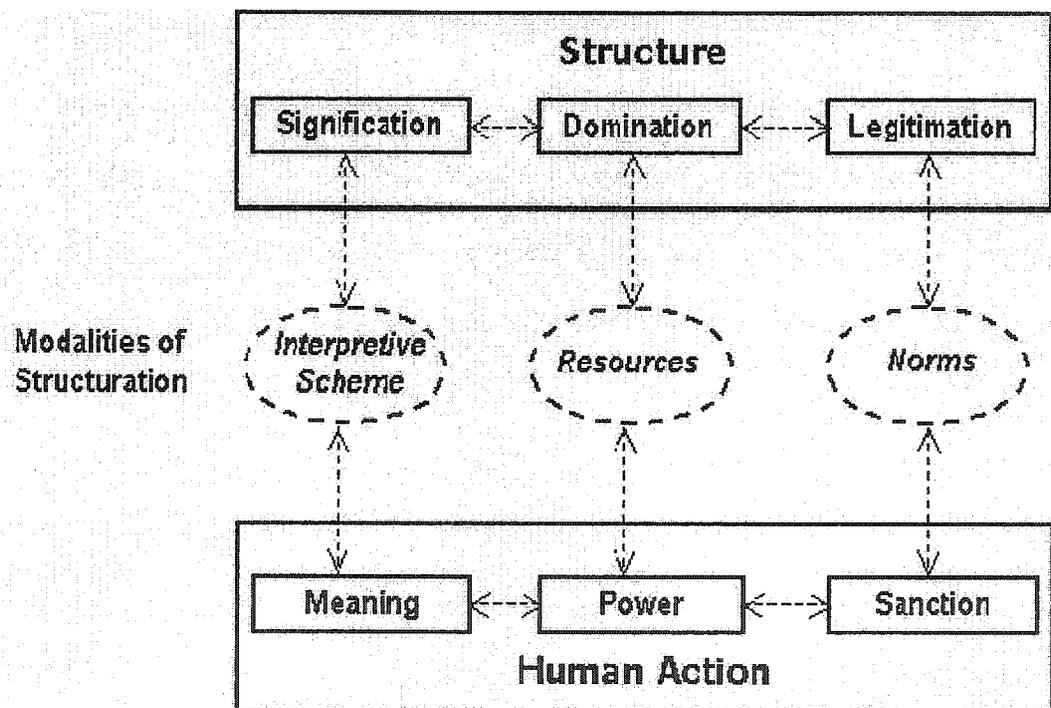
Figure (2): The interaction between social (human) action and institutional properties of structure as mediated by the three modalities of structuration (adopted from Giddens, 1984)

Resources are the means through which intentions are realized, goals are accomplished, and power is exercised. Finally, norms are the rules governing sanctioned

or appropriate conduct, and they define the legitimacy of interaction within a setting's moral order. Norms thus enable and constrain action and through their invocation in interaction, actors reproduce structures of legitimation. These three modalities determine how the institutional properties of social systems influence deliberate human action by affecting the way people communicate, enact power, and determine what behaviours to sanction and reward. They also determine how human action constitutes social structure when structured social practices are institutionalized as they become deeply endured in time and expand in space, i.e., acknowledged widely by actors (Giddens 1982).

Based on this conceptualization, a structuration model of social capital and communities of practice is developed (Figure 3). This model recognizes four influences that operate continuously and simultaneously in the interaction between human actors, social capital and communities of practice, namely:
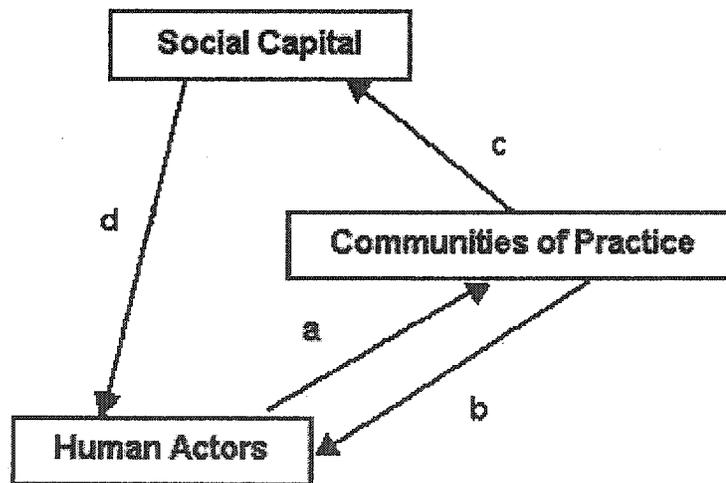
Figure (3): Structural model of social capital and community of practice

19

Table 2.1 The influence of social capital and community of practice

Arrows	Type of Influence	Nature of Influence
a.	COP as a Product of Collective Human Action	Communities of practice are the outcome of such human action as collaboration, negotiation and apprenticeship
b.	COP as a Medium of Collective Human Action	Communities of practice facilitate and constrain human action
c.	Impact of COP on Social Capital	Communities of practice influence the various dimensions of social capital through mutual engagement, joint enterprise, and shared repertoire
d.	Social Capital conditions the interaction with Communities of Practice	Social capital influences organizational members in their relationship to communities of practice

A. COP as a product of collective human action (arrow a in Figure 3): As argued by Wenger and Lave (Wenger and Lave 1991) communities of practice are composed of groups of individuals who are united in both of action and in the meaning that action has. Communities of practice arise naturally, are not formulated or controlled by management, set their own leadership, and follow their agenda (Wenger and Snyder 2000). Each community of practice

- Sets its goals: understanding their specialty and its applications,

- Determines membership boundaries: the group itself decides who is in, who is out, who are the respected leaders and who are the more casual followers,

- Shapes personal relationships among its members: from casual acquaintance to friendships to deep emotional bonds together with generalized reciprocity. The generalized reciprocity implies a sense of mutual commitment to the community, i.e., one member may help another simply because they belong to the same community, not because of a personal relationship, and finally

- Produces collective goods: the shared and enhanced understandings and expansions of professional knowledge in the organizational context (Brown and Duguid 1991).

B. COP as a medium of collective human action (arrow b in Figure 3): Community of practice is regarded as "an intrinsic condition for the existence of knowledge" (Wenger and Lave 1991)p. 98). The notion of "practice" implies that the community's members concentrate on learning that emerges only though working, or actually practicing one's craft. Because of their personal interaction, community's members generate and share new knowledge about how to do their job and how to act in certain settings that go beyond the "canonical" or official company's manuals and training materials (Duguid and Brown 1991). Moreover, as community's members interact and contribute their knowledge to the community the sense of mutual engagement emerges. Through collaboration a community of practice also generates a joint enterprise, a common, shared understanding of events, an action orientation for dealing with such events the next time they arise. Negotiation of a joint enterprise gives a sense of coherence and purpose to it. And finally, a community of practice's shared repertoire, such as stories, jargon, theories, forms, and other resources forms a stock of knowledge that is developed and can be utilized by its members (Iverson and McPhee 2002). Moreover, Lave and Wenger (Lave and Wenger 1991) coined the term "legitimate peripheral participation" to account for the way learning involves participation in a community of practice. In such a community, a newcomer learns from old-timers by being allowed to participate in certain tasks that relate to the practice of the community,

i.e., s/he must go through an apprenticeship process. Over time the newcomer moves from peripheral to full participation.

While the role of communities of practice in facilitating collective human action is discussed in the previous paragraph, they may also have constraining roles. At the community level, as participating in a community is jointly determined by the candidate and community members the wish to join does not necessarily mean that the candidate is allowed into the community. At the firm level, research has shown that core rigidities and competency traps may evolve when community's members attempt to preserve the status quo (Levitt and March 1988; Leonard-Barton 1992). Such situation impedes the creation of new insights and communities of practice may turn into cages in which individuals learn not to learn (Wenger 2000; Teigland 2003). Moreover, in absence of knowledge integration mechanisms and intra-communities interaction, communities of practice may become "knowledge silos" that hinder knowledge sharing at firm level.

C. Impact of COP on social capital (arrow c in Figure 3): Conceptualizing communities of practice as the means for realizing the different types of modality between social capital and human action allows a closer examination of the impact of COP on social capital. Communities of practice affect the structural dimension of social capital in two ways. First, they provide their members with shared repertoire of stories, jargon, theories, forms, and other resources form a stock of knowledge that can be utilized by members. Second, they provide the opportunity for their members to develop a network of individuals who have similar interests and helping them within the community make connections with one another (Lesser and Prusak 1999). In relation to the relational dimension of social capital the mutual engagement element of communities

of practice foster the interpersonal interactions necessary to build a sense of trust and obligations (Lesser and Prusak 1999). By interrelating, members are motivated to negotiate their practices and the meanings of actions. Finally, the joint enterprise element of communities of practice, which is a realization of interpretive schema that communities' members use to define significance, shape practices, and react to a larger context, helps in developing and maintaining an agreed-upon set of terminology, codes and narratives. Such a set is used by communities' members in everyday work conversations and is used to generate the artifacts that enact their shared knowledge.

D. Social capital conditions the interaction with communities of practice (arrow d in Figure 3): the firm's social capital is the set of relationship-based resources available to the organizational actors (individuals and groups) that enables them to create and share knowledge. As discussed in the third section Nahapiet and Ghoshal (Nahapiet and Ghoshal 1998) suggest that social capital can be viewed across three interrelated dimensions: the structural, the cognitive, and the relational. The structural dimension refers to the overall pattern of connections which enable organizational actors, individuals and group, to identify other actors with potential resources that they may not have at their own disposal. Therefore, the structural dimension of social capital will affect the visibility of communities of practice to other organizational actors.

The relational dimension of social capital described by Nahapiet and Ghoshal (Nahapiet and Ghoshal 1998), p. 244) is the result of a history of interactions organizational actors and can be described in terms of respect, trust and trustworthiness, norms and sanctions, obligations and expectations, and identity and identification.

Therefore, it affects the recognizability of communities of practice as credible sources of knowledge.

Social capital's third dimension according to Nahapiet and Ghoshal (Nahapiet and Ghoshal 1998) p. 244), the cognitive dimension, includes those resources that provide shared representations, interpretations, and systems of meaning among organizational actors, individuals or groups such as shared language, codes, language, and narratives. These resources are the means through which organizational actors – once connected – can share each other's tacit knowledge (Polanyi, 1966). Therefore, this dimension affects the accessibility to the knowledge possessed by communities of practice.

This structuration model provides a theoretically grounded approach to closely explore the interaction between human action and social capital of the firm. According to this model such interaction is mediated through firm's communities of practice that are conceptualized as the means for realizing the different types of modality between social capital and human action. Such conceptualization has several implications. The duality of firm's communities of practice, namely: they are both the medium and the outcome of collective human action (arrows a and b in Figure 3). As a medium they both facilitate and constrain the processes of creating, sharing and applying organizational knowledge. While the facilitating role of firm's communities of practice is recognized by many researchers (e.g., (Brown and Duguid 1991; Wenger 2000; Iverson and McPhee 2002), their constraining role is not well addressed. For example, firm's communities of practice, by their very nature, specialize in specific areas of organizational knowledge. However, the application of knowledge to produce goods and services requires the bringing together many areas of specialized knowledge (Grant 1996).

The structuration model provides a theoretical framework to explore the influences of community of practice as a product and medium of human action. This model also provides a framework to study the interaction of social capital and community of practice. This chapter gives an overview of social capital and community of practice and presents with a conceptualized framework of the influence social capital and community of practice and vice-versa on human action. This model forms the foundation to explore the impact of community of practice on social capital.

Chapter 3: Proposed Model

This chapter discusses the knowledge base view of the firm and conceptualization of the model that is derived in three steps. The first step which is the key model aims to study the impact of direct and indirect impact of community of practice competitive advantage. The key model is further extended to study the influence of community of practice on the various dimensions of social capital and forms the fine-grained model. The influence of computer-mediated communication and national culture on the interaction of individuals in community of practice is presented in the proposed model. This chapter presents the several hypotheses' and its rationale behind to establish that community of practice is important to an organization.

3.1 Knowledge-based View of the Firm

Knowledge is viewed as a resource and its presence is seen as a primary source of wealth creation. It is believed that competitive position of the firm is attained by preserving and harnessing knowledge possessed by the firm (Brown and Duguid 1991; Kogut and Zander 1992; Drucker 1993; Davenport, Jarvenpaa et al. 1996; Grant 1996). This is further emphasised by the shifting of the focus from production economy to knowledge economy where organizational knowledge is considered to be an integral part of the organization that needs to be utilized to gain competitive advantage (Drucker 1993). Organizational knowledge is a combination of explicit knowledge, which can be formally articulated or encoded and tacit knowledge, which is developed from direct experience and action by individuals.

