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GLOBALLY DISTRIBUTED INFORMATION TECHNOLOGY WORK:

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COMMUNICATION, AND MANAGEMENT

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ABSTRACT

Distributing information technology work globally has become increasingly prevalent and is facing a variety of challenges, including the challenge of cultural diversity management. Cultural diversity is inherent in globally distributed information technology work and has both positive and negative effects on it. Even though there is a body of literature acknowledging the relevance of cultural influences on globally distributed information technology work, there seems to be a paucity of research that addresses *how* cultural factors affect the globally distributed information technology work in real settings. In addition, the majority of prior cross-cultural information systems research assumes national culture as the sole or main cultural boundary that determines the individual cultural identity, and depicts cultural differences through preset static dimensions.

This research draws on the theory of situating culture and social identity theory and aims to examine *how* cultural factors influence globally distributed information technology work as well as *how* global virtual team members negotiate cultural differences. This research employs an interpretative case study approach to investigate the global information technology collaborations between or among three nations, the United States of America, China, and India. Two multinational information technology companies were studied in this case. Data has been collected through interviews with 44 information technology practitioners and observations from the field studies in the United States of America, China, and India.

It was found that globally distributed information technology work is affected by the combination of different cultural factors including national culture, organizational culture, regional culture, and professional culture. These cultural factors also intertwined with other factors, such as time zone difference and infrastructure, to have impacts on communication,

coordination and relationship dynamics of globally distributed information technology work. In the process of constructing their identities and negotiating the cultural differences, global virtual team members not only drew from their national and organizational backgrounds, but also drew from their individual experiences. Moreover, Chinese and Indian team members employed power relationships in their identity construction, such as core team/support team, outsourcer/outsourcee, and customer/service provider. Organizational practices including cross-cultural training, leadership development, and the uses of a global delivery model and cultural liaisons facilitate cultural diversity management.

From the knowledge perspective, this research generates an in-depth understanding of cultural influences on globally distributed information technology work. Furthermore, this research adds some insights with regards to global information technology collaborations between China and the United States, which is quite limited in the existing literature. From the theoretical perspective, this research demonstrates the analytical capability of integrating the theory of situating culture and social identity theory. From the practical perspective, recommendations formulated from this research provide actionable knowledge for practitioners with respect to virtual work management, human resource management, cultural diversity management, cross-cultural training and cross-cultural knowledge management.

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Chapter 1: Introduction

Globalization, the process of increased mobility of capital, commodities, technology, cultural influences, and human resources across national boundaries, is one of the most significant trends of the 21st century (Castells, 1996; Friedman, 2006). In the information technology (IT) industry sector, globalization is manifested through the globalization of IT work, such as global IT offshore outsourcing, globally distributed information systems development, and innovation through global R&D (research & development) collaborations. The relationships between globalization and the advancement of information technology are reciprocal: the advancement of information technology has been one of the major driving forces for globalization; the mobilization of global resources, such as financial and intellectual capitals, has also enabled speedy changes in the global IT landscape.

Global IT offshore outsourcing refers to organizational arrangements for obtaining information technology and systems products or services from external providers that are located in different countries from the clients (Hirschheim and Dibbern, 2002). Globally distributed information technology work refers to hardware, software and information systems development and management activities that involve collaborations between two or more organizations, or between one organization and its subsidiaries, which occurs across national boundaries (Huang, 2006). The difference between these two concepts is that global IT offshore outsourcing is across both national and organizational boundaries while globally distributed information technology work is across national boundaries but not necessarily across the organizational boundaries. The practices of globally distributed information technology work have continuously grown to become a significant global phenomenon (Sahay et al., 2003, Cameral and Tjia, 2005).

When compared to the traditional characteristics of information technology work, globally distributed information technology work has three unique characteristics. First, it is primarily conducted through a virtual environment that is supported by information and communication technologies (ICTs). Such virtual space is global by nature and transcends national and organizational boundaries. Second, it is situated within different complex, multi-level socio-cultural contexts. Walsham (2000, 2001) argued that the distinct cultures of different local contexts are critical factors in mediating the globalization process in the specific contexts. Therefore, the globally distributed work place has a global-local duality. Third, the practices of globally distributed information technology work have faced a variety of challenges, among which are cultural diversity and cross-cultural management.

Cultural diversity is inherent in globally distributed information technology work, given that the team members on global virtual teams have diverse national, organizational, and professional cultural backgrounds (Prikladnicki et al., 2003; Karahanna et al., 2005). Cultural diversity also has both positive and negative effects on globally distributed information technology work, which puts forward special challenges in managing the increasingly diversified global IT work and global IT workforce (Huang and Trauth, 2006; Van Knippenberg and Schippers, 2007; Ang and Inkpen, 2008). Studies showed that cultural diversity may be beneficial for enhancing creativity, flexibility, and problem solving skills, which are important for knowledge intensive work (Harrison et al., 2000; Dafoulas and Macaulay, 2001; Govindarajan and Gupta, 2001; Miroshnik, 2002; Trauth et al., 2006). However, to bring the divergent perspectives into a convergent development practice, cultural diversity may become a barrier to knowledge sharing and transference since some knowledge is contextually dependent and culturally contingent (Nicholson and Sahay, 2004). Carmel (1999), and Herbsleb and Moitra

(2001) point out that while cultural diversity can be seen as an enriching factor by bringing together divergent bodies of knowledge, it can also lead to serious and chronic misunderstandings. Therefore, the effective management of cultural diversity, along with the cultivation and integration of cultural diversity will be critical for organizations to not only succeed in current global software projects, but also to develop innovative capabilities and gain the competitive advantage in the long run (Baba et al., 2004; Earley and Mosakowski, 2004, Huang and Trauth, 2006; Ang and Inkpen, 2008).