The focus of this thesis is on tacit knowledge as it is highly pragmatic and situation specific; and it cannot be completely converted into explicit knowledge (Collins 1993; Cook and Brown 1999). Tacit knowledge is usually created and shared through highly interactive conversation and shared experience, or socialization process (Nonaka 1994). This knowledge is of critical strategic importance because, unlike explicit knowledge, it is both inimitable and appropriable and its possession is viewed as a source of competitive advantage (Spender 1996).

As indicated in Chapter 1, both social capital and the existence of communities of practice are vital for the firm's competitive position, the question that needs to be addressed now is how these two factors are interrelated. This research adapts a small part of the structuration model (Abou-Zeid and Sinha 2004) and further extends it to achieve greater understanding.

3.2 The Key Model

Exploratory research has shown that community of practice improve social capital of a firm thus improving the organizational performance of the firm (Lesser and Storck 2001). The communities of practice is conceptualized as the means for realizing the different types of modality between social capital and human action (Sinha and Abou-Zeid 2003). This conceptualization can further be extended to examine whether community of practice and social capital helps a firm to attain competitive advantage. It is a common perception that existence of community of practice and social capital is important for strategic positioning and hence empirical proof is required to validate that this perception is a correct one. The purpose of this thesis is to closely examine the

impact of community of practice on social capital and the impact of social capital and community of practice on competitive advantage.

3.2.1 Competitive Advantage

The firm can achieve competitive advantages in a particular domain by having a superior value and superior profits for itself in a particular area. Examples include having superior value such as customer services extended by Dell, or making superior products like IBM computers. When a firm sustains profit that exceeds the average of other firm, the firm is said to have a competitive advantage. The goal of the firm should always be to attain a position in the industry and defend itself against the competitive forces or influence other firms in its favour (Porter 1980). Along with adding values and setting strategic agendas, creating competitive advantages remains a pipe dream for many CIO's. Porter has identified two ways in which a firm can achieve competitive advantages:

- Cost advantage: same benefits at a lower cost

- Differentiation advantage: deliver benefits that exceed those of competing products.

The resource-based view emphasizes that the companies utilizes the resources like patents and trademarks, brand equity and propriety know-how to achieve either cost advantage or differentiation advantage that ultimately results in superior value creation. Capabilities refer to the firm's ability to effectively utilize the resources available to it. An example of capabilities could be the ability to bring a product to the market more quickly than the competitors. Resources and capabilities both form the distinctive abilities for the firm to achieve competitive advantages that enable innovation, efficiency, customer responsiveness and quality in the firm thus leveraging on cost or differentiation

28

advantage. Currently, the focus for gaining competitive advantages is on effective utilization of the resources and capabilities possessed by the firm (Fahy and Smithee 1999). The firm can also achieve competitive advantage by creating value by performing series of activities from value chain (Porter 1985).

Another view of competitive advantage is capability-based view of the firm that regards community of practice as a capability through which the firm is able to create and sustain competitive advantage by learning and collaborating and redesigning its processes on an ongoing processes (Liedtka 1999). The key model has been derived and adapted from the structuration model and aims at a closer examination of the impact of community of practice on social capital and the impact of social capital and community of practice on competitive advantage (see Figure 4).
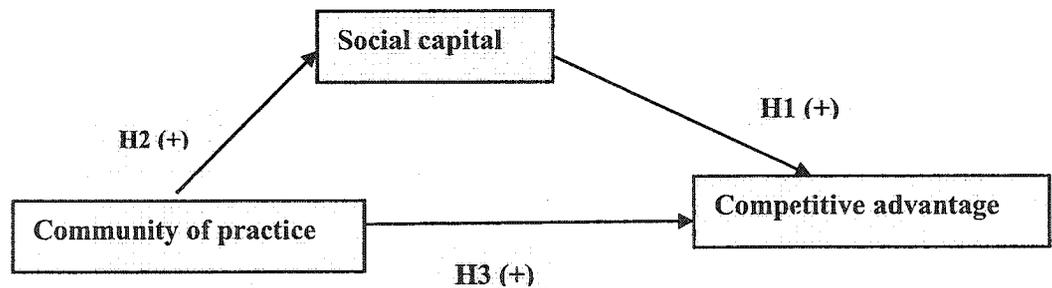
Figure (4): The key model extracted from the structuration model of social capital and community of practice

Towards the objective of empirically proving that competitive advantage is achieved due to the existence of community of practice and social capital in a certain domain, three hypothesises were formulated.

H1: The firm's social capital in a certain domain is positively related to the firm's competitive advantage in that domain.

Social capital refers to the resources embedded within a network of relationships of individual or social unit. The greater is the resources and capabilities that are possessed by a firm, the easier it is to attain competitive advantage. Thus, it is hypothesized that the presence of social capital enhances and improves the competitive position of a firm in a certain domain or area.

H2: The existence community of practice in a certain domain is positively related to the firm's social capital in that domain.

Community of practice is a collection of individuals and it is believed that the resources and capabilities that make up the social capital are improved because of the interaction and socialization process that takes place in community of practice. Thus, it is hypothesised that social capital of a firm in a certain domain is enhanced and improved by the existence of community of practice.

H3: The existence of community of practice in a certain domain is positively related to the firm's social capital in that domain.

The interaction that takes place in the community of practice would help to sustain and create new knowledge that will be unique for that firm and thus ensuring competitive position in the market. It is hypothesised that existence of community of practice will improve the competitive advantage of the firm.

3.3 The Fine-Grained Model

As was discussed in Chapter 2, social capital is characterized in terms of three interrelated dimensions: structural, relational and cognitive (Nahapiet and Ghoshal 1998). The key model is further extended to provide a fine-grained view of the relation of communities of practice and the various dimensions of social capital, i.e., structural,

relational and cognitive. It is very important to see whether existence of community of practice enhances the way individuals interact with each other, increases the level of trust and obligations they have with one another and enhances the common understanding of the goals of the organization that make it possible for work to be done effectively. Figure (5) presents a fine-grained view of the relation of community of practice and the dimensions of social capital.
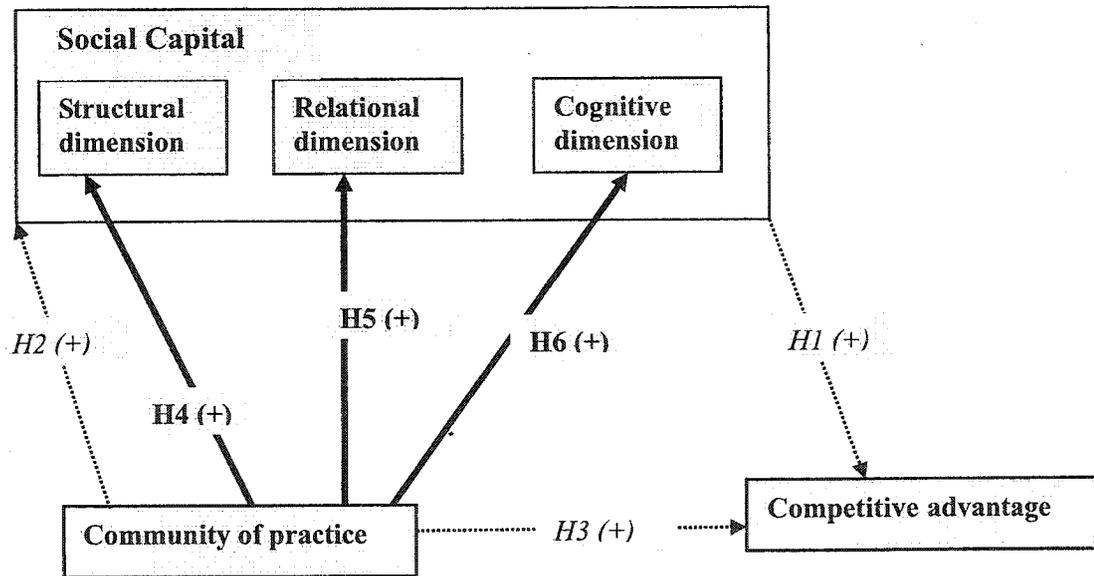
Figure (5): The fine-grained model of social capital and community of practice

H4: The existence of community of practice in a certain domain is positively related to structural component of firm's social capital in that domain.

The structural dimensions are basically pattern of connections that enable individuals to identify with others and thus build network ties. As network ties provide access to various resources, it is believed that existence of community of practice is a channel through which these ties could be strengthened. Thus, it is hypothesized that existence of community of practice helps to build and improve relationship.

H5: The existence of community of practice in a certain domain is positively related to the relational component of firm's social capital in a in that domain.

The relational dimension refers to obligation, trust, norms and identification and it is believed that existence of community of practice makes it easier for mutual reciprocity and establishing common behaviour that individuals are willing to abide by. Thus it is hypothesized that relational dimension of social capital is enhanced by the existence of community of practice.

H6: The existence of community of practice in a certain domain is positively related to the cognitive component of firm's social capital in that domain.

The cognitive dimension refers shared codes, language, and narratives and is the extent of common interests and shared understanding of the norms of the organization between the individuals. The extent to which people share language facilitates their ability to gain access to people and information is made easier by the existence of community of practice where through interactions firm's policies and norms is discussed and shared. Thus, it is hypothesized that having a community of practice in a firm improves the cognitive dimension of the firm.

3.4 The Proposed Model

The fine-grained model is further extended to study the impact of computer-mediated communications and national culture on the relationship between community of practice and the various dimension of social capital. Community of practice consists of individuals with various cultural issues and background, thereby affecting the formation and effectiveness of these communities. If the national culture does not support and encourage the use of common language, norms and trust building, then the social capital

will not have a positive improvement in the firm's competitive advantage. Culture is seen as the integral feature of the human species and involves what people think, what they do, and the products they produce.

The influence of computer-mediated communications cannot be overlooked as a tool to build relationship in communities of practice. As computer-mediated communications enhance the communication among individuals, and thus affect the structural dimension of social capital, it becomes imperative to know whether there is an influence of computer-mediated communications on the relationship between communities of practice and the structural dimension of the social capital.

In a nutshell, the proposed model takes into account the influence of national culture on the relationships between communities of practice and relational and cognitive dimensions of social capital, and that of computer-mediated communication on the relationships between communities of practice and structural dimension of social capital.

3.4.1 Computer Mediated Communications

According to Lesser and Prusak (Lesser and Prusak 1999) the structural dimension "refers to the formation of informal networks that enable individuals to identify others with potential resources. Overall, the structural dimension of social capital reflects the need for individuals to reach out to others within an organization to seek out resources that they may not have at their own disposal". The structural dimension of social capital can be build by using computer-mediated communications to facilitate sharing, creating, transferring and storing of knowledge among individuals.

Murray Turoff developed computer-mediated communication in1970. Computer-mediated communications (CMC) is defined as a computer-based systems that enable

entry, storage, processing, distribution, and reception of digitized information (Rice, Grant et al. 1990). Computer-mediated communications exist in different forms like e-mail, fax, telephone, text retrieval systems, group decision support systems, video conferencing and group ware (Huseman and Miles 1988). E-mail and telephone are the most common form of computer-mediated communications used to communicate and share knowledge in community of practice (Hildreth, Kimble et al. 1998). CMC is also used by instructors and students to deliver distance education, as well as for access to resources and information (Gillispie 1999). It has proven to be an effective means of connecting and exchanging information with colleagues by eliminating time and location constraints (Gillispie 1999; Li 2002). When used appropriately, computer-mediated communication can be a powerful means of integrating information from multiple sources and helps in providing individualized instruction, student participation, and collaboration (Gillispie, Dunn et al. 2002).

Research in computer-mediated communications reveals that they are more effective forms of communications than face-to face meeting (Walther 1995; Ocker, Fjermestad et al. 1998). Face-to face meeting are very useful for the initial phase of group work. But once the group members get to know each other then computer-mediated communication becomes most effective way to communicate. However, it is suggested that both face-to face and computer-mediated communications results in quality and innovative work (Ocker, Fjermestad et al. 1998). Also, it is observed that most studies examining the effects of CMC have focused on group outcomes, such as product quality (Straus and McGrath 1994), or on group processes, such as task versus social orientation (Walther 1995) or on communication processes and outcomes in organizations (Kahai

and Cooper 1999). It is also widely recognized that CMCS significantly alter communication processes and outcomes in organizations (Hollingshead and McGrath 1995; Bordia 1997).

These studies add to our understanding of CMC in organizations. Computer-mediated communication plays an important role in improving the communication among community members that increase new business, and product innovations (Millen, Fontaine et al. April 2002). It helps the organization to reduce the time taken and costs incurred to perform a variety of information -seeking and –sharing tasks. It enables to speed up information processing chain and indirectly enable complementary innovations. It would also help the organization to not only complete projects successfully but also to store information about the problems faced by the employees and different solutions proposed to solve the problem. This can help employees to avoid the problems in future projects thus saving time and resources.

Investment in information technology is linked to higher productivity, quality output, and improvement on intangible aspects of products like quality and timeliness (Brynjolfsson and Hitt 1995). But executives make a relatively low investment in technology since most of the technology like phone, fax, and e-mail are already present in the organization (Millen, Fontaine et al. April 2002). Groups rely heavily on e-mail and telephone to maintain the links. New approaches like Object Oriented Multi User Dungein (MOO) and videoconferencing may be considered to facilitate structural dimension of social capital (Hildreth, Kimble et al. 1998). Another recent innovation is the Sociometer to identify key players and connectors in community of practice (Choudhury and Pentland 2002). It is a very useful to help the management to identify

and reward the key employees thus result in improvement of productivity of the employee. Sociometer can also help managers to study the underlying social mechanism of community of practice and thus provide support to these communities accordingly.

3.4.2 National Culture

Culture has been explored on the national level (Hofstede, Neuijen et al. 1990) and organizational level (Hofstede 1980) (Schien 1986). National culture is defined by Hofstede as "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede 1980). The collective programming is based on values – "a broad tendency to prefer certain states of affairs over others" (Hofstede 1980). In other words, members of a culture will have similar sets of preferences built in to how they view the world. Each country will have its own sets of beliefs and issues and ways of doing things thus defining its national culture. The focus of the research is on national cultural as this culture influences the attitude and thinking of individuals working in the organization. It is very important for multinational companies who are now opening subsidiary firms in developing countries as organization's culture is nested within a national culture, and thus influences human resource practices and organizational behaviour (Hofstede 1980; Olutimayin 2002). National culture is of two types western culture and eastern culture. In western culture, ideas come from individual and these individuals are responsible, motivated and capable of governing themselves. There is an air of informality and is seen in organization of North America and Europe. In eastern culture, the individuals listen to wiser, higher-status members of the society lending to the air of formality and is most prevalent in organizations of Asia and Middle-Eastern countries.

Table 3.1 Hofstede's Cultural Dimensions (Ford and Chan 2002)

Cultural Dimension	Definition
Power Distance (PDI)	How inequalities are viewed and handled in the culture (i.e., strong hierarchical relationships versus egalitarian relationships).
Individualism/Collectivism	How individuals view themselves (e.g., are they an individual striving for individual goals or a part of a collective group, where group harmony is important?).
Uncertainty Avoidance (UAI)	How accepting of uncertainty a culture is (i.e. it focuses on the level of tolerance for uncertainty and ambiguity within the society - i.e. unstructured situations).
Masculinity/Femininity	How the culture values competitiveness/assertiveness (i.e., masculine traits) and cooperation/nurturing (i.e., feminine traits).
Long Term Orientation	This dimension accounts for people's preference of time frame (i.e., do the people focus on long term goals or the more immediate, short term goals?).

In studying cultural differences in work-related value orientations, Hofstede surveyed more than 88,000 employees of a large multinational corporation that has branches in 66 countries. Based on the information obtained in 40 countries, Hofstede identified four dimensions along which dominant patterns of a culture can be ordered: power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity. Hofstede and Bond (1988) (Hofstede and Bond 1988) later developed a fifth dimension, which they called long term orientation. See Table 3.1 for the definitions of the dimensions.

As markets continue to become global and firms become more international, joint ventures, particularly cross-border joint ventures, increasingly provide firms with opportunities to rapidly expand geographical market participation, create economies of scale and critical mass, reduce risks, learn new skills and technologies, and facilitate effective resource sharing. As knowledge is socially produced/reproduced the processes of creating and sharing is constrained by the social and cultural contexts in which it is embedded (De Long and Fahey 2000). Moreover, research on knowledge management

initiatives has shown that knowledge and culture are inextricably linked in organizations (Parkhe 1991; Lam 1997; Inkpen 1998; Lam 1998; De Long and Fahey 2000; Gupta and Govindarajan 2000; Robert 2000; Gill 2001). Therefore, the impact of context-specific factors in general, and cultural-specific factors in particular, on the effectiveness of socialization process cannot be overlooked. Culture is seen as the integral feature of the human species and involves what people think, what they do, and the products they produce.

The power distance and individualism/collectivism may impact the knowledge socialization processes within an organization. For instance, countries like South Pacific, culture that have a high power distance may have more hierarchical structures (Olutimayin 2002), therefore knowledge may be more likely to flow from the top down, or may be more limited than knowledge flows within a culture that has less power distance. For example, in their study of a Japanese manufacturing subsidiary in the Western U.S. (Ford and Chan 2002) found that "Japanese were more willing to talk to the President than their American counterparts. The Americans, on the other hand, were more willing to discuss the problem with their co-workers, and people below them in the organizational chart".

The extent to which individuals' behaviours are influenced and defined by others is individualism-collectivism. Individualists prefer self-sufficiency while collectivists recognize their interdependent roles and obligations to the group. One possible implication is that individualistic cultures may have more difficulty in knowledge sharing, since knowledge is often seen as a source of power and a tool for success. In their study of how different national cultures influence knowledge sharing behaviour, Yoo

and Torry (Yoo and Torry 2002) found that Korean consultants share their knowledge through informal social settings compared with U.S. consultants.

Two identical firm having same technologies and resources will have different cultural differences resulting in different profitability and incentive intensity. The difference in culture may arise due to initial conditions and magnified later on by the dynamics of incentives, reciprocity and social capital (Rafeal and Zemsky Summer 2002). In summary, we argue that national cultures and knowledge socialization processes intersect in the following ways:

- Cultures that are high on power distance may have a more top-down flow of knowledge than cultures that are low on power distance.

- Cultures that are high on individualism may have more difficulty in knowledge socialization than cultures that are high on collectivism.

This approach is used to study the effect of national culture and computer-mediated communication on the relationship between social capital and communities of practice (Sinha and Abou-Zeid 2003). Based on the above discussion, it is believed that national culture and computer-mediated communications would affect the relationship between community of practice and social capital, the following hypotheses are proposed. Figure 6 gives an overview of our proposed model.

H4a: The computer-mediated communication strengthens the relation between the structural component of firm's social capital in a certain domain and the existence of community of practice in that domain.

As computer-mediated communications enhance the communication among individuals, and thus affect the structural dimension of social capital, it becomes

imperative to know whether there is an influence of computer-mediated communications on the relationship between communities of practices and the structural dimension of the social capital. It is also important to understand whether computer-mediated communications would support communities by providing an opportunity to find one another using individual profiles, and exchange ideas using discussion forums, e-mails, and chatrooms. Therefore, it is hypothesized that the computer-mediated communications acts as a moderator that strengthens the relation between the structural component and the existence of community of practice (see Figure 6)
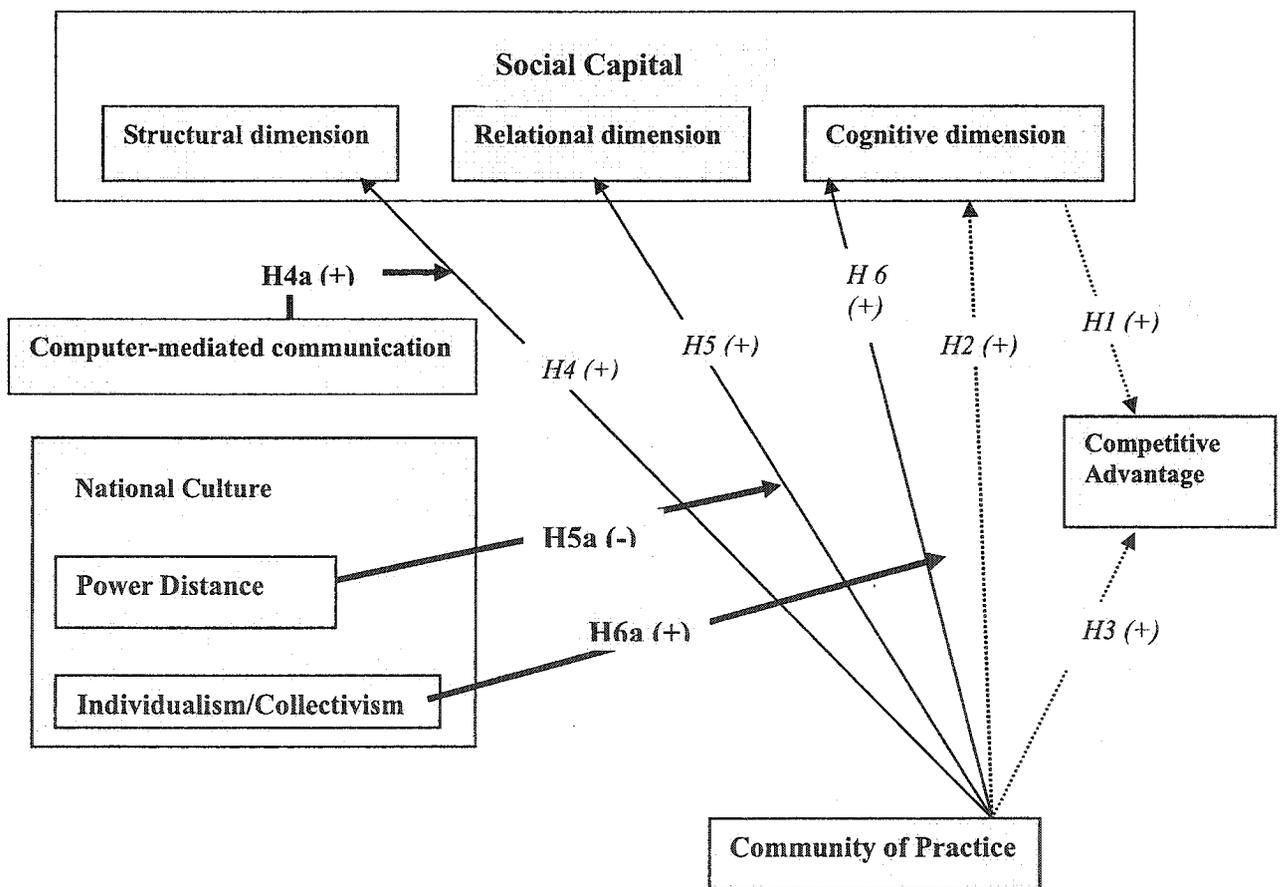
Figure (6): The proposed model

H5a: The greater a country's power distance, the weaker the positive relation between the relational component of firm's social capital in a certain domain and the existence of community of practice in that domain.

Power distance influences the way relationship is formed between individuals in community of practice and acts a moderator that will weaken the relationship between relational component and community of practice. The relational dimension of social capital is most affected by power distance. The more the level of power hierarchy, the more difficult it is to build obligation, trust and norms. Thus, the proposed model takes into account the power distance and attests whether there is an influence on relational dimension of the social capital (see Figure 6).

H6a: The more collectivistic a society, the stronger the positive relation between the cognitive component of firm's social capital in a certain domain and the existence of CoP in that domain.

Individualism/collectivism will influence the sharing of common contexts and language and will thus influence the relationship between community of practice and the cognitive dimension of social capital. It will moderate the relation between the cognitive component of firm's social capital and existence of community of practice. The use of common language will be more if the individuals have a sense of obligations to the group. The more the influence of other individual's behaviours, the more should be the impact of national culture cognitive dimension of social capital. It is hypothesized that when a society has a collectivistic attitude, it is very easy to enhance the cognitive component of firm's social capital.

Overall, we postulate that improving social capital will augment the competitive advantage of the firm in a particular domain. Social capital in a domain will improve when proper use of computer-mediated communications will be made and power distance is reduced in a firm. Our objective is to demonstrate how improving the three dimension of social capital will influence the survival of community of practice in a certain domain and thus increase the competitive advantage of the firm.

Chapter 4: Research Methodology

This chapter defines the constructs that have been used with regard to the research presented in this thesis. Operational definitions were given to each construct and are discussed in detail in this chapter. The chapter discusses the design of the measure of community of practice. Finally, the data collection phase is also discussed in this chapter. The processes involved in the development of the questionnaires for each construct are also described.

4.1 Operationalized Definition

This section describes the definitions that were used to prepare the questionnaires. Since the concepts behind each construct are huge, the first step involves defining the scope of the each construct. Once the scope is established, the construct is defined and questionnaires are prepared based on these definition.

4.1.1 Existence of Community of Practice

Research in communities of practice is in infancy stage thereby resulting in the lack of appropriate measures for this construct. To measure this construct, the questions were designed using the definition provided by Wenger (Wenger, Snyder et al. 2002). Community of practice is defined in three aspects; joint enterprise, mutual engagement and shared repertoire. Joint enterprise is measured in terms of degree of common agreement and common interests on work related issues and interests. Mutual engagement is measured by degree of participation and sharing of work in work related issues and interests. Finally, shared repertoire is measured by the frequency of use and reuse of old documents and databases and the degree of learning achieved during the

meetings. Table 4.1 gives the items that were used to measure the different aspect of community of practice.

Table 4.1. Construct of community of practice

Construct	Definitions (Adapted from (Wenger 1999))
Community of Practice	**Joint Enterprise**
	a. Share common interests that are related to work b. Common agreement on work related issues and interests
	Mutual Engagement
	a. Share work related interests b. Participating in group activities are felt to be useful and insightful
	Shared Repertoire
	a. Learned some new words or jargons that you relate with your interest b. Use of documents and databases of past meeting. c. Always updating the database with new information

Questions were formulated in 5-point Likert scale based on the items that measure the construct community of practice. The sum of the items was considered to give the numerical value of community of practice. When the sum of the six items lies in between (6,12), then it shows that communities of practice do not exist in the organization as the employees never or seldom meet and share, never or seldom have common agreement and interests related to work and overall they never or seldom learn anything new or beneficial for their development. When the sum of the six questions lies in between (18, 30), the answers that are ticked for all the questions lies between occasional to always range. This implies that the members occasionally or often use database of past meeting and are continuously learning something new (like new slangs, vocabulary, or styles). This helps us to confirm the presence of communities of practice as the employees are meeting regularly to discuss work related issues and are learning new in each meeting.

The questionnaires are filled by two professional groups of people, one

44

constituting the management (manager) and the other constituting members working under them (professionals). Table 4.2 gives the guidelines that will be used to evaluate the perception of managers and professionals on the existence of community of practice.

Table 4.2. Existence of community of practice

Existence of community of practice	Managers (Response in the questionnaire)	Professional (The sum of questions in questionnaire)
Yes	Yes	15-30
No	No	6-14

During the pretesting of this construct, it was observed that when the sum of six questions lies between (13, 17), it was observed that response to few questions were ticked seldom or never and few occasional to always. This may imply that the community is not very developed and thus would be at various stages of development. It gave the impression that although employees meet and discuss their interests but they might not find it useful or learn something useful in these communities. It can also be perceived that the employees do not always agree to the issue and might not share the same interests with other colleagues. At this stage, maybe the interests are developing and after a particular stage they might feel that the communities of practice will be useful. To explain this phenomenon, the concept of stages of development of community of practice that was discussed in Chapter 2 was used.

Table 4.3 gives the guidelines to identify the stages of development. The joint enterprise of community of practice is identified when the sum of the item lie between 8 and 13. When the measure for joint enterprise shows a high number, it indicates that the community is at potential and coalescing stage. The mutual engagement of community of practice is identified when the sum of the items lies between 13 and 17; and we can say that community of practice is at mature stage. The higher the sum, the more mature is the

45

community of practice. The shared repertoire of community of practice is identified when the sum of items lie between 18 and 30.

Table 4.3. Distinguishing the different stages of development of community of practice

Potential	Coalescing	Mature	Active
Characteristics of each stage			
Loose network of people with similar issues and interests. People come together and engage in learning activities.	Members defines learning agenda, create guidelines and measures. Engage in joint activities and developing relationships and commitment.		Community is established and goes through the cycle of activities Use of previous databases and knowledge reserves to train and educate novices. Redefine and renew their issues.
Items to measure each stage			
Joint enterprise: sharing of common interest, having and common agreement on work related issues	**Mutual engagement:** share work related interests and participating is felt useful and insightful.		**Shared repertoire:** learned new words and consult database of previous meetings.
Sum of items			
8-13	13-17		18-30

Once it is established that community of practice exists, the data from the professional data was used to analyze the current stage of community of practice.

4.1.2 Social Capital

The focus of social capital in this thesis is based on work of Nahapiet and Ghoshal. To measure this construct, the measurement has been adapted from the work of Chua (Chua 2002) who has extended the work of Nahapiet and Ghoshal. The questionnaire (Chua 2002) of social capital measures the structural dimension as the length and extent of discussion on a particular topic. The focus of relational dimension is

on obligation, trust, norms and identification and finally the cognitive dimension the use of common language and codes, underlying assumptions, shared narratives and the extent to which people share language facilitates their ability to gain access to people and information. The items that will measure each dimensions of social capital is identified and presented in Table 4.4

Table 4.4. Construct of social capital (Adapted from (Chua 2002))

Construct	Definitions
Social Capital	Structural dimension
	a. Discussion of modification among employees b. Length of discussion
	Relational dimension
	a. Trust in terms of their dependability and reliability b. Empathy with your collgeaues c. Provided help when they needed it d. Leniency in judgement e. Sharing of open and free opinion in curriculum development f. Value diversity g. Openness to criticism h. Tolerate failure i. Sense of togetherness
	Cognitive Dimension
	a. Use of slang, cliché or lingo when engaging in casual discussion with your colleagues b. Sharing organizational myths or stories with your colleagues

4.1.3 Competitive Advantage

To measure this construct, the innovation and capability aspect of competitive advantage that was proposed by Porter has been used. The managers were asked to identify the area in which they thought they have competitive advantage and then questions were designed that measured whether the company possessed a uniqueness in that area that clearly separate it from its competitors, and whether it had the capabilities and resources to compete in the market five to 10 years from now (see Table 4.5). A 7-

47

point Likert scale was used to measure the innovative capability of competitive advantage.

Table 4.5. Construct of competitive advantage

Construct	Adapted from Porter (1985)
Competitive advantage	a. Unique feature that distinguishes from the competitors b. Possesses resources and capabilities to sustain its competency in the market for the next 5-10 years

4.1.4 National Culture

Given the scope of the thesis, the focus is on the power distance and individualism/collectivism aspect of national culture. As power distance relates to the relationship between employees and management (i.e., strong hierarchical relationships versus egalitarian relationships), it affects the effectiveness of communities of practice. Communities of practice will have different dynamics due to the individualism /collectivism nature of the countries in which these individuals exists. The indices that were calculated by Hofstede are used to measure the individualism and power distance for the construct of national culture.

Table 4.6. Hofstede's dimension of individualism and power distance

Country	Individualism index	Power distance index
Canada	80	39
India	48	77
P.R.China	17	58
Russia	NA	NA
United Kingdom	89	35
USA	91	40

The countries from where the managers and professionals participated in this research are presented in Table 4.6 along with Hofstede's individualism index and power distance index.

4.1.5 Computer-Mediated Communications

In this thesis, for this construct, we have limited ourselves to mainly on e-mails, chatrooms, intranet and newsgroup. The frequency and the extent of use of each computer-mediated communications have been measured. The measurement designed by Hiltz (Hiltz and Johnson 1990) was used for our purpose. The construct also measured the most widely used computer-mediated communications. Table 4.7 defines the items that were used to measure this construct.

Table 4.7. Construct of computer-mediated communication

Construct	Adapted from Hiltz (Hiltz and Johnson 1990)
Computer-mediated communications	**E-mail**
	a. Usage of e-mail b. Check e-mails on an average
	Newsgroup/discussion board and videoconferencing
	a. Usage of newsgroup/discussion board b. Chat with number of people on an average
	Favored mode of communication
	a. E-mail b. Chatrooms c. Newsgroup d. Videoconferencing

4.2 Data Collection

Data was collected through web survey and the URL (http//pan.concordia.ca/ abouzeid/survey-main.htm) was sent through e-mails to different organizations situated in different countries. Data was collected through two phases: the first phase consisted of manager filling the manager form. These managers were asked to identify the area of competitive advantage. The second phase consisted of requesting the manager to forward the URL to the professionals working in that area. E-mails and telephone reminders were given to the managers and professionals so that the manager

and professional questionnaire were duly filled. A thank you e-mail was sent to managers and professionals who successfully completed the web-survey.

The data was stored in the university database and the database administrator was responsible for this data. The data was then converted into SAV file and analyzed using SPSS.

Chapter 5: Data Analysis

The collected data are analyzed in this chapter and results are presented in three parts. The first part discusses the characteristics of the sample. Subsequent two parts discuss the analysis of manager and professional dataset. The chapter concludes with a comparison of perceptions of manager and professional on community of practice.

5.1 Sample Characteristics

A total of 42 organizations participated in this research. The sample consisted of organizations that were involved in different business activities and these activities ranged from banking to mining and manufacturing. Table 5.1 list the number of organization that are involved in various business activities. The analysis showed that the majority of organizations that participated in this research belonged to the category of information technology activities.

Table 5.1. Business activities

Business activity	Number of organization	Percentage
Information technology	15	36.6
Banking	7	17.1
Engineering	6	14.3
Communication	4	9.8
Consultancy	3	7.3
Manufacturing	3	7.3
Mining	2	4.9
Education	1	2.4

One of the intentions of this research is to investigate the difference in the level of interaction among employees in different cultures i.e., western and eastern culture. Organizations located in different countries like India, Canada, USA participated in this research. Table 5.2 shows country that participated in the research and the number of

organizations that participated in the research from each country. It can be observed from the table that the majority of organizations were from India and USA.

Table 5.2.Participating countries

Country	Number of organizations	Percentage of the sample
India	16	38.1%
USA	15	35.8%
Canada	7	16.7%
United Kingdom	2	4.8%
P.R.China	1	2.4%
Russia	1	2.4%

This was very useful as India represents the eastern culture and USA represents the western culture.

5.2 Interpretation of Manager Data Set

This dataset measures the constructs community of practice and competitive advantage. After pretesting the manager questionnaire, e-mails with the URL was sent to a total of 150 managers, out of which only 42 participated. The questionnaire for the managers is provided in the appendix (Exhibit A2). Out of 42 managers that participated in the research, 32 managers were aware of the presence of community of practice in their organization (see Table 5.3). This means that more than 75% of the sample was aware that communities of practice existed in their organization.

Table 5.3. Existence of COP

Existence of COP	Number of managers	Percent
No	10	23.8
Yes	32	76.2
Total	42	100.0

Once it was observed that the managers are aware of community of practice, the perception of manager of its importance was judged. It was observed that 40% of the

52

managers perceive that community of practice is important as they *contribute occasionally* to the area in which the firms have competitive advantage. About 47% of the managers perceive that community of practice is important as they *contribute regularly* to the area in which the firms have competitive advantage. Table 5.4 gives a glimpse of the number and percentage of managers that perceives the importance of community of practice.

Table 5.4. Importance of community of practice

Contribution to competitive advantage	Number of managers	Percent
Regular	18	47.3
Occasional	15	39.5
No contribution	5	13.2

The different area in which the community of practice contributes to the competitive advantage of the firm is listed in Table 5.5 along with the percentage of managers.

Table 5.5. Nature of contribution of community of practice

Contribution of community of practice on competitive advantage	Perception of percentage of managers
By generating new ideas and solutions	64.3%
Sharing experiences and knowledge among colleagues	64.3%
Connecting different professionals having different expertise	47.6%
Increasing access to expertise across the business area	45.2%
Creating a sense of belonging among new employees	23.8%
Sharing of the values, norms and myths between employees	23.8%
Increasing opportunities to pro-actively raise issues with relevant forums.	23.8%

The percentage gives the number of managers out of 42 managers that perceive the area of contribution of community of practice. It is observed that the 64.3% of the managers perceive that informal group of professionals contribute to the competitive

53

advantage by generating new ideas and solutions and sharing experiences and knowledge among colleagues.

About 24% of the managers perceive that communities of practice enhances the competitive advantage of the firm by creating a sense of belonging among new employees, sharing the values, norms and myths among employees and increasing opportunities to proactively raise issues for discussion.

Table 5.6 shows the correlation matrix and it reveals that competitive advantage has a weak relationship with existence of community of practice. The correlation is not statistically significant as can be seen by the sig. value. The weak correlation would be contributed due to the small size of the managers.

Table 5.6. Correlation Matrix

		Competitive Advantage
Existence of COP	**Pearson Correlation**	**0.102**
	Sig. (2-tailed)	0.531
	Sig. (1-tailed)	0.266

As the items that measure community of practice are exists and not-exists, t-test was used to examine the effects of one independent variable (existence of community of practice) on competitive advantage. The t-test is restricted to comparisons of two groups; existence of community of practice and non-existence of community of practice. The results of this test enabled us to determine if the means of these groups differs significantly.

Table 5.7. Statistics for existence of community of practice

	Existence of COP	Number of managers	Mean	Std. Deviation	Std. Error Mean
Competitive advantage	Exists	31	10.42	3.344	.601
	Not Exists	9	9.56	4.475	1.492

The group statistics (Table 5.7) reveals that the mean of existence of community of practice differs slightly from the mean of non-existence of community of practice. The statistics also reveals that the mean of competitive advantage when community of practice exists is higher; 10.42 implying that the organization possesses a very unique capability that can help them to remain competitive in the market and this unique capability would help them retain their competitiveness in the future.

F-test (Levene's test for equality of variances) evaluates the basic assumption of the t-test that the variances of the two groups are approximately equal (homogeneity of variance). The F value reported in table 5.8 is 1.402 and the significance level is 0.244, the assumption of homogeneity of variance has not been violated. Thus, the data showed the existence of community of practice has no significant effect on competitive advantage, $t(38) = 0.632$, $p = 0.86$.

Table 5.8. Results of Levene's test

	F-value	Sig.	T-test	Sig.	Df
Competitive advantage	1.402	.244	0.632	.86	38

The managers that participated in the web-survey belonged to the department like personnel, technical or sales. The focus of these departments is not on business needs and thus community of practice would generally be for solving and discussing issues related to work. So that could be a reason why managers perceive that community of practice does not help a firm to achieve competitive advantage.

5.3 Reliability and Validity

Before analyzing professional data, reliability and validity test was done ensure that instruments and observations were relevant and reflects what it's supposed to and are reliable. To do so convergent and discriminant validity was done to ensure that construct was measuring what it supposed to measure.

5.3.1 Convergent and Discriminant Validity

Before analyzing professional data, convergent validity and discriminant validity of each of the construct was done. Convergent validity assesses the extent to which the items within each construct are related. Discriminant validity assesses the extent to which each constructs are unique and different from each other. It was very important to assess this test, as there were multiple constructs in the proposed model. To do these tests in SPSS, Pearson's correlation test of items of different construct was done.

To observe discriminant validity, the relationship between measures of different constructs should be very low. The correlation matrix that is shown as Exhibit A4 is very low (i.e. near zero) and certainly much lower than the convergent correlations. To observe the convergent validity, the relationship between items of the same construct should be high. Also, convergent correlations should always be higher than the discriminant ones. From the correlation matrix that is shown as Exhibit A4, it is observed convergent correlations are *always* higher than the discriminant ones. Therefore we conclude from that the correlation matrix provides evidence for both convergent and discriminant validity.

5.3.2 Reliability

The primary concern in any research is the accuracy of measures of the dependent variable. Reducing sources of measurement error is the key to enhancing the reliability of the data. After the questionnaire was prepared, it was pretested by sending the questionnaire to two small organizations. The pretesing revealed that apart from few questions, the questions were clear and easily interpreted. The questions that were not clear to the respondent, the questions were rephrased after getting the feedback from the respondent. Except for community of practice, all the other constructs are borrowed from previous research to maintain the clarity and validity of the constructs. The pretest also confirmed that the construct community of practice that was developed is clear and the items only measure the construct of community of practice.

Cronbach's alpha was measured to test how a set of items (or variables) measures a single construct. Table 5.9 shows the Cronbach alpha for the different constructs used.

Table 5.9. Cronbach Alpha for different construct

Construct	Number of items	Cronbach alpha
Competitive advantage	2	0.8356
Computer-mediated communications	6	0.62
Community of practice	6	0.7605
Social capital	11	0.6783
Structural dimension	2	0.4374
Relational dimension	7	0.6903
Cognitive dimension	2	-0.1321

For computer-mediated communications, there were 105 cases and the Cronbach alpha for six-item scale was reported to be 0.62 that was quite good. For 106 cases of community of practice, the Cronbach alpha for 6 items scale was reported to be 0.7605 which was quite good. Social capital was measure by 10 items and the Cronbach

alpha was reported to be 0.6135. Exhibits 4, 5, 6, and 7 in the appendix show the details of reliability analysis done in SPSS.

Thus, it is observed that the items used to measure the different constructs were reliable except for the low Cronbach alpha for cognitive dimension.

5.4 Analysis of Professional Data Set

106 professionals participated in the survey. The manager perceives these professionals as critical and important part of their group as they contribute to the competitive advantage of the firm. It was observed that 95.3% of the professionals from the sample perceive that they are the part of community of practice (see Table 5.10). This implies that the professionals are aware of the existence of community of practice and are part of this network.

Table 5.10. Existence of community of practice

Response	Number of professional	Percent
No	5	4.7
Yes	101	95.3
Total	106	100.0

An important concept that needs to be analyzed is whether existence of community of practice influences social capital. It is observed from the correlation matrix that social capital is positively related to community practice implying that when the social capital increases, the boundaries of community of practice becomes more evident. The F value reported in Table 5.11 shows the Levene's F-value that is reported to be 3.011 and the significance level is 0.086, indicating that the assumption of homogeneity of variance has not been violated. Thus, our data show existence of community of practice has significant effect on social capital, t (97) = 3.228, p =0.002.

Table 5.11. Results of Levene's test

	F-value	Sig.	T-test	Sig.
Social capital	3.011	0.086	3.228	0.002

Four regression models involving competitive advantage as dependent variable and existence of community of practice and social capital as independent variable from professional dataset was done. The results are summarized and shown in Table 5.12. Results from simple regression of competitive advantage on existence of community of practice and social capital respectively are shown in model 1 and 2.

Table 5.12. Statistical models

Variable	Model 1	Model 2	Model 3	Model 4(regressed with social capital as dependent variable)
Community of practice	0.0041	-	-0.124	0.499
Social capital	-	0.007904	0.114	-
Intercept	11.809	7.329	8.579	32.891
R^2	0.002	0.011	0.024	0.154
F-value	0.196	1.025	11.39	17.637
Sig.	0.659	0.314	0.024	0.000

Regression analysis with competitive advantage as dependent variable and existence of community of practice as independent variable i.e. model 1 in Table 5.12 reveals that about 0.2% of the data is explained by this model. The coefficient of existence of community of practice is 0.0041 that implies for every rise of one unit for existence of community of practice, there is a 0.0041 unit rise of competitive advantage which is not very much. The analysis of variance shows that the F-value is 0.196; and the significance is 0.659 and therefore, it is not consistent with our research hypothesis that the firm's competitive advantage in a certain domain is positively related to the existence of community of practice in that domain. Since the community of practice is at a group level and competitive advantage is at the firm's level, this could be one of the reasons for these inconsistencies.

Regression analysis with competitive advantage as dependent variable and social capital as independent variable i.e., model 2 in Table 5.12 reveals that about 1.1% of the data is explained by this model. The coefficient of social capital is 0.0079 that implies for every rise of one unit for social capital, there is a 0.0079 unit rise of competitive advantage which is not very much. The analysis of variance shows the F-value to be 1.025, and the significance to be 0.314 implying that the result is not consistent with our research hypothesis that the firm's competitive advantage in a certain domain is positively related to the social capital in that domain.

It is also hypothesized that existence of community of practice has an indirect effect on competitive advantage through positive influence of social capital. Therefore, model 4 in Table 5.12 shows the results from simple regression of social capital on existence of community of practice. About 15.4% of the data is explained by this model and the analysis of variance shows F=17.637, that is significant at p=0.000 implying that the result is consistent with our research hypothesis that the firm's social capital in a certain domain is positively related to the existence of the community of practice in that domain.

However, when both social capital and existence of community of practice was regressed with competitive advantage represented by model 3 of Table 5.12, the analysis of variance shows that the regression result is statistically significant i.e. the F-value is 11.39, and p=0.024 implying that the existence of community of practice and social capital improves the competitive advantage of the firm in that domain.

Regression analysis of structural dimension of social capital as dependent variable and the existence of community of practice as independent variable shows that about 4%

of the data is explained by this value as can be seen in Table 5.13. The F-value of 4.214 indicates that the existence of community of practice has a positive and significant impact on structural dimension of social capital. The analysis of variance shows an F-value of 4.214 and the significance of 0.043 implying that the result is consistent with our research hypothesis that the structural component of firm's social capital in a certain domain is positively related to the existence of community of practice in that domain.

Table 5.13. Regression analysis of dimensions of social capital and existence of community of practice

Dependent Variable	Independent variable	R(squared)	F-value	T-value	Sign.
Structural dimension	Existence of community of practice	0.040	4.214	2.053	0.043
Relational dimension		0.189	23.017	4.798	0.000
Cognitive dimension		0.013	1.363	1.168	0.246

Similarly, the analysis of variance when relational dimension and existence of community of practice is regressed shows that F=23.017 and the significance is 0.000 implying that the result is consistent with our research hypothesis that the relational component of firm's social capital in a certain domain is strongly and positively related to the existence of community of practice in that domain. The analysis of variance when cognitive dimension and existence of community of practice is regressed shows that F=1.363, and the significance p=0.246 implying that the result is not very consistent with our research hypothesis that the structural component of firm's social capital in a certain domain has a weak relationship the existence of community of practice in that domain. The reason could be the use of unreliable measure for cognitive dimension as the cronbach alpha was very low (-1.321).

Table 5.14 shows the different regression models and the influence of moderating models. It was observed that the computer-mediated communications does not moderate

the relationship between structural dimensions of social capital and existence of community of practice. This model explained only 4% of the data and had a very low F-value that implies that computer-mediated communication (e.g., email, chat room) does little to strengthen the relation between the structural component of firm's social capital in a certain domain and the existence of community of practice in that domain.

Table 5.14. Regression models with moderating variables

Dependent Variable	Moderating variable	Independent variable	R^2	F-value	T-value of the product	Sign.
Structural dimension	Computer-mediated Communications	Existence of community of practice	0.046	1.613	(CMC*COP)=0.502	0.617
Relational dimension	Power distance		0.207	8.176	(PDI*COP)=-1.161	0.249
Cognitive dimension	Individualism/colle ctivism		0.256	10.785	(IDV*COP)=2.550	0.012

When regression was done on relational dimension and existence of community of practice with power distance as moderating variable, it was observed that 20.7% of the data was explained and the F-value was high 8.176 with significance less than 0.05. This indicates that the greater a country's power distance, the weaker will be the positive relation between the relational component of firm's social capital in a certain domain and the existence of community of practice in that domain. The t-value of the product or the interaction of the power distance and existence of community of practice implies that the moderator has small impact on the relationship between relational dimension and existence of community of practice.

When regression was done on cognitive dimension and existence of community of practice with individualism as moderating variable, it was observed that 25.6% of the data was explained and the F-value was high 10.785 with significance less than 0.05. This indicates collectivistic society has a strong and positive relation between the

cognitive component of firm's social capital in a certain domain and the existence of community of practice in that domain. The t-value of the product or the interaction of the power distance and existence of community of practice implies that the moderator has a strong impact on the relationship between cognitive dimension and existence of community of practice and is statistically significant.

The correlation matrix in Table 5.15 shows the degree of association of each variable with the dimensions of social capital.

Table 5.15 Correlation Matrix

		CMC	COP	CMC_COP
Structural dimension	Pearson correlation	0.141	.199*	0.203*
	Sig. (2-tailed)	.153	.043	.039
		Power distance	COP	PDI_COP
Relational Dimension	Pearson Correlation	.028	.434**	.178*
	Sig. (2-tailed)	.785	.000	.079
		Individualism	COP	IDV_COP
Cognitive dimension	Pearson Correlation	.143	.114	.200*
	Sig. (2-tailed)	.148	.246	.043

Correlation between computer-mediated communications (CMC) and structural dimension is not statistically significant but existence of community of practice is significantly correlated with structural dimension. This implies that the higher the state of community of practice, the stronger will be the structural dimension of the social capital. The computer-mediated communications interact significantly with the relationship between existence of community of practice and structural dimension of social capital. Correlation between power distance and relational dimension is not statistically significant but existence of community of practice is significantly correlated with relational dimension. This implies that the higher the state of community of practice, the stronger will be the relational dimension of the social capital. The power distance

interacts significantly with the relationship between existence of community of practice and relational dimension of social capital.

Correlation between individualism and cognitive dimension and existence of community of practice is not statistically significant. This implies that the higher the state of community of practice, the stronger will be the cognitive dimension of the social capital. But individualism interacts significantly with the relationship between existence of community of practice and cognitive dimension of social capital.

In a nutshell, the key model represents competitive advantage as dependent variable, social capital as independent variable and community of practice as mediating variable as it has indirect effect on competitive advantage through social capital. The claim that competitive advantage is improved by social capital is weakly supported. It is seen that existence of community of practice in a certain domain improves the social capital of an organization in that domain. Surprisingly, our claim that existence of community of practice improves the competitive advantage of the organization in that domain is not supported. However, social capital and existence of community of practice does improve competitive advantage in a certain domain. Table 5.16 gives a brief overview of the results and the status of each hypothesis.

Table 5.16. Summary of the results

Hypo thesis	Dependent variable	Independent variable	T-value	Sig.	F-value	Sig.	
H1	Competitive advantage	Social capital	1.012	0.314	1.025	0.314	Weak support
H2	Social capital	Existence of community of practice	4.200	0.000	17.637	0.000	Supported
H3	Competitive advantage	Existence of community of practice	-0.442	.659	.196	0.659	Not Supported
H4	Structural dimension	Existence of community of practice	2.053	0.043	4.214	.043	Supported
H4a		Computer-mediated communications	0.0502	0.617	1.613	0.191	Weak Support
		Existence of community of practice	-0.166	0.869			
H5	Relational dimension	Existence of community of practice	4.798	0.000	23.017	0.000	Supported
H5a		Power distance as a moderator	-1.161	0.249	8.176	0.000	Supported
		Existence of community of practice	2.577	0.012			
H6	Cognitive dimension	Existence of community of practice	1.168	0.246	1.363	0.246	Weak Support
H6a		Individualism as a moderator	2.550	0.012	10.785	0.000	Supported
		Existence of community of practice	-1.087	0.280			

There is a weak relationship between the existence of community of practice and structural domain and this relationship does not improve significantly even with the introduction of computer-mediated communications. This implies that existence of community of practice in a firm may not improve the structural dimension of the social capital thus, implying that e-mail, chatrooms, and videoconferencing are not vital for the improvement of social capital in a firm in a domain.

The claim that the existence of community of practice improves the relational dimension of social capital by improving trust, obligation, norms and identification is strongly supported. It is also observed that power distance influences the way relationship is formed between individuals in community of practice and thus will improve social capital by strengthening the relational dimension. Similarly, the claim that the existence of community of practice improves the cognitive dimension of social capital by improving the shared understanding of the norms and rules of the organization is also weakly supported. It is observed that individualism will decrease the sharing of common contexts and language and will thus influence the relationship between community of practice and the cognitive dimension of social capital.

5.5 Comparison of Perception of Community of Practice

From the professional dataset, it was observed that the minimum value of community of practice is 9 and maximum is 30 with the mean being 22.46. It should be noted that the professional from one organization form a group and the average of the sum of community of practice defines it. The guidelines given at the start of the chapter is used to define whether the community of practice exists or not. As indicated in Tables 5.3 and 5.10, a total of 32 managers out of 42 perceive that communities of practice exist in a certain domain of the organization, and out of 106 professionals that answered the questions, 101 professionals perceive that they belong to community of practice. To check whether the manager perception of existence of community of practice coincides with the perception of the professionals, analysis of both professional and manager datasets were done. The explanation for this inconsistency could be the fact that managers were not aware that community of practice exist in that domain of the

66

organization. The community of practice could be at a potential or coalescing stage and thus the participation and permission of the manager is not necessary. To check the stage of development of community of practice, analysis of item of this construct was done and Table 5.17 gives the guidelines to identify the stage of community of practice.

Table 5.17. Guidelines to identify the stage of community of practice

Potential	Mature	Active
Sum of items should lie between 8-13	Sum of items should lie between 13-17	Sum of items should lie between 18-30.

Following the guidelines, the organization in which the managers have responded no to the existence of community of practice were identified and checked against the professionals of the same organization. It was observed in all the cases where managers perceive that community of practice does not exist, response from the professionals indicate that community of practice does exist. Table 5.18 gives perception of managers and professionals and the stage of the community of practice in that firm in a particular domain. To maintain the anonymity of the organizations that participated in the survey, the organizations are named as A, B.etc.

Table 5.18. Different perceptions of manager and professional

Organization	Manager	Professionals	Sum of items	Stage of COP
A	Does not exist	Exists	23	Active
B			25	Active
C			23	Active
D			23	Active
E			20	Active
F			24	Active
G			23	Active
H			23	Active
I			23	Active

The items of the construct of community of practice were divided to measure joint enterprises, mutual engagement, shared repertoire and the sum of all the items gave the

state of community of practice. It is interesting to note that although the managers gave a negative response to the existence of community of practice, the community of practice of the firms that had negative response was at an active stage. This implies that managers are not aware of the existence of community of practice in that domain.

Chapter 6: Conclusion

It has been argued that community of practice increases the competitive advantage of the organization and is used as a strategy to improve organization performance. Lesser and Storck (Lesser and Storck 2001) developed a framework which studies the influence of communities of practice on the organizational performance through its social capital. However, this framework does not explore closely the impact of tools, such as computer-mediated communications, and also, the factors such as national culture that may affect the relationship between communities of practice and social capital. Factors like computer-mediated communications and national culture enhance the communication among individuals and the way relationship is formed among the individuals in the community. These factors cannot be overlooked in the era of globalization and multi-national corporations. Web survey was conducted in two phases and it was found that managers perceive that community of practice improve the competitive advantage of the firm.

But the professional data reveals that there is a no significant relationship between community of practice and competitive advantage. The analysis also reveals that existence of community of practice would significantly improve the social capital of the firm in a particular domain. The results indicate that power distance significantly affects the relationship building between individuals and individualism significantly affects the shared understanding of norms and rules of organization. There was a weak relationship between computer-mediated communication and structural dimension of social capital.

69

The data also reveals that although there is an active and mature community of practice, the managers are not aware of its existence.

6.1 Contributions

The major contribution of this research is the development of the construct community of practice. Due to the infancy of the research in the area of community of practice, this construct was not fully developed. The methodology that was generally used in this area was mostly interviews. Therefore, a reliable and valid measure for community of practice was designed to suit our purpose. This would help fellow researchers who are interested in the area of community of practice and enhance this area.

This is the first theoretical grounded approach to study the relationship between community of practice and social capital. Structuration model based on Gidden's structuration model was conceptualized to explain the relationship between community of practice and social capital. This is the first empirical research on structuration model of community of practice and social capital and this study contributes in providing a unique framework for the researchers to explore and understand the functioning of communities of practice with regard to the social mechanisms of the organization. Through our study we have observed that social culture and values play an important role and have positive impacts on the overall performance of the organization.

Till now, most research on community of practice has been concentrated on improving the performance of the organization. Our research effort is the first empirical study that examines the influence of community of practice and social capital on competitive advantage of the firm in a particular domain. It should be kept in mind that this research is more concentrated on achieving more competitive edge by focussing on

the area that the organization has competitive advantage. This study initiates and suggests the use of community of practice to help attain the competitive edge.

It is also a first empirical study to introduce the influence of national culture on the relationship between community of practice and social capital. This study initiates and introduces the impact of computer-mediated communications on the relationship between community of practice and social capital.

6.2 Limitations and Future Research Directions

This research revealed that existence of community of practice does make any differences in social capital of the firm in a certain domain. Although the sample size was small, it still managed to reveal that the computer-mediated communication influences the structural dimension of social capital and the power distance and individualism affect the relational dimension and cognitive dimension of social capital. Due to the time constraint, the influence of other dimension of national culture on relationship between social capital and community of practice was not studied. This was one of the limitations of the research and could form a direction for future research by concentrating on other dimension of national culture; masculinity and femininity, long term orientation and finally uncertainity avoidance. Also, influence of organizational culture on the formation of community of practice could also be explored.

This research takes a part of structuration model proposed by Abou-Zid and Sinha and extends it to study the impact of national culture and computer mediated communications. Future research could be carried out to study the following questions:

a). Is community of practice a product of human actions? When members are united in action, set goals and shapes membership boundaries and relationship, does it results in developing a community of practice?

b). Does community of practice facilitate and constrain the development of relationships, collaboration and negotiation among members?

c). Finally, how does social capital influences organizational members in their relationship and thus affecting communities of practice?

The framework developed in this study would also facilitate the exploration of (a) the impact of knowledge management support systems on the relationship between the structural component of firm's social capital and the existence of community of practice. (b) Impact of organizational culture on the relationship between relational and cognitive dimension of the social capital and communities of practice, and (c) whether having a professional environment strengthen the relationship by building trust and cooperation among employees.

Another area of future research could be to focus on developing a more advance measure of community of practice by focusing on fuzzy logic. Although we used a clear set to define the boundaries of community of practice, we feel that a fuzzy logic approach is more appropriate to identify the boundary of community of practice.

The reliability test of the different dimensions of social capital revealed that the items that measure structural dimension and cognitive dimensions were not very reliable as the cronbach alpha was less that .50. This could be the reason for most of our hypothesis that was related to social capital was not supported. A more reliable measure is needed to develop the construct of social capital to get a better result in the future.

6.3 Conclusions

This study revealed the benefits of community of practice is not fully harnessed as the managers are not aware of their existence. The community of practice are in active stage implying that the professionals are networking and building relations to resolve issues. But managers are not harnessing the potential benefits of network of professional. Since it is found that existence of community of practice improves the social capital and competitive advantage of the firm, this study would motivate the managers to ensure that proper funds, incentives and guidance would be given to the members of community of practice to harness its competitiveness.

We believe that this study provides a unique framework for the researchers to explore and understand the functioning of communities of practice with regard to the social mechanisms of the organization. In summary, we emphasize that national culture and some aspect of computer-mediated communications especially e-mail will have a significant positive impact on social capital and community of practice. Although a more in-depth analysis of the proposed framework is need, it is sufficient to achieve a better understanding of communities of practice with regard to the social mechanisms of the organization. Through our proposed framework, we aim to establish that managers need to be aware of communities of practice and different ways to harness it to achieve their business objectives and goals. The managers should not concentrate their resources and energy on technology aspect but on people aspect by creating an appropriate environment to exchange knowledge.

References

Abou-Zeid, E. S. and M. Sinha (2004). <u>Social Capital and Communities of Practice: A Structuration Theory Approach</u>. Conference on Information Science Technology Management (CISTM), Alexandaria, Egypt.

Allee, V. (2000). "Knowledge Networks and Communities of Practice." <u>Journal of Organization Development Network</u> 32(4): 1-13.

Baker, W. (2000). <u>Achieving Success through Social Capital: Tapping Hidden Resources in Your Personal and Business Networks</u>. New York, John Wiley & Sons, Inc,.

Bordia, P. (1997). "Face-to-face versus computer-mediated communication: a synthesis of the experimental literature." <u>Journal of business Communication</u> 31(1): 99-120.

Brown, J. and P. Duguid (1991). "Organizational Learning and Communities-of-Practice; Toward a Unified View of Working, Learning and Innovation." <u>Organization Science</u> 2(1): 40–57.

Brown, J. S. and P. Duguid (1998). "Organizing Knowledge." <u>California Management Review</u> 40(3): 90-111.

Brynjolfsson, E. and L. Hitt (1995). "Beyond Computation: Information Technology, Organizational Transformation and Business Performance." http://ebusiness.mit.edu/erik.

Burt, R. (1992). <u>Structural Holes: The Social Structure of Competition</u>. Cambridge, MA, Harvard University Press.

Choudhury, T. and A. Pentland (2002). <u>The Sociometer: A Wearable Device for Understanding Human Networks</u>. ACM 2002 Conference on Computer Supported Cooperative Work, New Orleans, Louisiana, USA.

Chua, A. (2002). "The Influence of Social Interaction on Knowledge Creation." Journal of Intellectual Capital, 3(4): 375-392.

Cohen, D. and L. Prusak (2001). In Good Company: How Social Capital Makes Organizations Work, Harvard Business School Press.

Collins, H. (1993). "The Structure of Knowledge." Social Research 60(1): 95-116.

Cook, S. and J. Brown (1999). "Bridging Epistemologies: The Generative Dance Between Organizational Knowledge and Organizational Learning." Organization Science 10(4): 381-400.

Crossan, M., H. Lane, et al. (1999). "An Organizational Learning Framework: From Intuition to Institution." Academy of Management Review 24(3): 522-537.

Davenport, T., S. Jarvenpaa, et al. (1996). "Improving Knowledge Work Processes." Sloan Management Review 37(4): 53-66.

De Long, D. and L. Fahey (2000). "Diagnosing Cultural Barriers to Knowledge Management." Academy of Management Executive 14(4): 113-127.

Drucker, P. (1993). Post-Capitalist Society. New York, Harper Collins.

Duguid, P. and J. Brown (1991). "Organizational Learning and Communities-of-Practice; Toward a Unified View of Working, Learning and Innovation." Organization Science 2(1): 40-57.

Fahy, J. and A. Smithee (1999). "Strategic Marketing and the Resource Based View of the Firm." Academy of Marketing Science Review [Online] 10.

Ford, D. and Y. Chan (2002). Knowledge Sharing in a Cross-Cultural Setting: A Case Study. Kingston, Queen's University: http://business.queensu.ca/kbe/docs/wp_02-09.pdf.

Giddens, A. (1976). New Rules of Sociological Method. New York, Basic Books.

Giddens, A. (1979). Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis. London, Macmillan.

Giddens, A. (1981). Agency, Institution and Time-Space Analysis. Advances in Social Theory and Methodology: Toward an Integration of Micro- and Macro-Sociologies. A. Cicourel. Boston, Routledge & Kegan Paul: 161-174.

Giddens, A. (1982). Profiles and Critiques in Social Theory. London, Macmillan.

Giddens, A. (1984). The Constitution of Society: Outline of the Theory of Structuration. Cambridge, Polity Press.

Giddens, A. (1986). Central Problems in Social Theory. London, Macmillan Press.

Gill, K. (2001). "Knowledge Networking in Cross Cultural Settings." http://www.hdz-ima.rwth-aachen.de/forschung/publications/knowledge_networking.html.

Gillispie, C. C. (1999). "A study of computer mediated communication to be used for classroom instruction." Journal of Industrial Technology 15(3): 1-6.

Gillispie, J. C. C., C. C. Dunn, et al. (2002). "Establishing a computer mediated communication laboratory in a graphic communication department." Visual Communication Journal,: 34-37.

Grant, R. (1996). "Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration." Organization Science 7(4): 375-387.

Gupta, A. and V. Govindarajan (2000). "Knowledge Flows Within Multinational Corporation." Strategic Management Journal 21: 473-496.

Hildreth, P., C. Kimble , et al. (1998). Computer Mediated Communications and

    International Communities of practice. Proceedings of Ethicomp'98, Eramaus

    Universtiy, The Netherlands.

Hildreth, P., C. Kimble , et al. (2000). "Communities of Practice in the Distributed

    International Environment." Journal of Knowledge Management 4(1): 27-38.

Hiltz, S. R. and K. Johnson (1990). "User Satisfaction with Computer-Mediated

    Communication Systems." Management Science 36(6): 739-765.

Hofstede, G. (1980). Culture's Consequences: International Differences in Work-Related

    Values. Beverly Hills, London, Sage Publications.

Hofstede, G. and M. Bond (1988). "Confucius and Economic Growth: New Trends in

    Culture's Consequences." Organizational Dynamics 16(4): 4-21.

Hofstede, G., B. Neuijen, et al. (1990). "Measuring Organizational Cultures: A Qualitative

    and Quantitative Study across Twenty Cases." Administrative Science Quarterly

    35: 286-316.

Hollingshead, A. B. and J. E. McGrath (1995). Computer-assisted groups: a critical

    review of the empirical research. I. San Francisco, Jossey-Bass.

Huseman, R. C. and E. W. Miles (1988). "Organizational communication in the

    information age: implications of computer-based systems." Journal of

    Management 14(2): 1988.

Inkpen, A. (1998). "Learning and Knowledge Acquisition Through International Strategic

    Alliances." Academy of Management Executive 12(4): 69-80.

Iverson, J. and R. McPhee (2002). "Knowledge Management in Communities of Practice: Being True to the Communicative Character of Knowledge." Management Communication Quarterly 16(2): 259-267.

Kahai, S. S. and R. B. Cooper (1999). "The effect of computer-mediated communication on agreement and acceptance." Journal of Management Information Systems. Armonk: 16(1): 165;24 pgs.

Kogut, B. and U. Zander (1992). "Knowledge of the Firm, Combinative Capabilitues, and the Replication of Technology." Organization Science 3(3): 383-397.

Lam, A. (1997). "Embedded Firms, Embedded Knowledge: Problems of Collaboration and Knowledge Transfer in Global Cooperative Ventures." Organization Studies 18(6): 973-996.

Lam, A. (1998). The Social Embeddedness of Knowledge: Problems of Knowledge Sharing and Organizational Learning in International High-Technology Venture, Danish Research Unit For Industrial Dynamics. 98-7.

Lave, J. and E. Wenger (1991). Situated Learning: Legitimate Peripheral Participation. Cambridge, UK, Cambridge University Press.

Leana, C. and H. Van Buren (1999). "Organizational Social Capital and Employment Practices." Academy of Management Review 24(3): 538–555.

Leonard-Barton, D. (1992). "Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development." Strategic Management Journal 13((Summer Special Issue)): 111-126.

Lesser, E. and L. Prusak (1999). "Communities of Practice, Social Capital and Organizational Knowledge." Information Systems Review 1(1): 3-9.

Lesser, E. and J. Storck (2001). "Communities of Practice and Organizational Performance." IBM Systems Journal 40(4): 831-840.

Levitt, B. and J. March (1988). "Organizational Learning." Annual Review of Sociology 14: 319-340.

Li, Q. (2002). "Gender and computer-mediated communication: An exploration of elementary student's mathematics and science learning." Journal of Computers in Mathematics and Science Teaching 21(4): 341-359.

Liedtka, J. (1999). "Linking competitive advantage with communities of practice." Journal of management inquiry 8(1): 5-16.

Millen, D. R., M. A. Fontaine, et al. (April 2002). "Understanding the Benefit and Costs of Communities of Practice." Communications of ACM 45(4): 69-73.

Nahapiet, J. (2000). Creating Organizational Capital through Intellectual and Social Capital. Organization Science Winter Conference.

Nahapiet, J. and S. Ghoshal (1998). "Social Capital, Intellectual Capital and the Organizational Advantage." Academy of Management Review 23(2): 243-266.

Nonaka, I. (1994). "A Dynamic Theory of Organizational Knowledge Creation." Organization Science 5(1): 14-37.

Nonaka, I. and H. Takeuchi (1995). The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. New York, Oxford University Press.

Ocker, R., J. Fjermestad, et al. (1998). "Effects of four modes of group communication on the outcomes of software requirements determination

Summer 1998. Vol. 15, Iss. 1; pg. 99, 20 pgs." Journal of Management Information

    Systems. Armonk: 15(1): 99-119.

Olutimayin, J. (2002). "Adopting Modern Information Technology in the South Pacific: A

    Process of Development, Preservation, or Underdevelopment of the Culture?" The

    Electronic Journal on Information Systems in Developing Countries 9(3): 1-12.

Parkhe, A. (1991). "Interfirm Diversity, Organizational Learning, and Longevity in

    Global Strategic Alliances." Journal of International Business Studies 22(4): 579–

    601.

Porter, M. E. (1980). Competitive Strategy, Free Press.

Porter, M. E. (1985). Competitive Advantage: Creating and Sustaining Superior

    Performance, Free Press.

Rafeal, R. and P. Zemsky (Summer 2002). "Social Capital, corporate culture, and

    incentive intensity." The Rand Journal of Economics 33(2): 243, 15 pgs.

Rice, R., A. Grant, et al. (1990). "Individual and network influences on the adoption and

    perceived outcomes of electronic messaging." Social Networks 12: 27-55.

Robert, J. (2000). "From Know-How to Show-How? Questioning the Role of Information

    and Communication Technologies in Knowledge Transfer." Technology Analysis

    & Strategic Management 12(4): 429-443.

Schien, E. (1986). Organizational Culture and Leadership, Jossey-Bass.

Sierhuis, M. and W. Clancey (1997). Knowledge, Practice, Activities and People. AAAI

    Spring Symposium on Artificial Intelligence in Knowledge Management,

    Stanford University.

Sinha, M. and E. Abou-Zeid (2003). The Impact of Computer-Mediated Communication and National Culture on Social Capital and Communities of Practice. Sixth International Conference on Information Technology, December 22-25, 2003, Bhubaneswar, India.

Spender, J.-C. (1996). "Making Knowledge the Basis of a Dynamic Theory of the Firm." Strategic Management Journal 17: 45-62.

Spender, J.-C. and R. Grant (1996). "Knowledge and the Firm: An Overview." Strategic Management Journal 17: 5-9.

Straus, S. G. and J. E. McGrath (1994). "Does the medium matter? The interaction of task type and technology on group performance and member actions." Journal of Applied Psycology 79(1): 87-97.

Teigland, R. (2003). Knowledge Networking: Structure and Performance in Networks of Practice. Institute of International Business. Stockholm, Stockholm School of Economics: 512.

Tsoukas, H. and E. Vladimirou (2001). "What is Organizational Knowledge." Journal of Management Studies 38(7): 973-993.

Walther, J. B. (1995). "Relational aspects of computer-mediated communication: Experimental observations over time." Organization Science, Linthicum 6(2): 186.

Wegner, E. C. (June 1998). Communities of Practice: Learning as a Social System. http://www.co-i-l.com/coil/knowledge-garden/cop/lss.shtml, Systems Thinker.

Wenger, E. (2000). "Communities of Practice and Social Learning Systems." Organization 7(2): 225-246.

Wenger, E. (2000). Communities of Practice: The Structure of Knowledge Stewarding. Knowledge Horizons: The Present and the Promise of Knowledge Management. D. Shauvel. Boston, Butterworth-Heinemann: 203-224.

Wenger, E. and J. Lave (1991). Situated Learning. Legitimate Peripheral Participation. Cambridge, Cambridge University Press.

Wenger, E. and B. Snyder (2000). "Communities of Practice: The Organizational Frontier." Harvard Business Review 78(1): 139–145.

Wenger, E., W. Snyder, et al. (2002). Cultivating Communities of Practice. Cambridge, MA, Harvard Business School Press.

Wenger, E. C. (1999). Communities of Practice: Learning, Meaning and Identity, Cambridge University Press.

Yoo, Y. and B. Torry (2002). National Culture and Knowledge Management in a Global Learning Organization. The Strategic Management of Intellectual Capital and Organizational Knowledge. C. W. Choo and N. Bontis, Oxford University Press: 421-434.

Appendix

Exhibit A1: Questionnaires for the manager

<u>Please fill out our personal information:</u>
1. Country in which your organization is situated/located
2. Name of the organization
3. Number of years that you have been working in this organization
4. Name of your department
5. Position or title you hold
6. Are you supervising any projects currently?
        a. Yes   b. No

If the answer is 'Yes' to question 6, then please answer question 7 and question 8, otherwise proceed to question number 9.

7. Number of projects you are currently supervising in this organization
        a. 1   b. 2-3   c. 4-5   d. 6-10   e. more than 10

8. Number of employees that are working under you on various projects
        a. Less than 10 b. 10 – 20   c. 20–30   d. 30–40   e. more than 40

9. Please check the primary business activity (or activities) of your company.

Banking	Information Technology
Communication	Consultancy
Engineering	Finance
Investment	Law
Medicine	Real estate
Manufacturing	Others (please specify)

10. What are the business areas in which you believe that your company has a competitive advantage, for example, having an efficient customer relation/service, or delivering exclusive products and/or innovative ideas at a competitive rate?

On the scale of 1-7, with 1-being strongly disagree and 7 strongly agree, to what extent do you agree that

11. Your organization possesses a unique feature (in terms of innovations, products and/or services) that clearly distinguishes it from its competitors:
         1   2   3   4   5   6   7

12. Your organization possesses resources and capabilities to sustain its competency in the market for the next 5-10 years:
         1   2   3   4   5   6   7

13.   In the identified business areas in which your organization has competitive advantages (from Question 10), are you aware of the existence of informal groups of professionals (communities of practice)?

   a. Yes   b. No

14. To what extent do you believe that these informal groups of professionals play an important role competitive advantage of the organization?

   a. Never b. Seldom c. occasionally d. fairly often e. always

15. In what way do you think that these informal group of professionals help in contributing to the business area in which you have competitive advantage?

   ◘Generating new ideas and solutions
   ◘Connecting different professionals having different expertise
   ◘increasing access to expertise across the business area
   ◘Sharing experiences and knowledge among colleagues
   ◘Creating a sense of belonging among new employees
   ◘Sharing of the values, norms and myths between employees
   ◘increasing opportunities to pro-actively raise issues with relevant forums

Exhibit A2. Questions for professionals

1. Country in which your organization is situated/located
2. Number of years you have worked in this organization
3. Name of the organization
4. Business area of your organization
5. Name of your department

The following questions relate to the issues pertaining to working and interactions with other professionals within a community of practice in your department. To what extent do you believe that:

Joint Enterprise	6.You and your colleagues share common interests that are related to work a. Never b. Seldom c. occasionally d. fairly often e. always 7. You and your colleagues have common agreement on work related issues and interests a. Never b. Seldom c. occasionally d. fairly often e. always
Mutual Engagement	8.You and your colleagues meet to share work related interests a. Never b. Seldom c. occasionally d. fairly often e. always 9. Participating in group activities are useful and insightful for you a. Never b. Seldom c. occasionally d. fairly often e. always
Shared Repertoire	10. You have learned some new words or jargons that you relate with your interests a. Never b. Seldom c. occasionally d. fairly often e. always 11.You use documents and databases of past meeting and update it with new information a. Never b. Seldom c. occasionally d. fairly often e. always

The following questions relate to the mode and the frequency of interactions/communications with your colleagues.

12. To what extent do you use e-mail to communicate with your colleagues?
    a. Never   b. Seldom   c. occasionally   d. fairly often   e. always

13. On an average, how many times do you check your e-mails?

a. Once every week b. 1-5 times a week   c. more than 6 times a week   d. 1-5 times a day e. More than 5 times a day

14. To what extent do you use any newsgroup/discussion board to discuss any topic?

a. Never   b. Seldom c. occasionally   d. fairly often   e. always

15. To what extent do you use videoconferencing/multi-user mode chat to discuss any topic?
        a. Never   b. Seldom c. occasionally   d. fairly often   e. always

16. On an average, with how many people do you chat?
        a. 0   b. 1-5   c. 6-10   d. more than 10

17. What is the most favored mode of communication among colleagues?
        a. E-mail   b. Chatrooms c. Newsgroup   d. videoconferencing

The following questions are used to measure social capital in an organization:

Social Capital	When interacting with other colleagues and taking part in any form of discussion, group activities or making any modifications to any modules of a project
Structural Dimension	1. To what extent have you discussed the modifications with your colleague(s)? a. Never b. Seldom c. occasionally d. fairly often e. often 2. On average, how long does each discussion with your colleagues last? a. No b. 1-15min c. 15-30min d. 30-60 min e. >1hr
Relational dimension	3. To what extent have you trusted your colleagues in terms of their dependability and reliability? a. Never b. Seldom c. occasionally d. fairly often e. often 4. To what extent have you empathized with your colleagues by putting yourself in their positions? a. Never b. Seldom c. occasionally d. fairly often e. often 5. To what extent have you helped your colleagues when they are in need? a. Never b. Seldom c. occasionally d. fairly often e. often 6. To what extent have you been lenient in making judgments when these colleagues make mistakes? a. Never b. Seldom c. occasionally d. fairly often e. often

	7. To what extent have you shared your opinion in curriculum development openly and freely with these colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often
	8. To what extent is there teamwork between yourself and these colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often
	9. To what extent have you valued diversity between yourself and these colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often
	10. To what extent is openness to criticism between yourself and these colleagues a norm? a. Never b. Seldom c. occasionally d. fairly often e. often
	11. To what extent have you tolerated failure among your colleagues and yourself? a. Never b. Seldom c. occasionally d. fairly often e. often
	12. To what extent have felt the sense of togetherness with your colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often
Cognitive dimension	13. To what extent have you used slang, cliché or lingo when engaging in casual discussion with your colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often
	14. To what extent have you shared organizational myths or stories with your colleagues? a. Never b. Seldom c. occasionally d. fairly often e. often

Exhibit A 3. Correlation Matrix

Constructs	Computer-mediated communications	Social capital	Community of practice
Items	Average chat (I1)	Criticism (S1)	Common agreement (C1)
	Check-email (I2)	Empathy (S2)	Common Interest (C2)
	e-mail usage (I3)	Help your colleagues (S3)	Learn something new (C3)
	Favorite mode of communication (I4)	Lenient in passing judgement (S4)	Share work related (C4)
	Newsgroup usage (I5)	Length of Discussion (S5)	Update databases (C5)
	Videoconferencing (I6)	Discuss modification (S6)	Participation (C6)
		Share Stories (S7)	
		Teamwork (S8)	
		Trust (S9)	
		Slang Use (S10)	

88

	I1	I2	I3	I4	I5	I6	C1	C2	C3	C4	C5	C6	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
I1	1.000	.130	.184	.144	.253	.485	.239	.225	.181	.351	.294	.264	.140	.088	.067	.184	.002	.076	.165	.159	.177	.017
I2	.130	1.000	.450	-.025	.003	.322	.049	-.131	.096	.007	.145	-.060	-.024	-.053	-.130	.079	.053	-.069	-.029	-.101	.082	.017
I3	.184	.450	1.000	.084	.156	.345	.116	.171	.093	.338	.366	.084	-.066	.040	-.134	.229	.043	.086	-.001	-.011	.093	-.128
I4	.144	-.025	.084	1.000	.176	.093	.197	.146	.021	.161	.176	.138	.113	.087	-.013	-.002	.050	.052	.006	-.023	.053	-.073
I5	.253	.003	.156	.176	1.000	.278	.170	.212	.050	.289	.360	.226	.010	-.068	-.132	-.068	.036	.101	.002	.090	.053	-.229
I6	.485	.322	.345	.093	.278	1.000	.153	.193	.214	.369	.400	.235	.012	.004	.011	.133	.157	.071	.194	.143	.094	-.024
C1	.239	.049	.116	.197	.170	.153	1.000	.478	.265	.285	.338	.319	.189	.199	.010	.279	-.002	.089	.085	.168	.300	-.106
C2	.225	-.131	.171	.146	.212	.193	.478	1.000	.184	.462	.342	.325	.090	.132	.178	.234	-.002	.154	.047	.072	.286	-.132
C3	.181	.096	.093	.021	.050	.214	.265	.184	1.000	.263	.369	.404	.048	.278	.118	.233	.081	.113	.192	.150	.342	.100
C4	.351	.007	.338	.161	.289	.369	.285	.462	.263	1.000	.525	.399	.111	-.062	.129	.361	.178	.147	.094	.214	.304	-.063
C5	.294	.145	.366	.176	.360	.400	.338	.342	.369	.525	1.000	.393	.136	.064	.004	.251	.178	.170	.102	.200	.270	.052
C6	.264	-.060	.084	.138	.226	.235	.319	.325	.404	.399	.393	1.000	.289	.148	.177	.189	.094	.061	.168	.338	.258	.083
S1	.140	-.024	-.066	.113	.010	.012	.189	.090	.048	.111	.136	.289	1.000	.265	.175	.094	.229	.031	.104	.268	.218	.188
S2	.088	-.053	.040	.087	-.068	.004	.199	.132	.278	-.062	.064	.148	.265	1.000	.253	.189	.054	.172	.134	.235	.418	.025
S3	.067	-.130	-.134	-.013	-.132	.011	.010	.178	.118	.129	.004	.177	.175	.253	1.000	.088	-.083	.147	.094	.322	.326	-.087
S4	.184	.079	.229	-.002	-.068	.133	.279	.234	.233	.361	.251	.189	.094	.189	.088	1.000	-.034	.019	.416	-.014	.306	.236
S5	.002	.053	.043	.050	.036	.157	-.002	-.002	.081	.041	.178	.094	.229	.054	-.083	-.034	1.000	.289	.002	-.064	.019	.023
S6	.076	-.069	.086	.052	.101	.071	.089	.154	.113	.166	.170	.061	.031	.172	.147	.019	.289	1.000	.138	.112	.211	.092
S7	.165	-.029	-.001	.006	.002	.194	.085	.047	.192	.094	.102	.168	.104	.134	.094	.416	.002	.138	1.000	.011	.173	.573
S8	.159	-.101	-.011	-.023	.090	.143	.168	.072	.150	.214	.200	.338	.268	.235	.322	-.014	-.064	.112	.011	1.000	.283	-.110
S9	.177	.082	.093	.053	.053	.094	.300	.286	.342	.304	.270	.258	.218	.418	.326	.306	.019	.211	.173	.283	1.000	.105
S10	.017	.017	-.128	-.073	-.229	-.024	-.106	-.132	.100	-.063	.052	.083	.188	.025	-.087	.236	.023	.092	.573	-.110	.105	1.000

Exhibit A4 Reliability analysis

Reliability analysis for computer-mediated communications

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
CHAT_AV	14.5429	7.0390	.4243	.5432
EMAIL	13.1905	7.9249	.2885	.5957
EMAIL_US	12.4571	7.5390	.4049	.5565
MODE_COM	15.5619	9.0562	.1560	.6298
NEWSGROU	13.8000	6.9885	.2909	.6065
VIDEO	14.0667	5.4859	.5505	.4703

Reliability Coefficients

N of Cases =   105.0   N of Items = 6

Alpha =   .6176

Reliability analysis for community of practice

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
AGREEMEN	18.6132	10.3537	.4667	.7395
INTEREST	18.6132	9.8966	.4959	.7303
LEARN	18.8679	9.6014	.4287	.7441
WORK_SHA	18.8113	8.7260	.5765	.7049
DATABASE	18.8962	7.3701	.5817	.7112
USEFUL	18.5094	8.9571	.5324	.7172

Reliability Coefficients

N of Cases =   106.0   N of Items = 6

Alpha =   .7605

Exhibit A5. Reliability analysis for community of practice

Reliability analysis for social capital

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
CRITICS	37.0600	13.7337	.4490	.6327
DIVERSE	36.7400	13.4065	.5505	.6135
EMPATHY	36.7800	15.1834	.3851	.6498
HELP	36.3900	15.8565	.2418	.6697
JUDGEMEN	36.9400	15.5115	.2569	.6680
TEAMWORK	36.3600	15.7277	.2224	.6732
TRUST	36.5500	15.2601	.4235	.6468
LENGTH	37.3500	16.1490	.1443	.6851
MODIFICA	36.5300	15.2617	.3079	.6600
SLANG	37.4000	14.2424	.2911	.6680
STORY_SH	37.3000	13.9091	.3631	.6511

Reliability Coefficients

N of Cases =   100.0   N of Items = 11

Alpha =   .6783

Reliability analysis for structural dimension

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
DISCUSSI	3.1827	.5003	.2837	.
LENGTH	3.5673	.6945	.2837	.

Reliability Coefficients

N of Cases =   104.0   N of Items = 2

Alpha =   .4374

94

Exhibit A6. Reliability analysis of social capital

Reliability analysis for relational dimension

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
CRITICS	23.5784	6.3651	.4475	.6442
DIVERSE	23.2451	6.4245	.4953	.6272
EMPATHY	23.2843	7.2154	.4671	.6412
HELP	22.8922	7.4437	.3922	.6589
JUDGEMEN	23.4314	7.9309	.1815	.7126
TEAMWORK	22.8725	7.2806	.3774	.6619
TRUST	23.0490	7.3342	.4904	.6392

Reliability Coefficients

N of Cases =   102.0   N of Items =   7

Alpha =   .6903

Reliability analysis for cognitive dimension

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
SLANG	3.6509	.8008	-.0625	.
WORK_SHA	3.1887	1.0498	-.0625	.

Reliability Coefficients

N of Cases =   106.0   N of Items =   2

Alpha =   -.1321

Exhibit A6. Reliability analysis of social capital

Reliability analysis for competitive advantage

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Alpha if Item Deleted
FEAT_UNI	5.0244	3.8744	.7190	.
FEAT_FUT	5.2195	3.4256	.7190	.

Reliability Coefficients

N of Cases =   41.0   N of Items = 2

Alpha =   .8356

.