The primary objective of this research is, therefore, to understand how cross-cultural issues influence globally distributed information technology work and how to effectively manage these issues. To date, the majority of cross-cultural research in the information systems (IS) discipline assumes national culture as the sole or main cultural boundary that determines the individual cultural identity while it ignores other cultural influences (Myers and Tan, 2002). In addition, this research stream conceptualizes culture through preset static dimensions, while overlooking the complex nature of the socio-cultural context, the dynamic aspects of emergent culture, and the agency of individuals who constitute the cultural groups (Walsham, 2002). Aiming at exploring the dynamic cultural influences on globally distributed information technology work, this research draws on situating culture theory and social identity theory.

Although there is a body of literature which acknowledges the relevance of cross-cultural impacts on globally distributed information technology work, there seems to be a paucity of research that addresses *how* cross-cultural factors affect the globally distributed information technology work in real settings and *how* those influences intertwine with organizational management (Sahay et al., 2003; Gurung and Prater, 2006). More specifically, this research takes an interpretative approach and focuses on *how* cross-cultural factors affect global information

technology work that is distributed among three countries, China, India and the United States (U.S.).

China and India not only have their own unique positions in the global IT market, they also have notable differences with respect to policy, infrastructure, and culture (Trauth, 2000). The U.S. has historically dominated the software and IT-enabled service industry (Carmel and Tjia, 2005; ACM Report, 2006). According to Carmel and Tjia (2005), in 2003, the spending from the U.S. represented two thirds of the global IT offshore outsourcing market. They estimated that the U.S. share will remain steady in the future while the global IT offshore outsourcing market continues growing. India is the biggest IT-service provider in the global IT market and software services are India's largest export (ACM Report, 2006). It is projected that India's software and services exports will be worth $50 billion by 2008 (Sahay et al., 2003). India's dominance in the global software and services market is largely attributed to its policy liberation in the early 1990s and a large talented IT workforce, who are skilled and fluent in English (Farrell et al., 2004; ACM Report, 2006). Compared to India, China has only a small share of the global software and services market (ACM Report, 2006). China is a top-down policy-driven nation, in which the central government has significant impact on its economic development pattern (De Filippo et al., 2005; ACM Report, 2006). The national software strategy of China has traditionally focused on domestic market (ACM Report, 2006). Its software industry is highly fragmented and lacks of expertise needed to capture large international projects (De Filippo et al., 2005).

However, several studies point out that China has great potential to compete in the global software and IT services market in the future (Li and Gao, 2003; De Filippo et al., 2005; ACM Report, 2006), supported by its continuous infrastructure development, high education

improvement, and reformed software strategies (Farrell et al., 2004). According to a global outsourcing report that ranks the world's most competitive and popular IT outsourcing destinations, China is rated number two in the current market (following India) and is expected to be number one in the next decade (Minevich and Richter, 2005). The fast development of the Chinese IT infrastructure and IT industry has attracted the attention of IS/IT scholars and practitioners (Martinsions, 2005). *Communications of the ACM* presented a special issue in 2005 on how the transformation China is undergoing is impacted by IT. However, in the research area of global IT collaborations between China and other countries such as the U.S., studies are quite limited.

Therefore, from the empirical perspective, this research will provide rich insights on *how* cross-cultural issues affect global information technology collaborations between or among China, India, and the U.S. From the theoretical perspective, this research will contribute to the extension of existing theories to different work domains and environments. From the practical perspective, this research will help practitioners develop corresponding strategies for cultural diversity management, cross-cultural training, and cross-cultural knowledge management. Furthermore, cultural diversity issues are becoming increasingly prevalent and important in future IS/IT work practices and workplaces. This research will also provide some actionable knowledge with respect to understanding and addressing cultural diversity issues.

This dissertation is composed of nine chapters. Chapter 1 introduces the research topics by addressing research backgrounds, research problems and motivations, and highlights research contributions. Chapter 2 reviews relevant literature, including published research on global information systems, virtual teams, and cross-cultural management. It also discusses the theoretical orientations that guide this research and the rationales of choosing them. This chapter

concludes with a highlight on potential theoretical and practical gaps identified from the review of literature. Chapter 3 describes the research design. First it introduces three research questions and articulates the cultural conceptualization and research epistemology that underlies this research. Following that, it discusses the interpretive case study method employed in this research, including case selection, data collection procedures and methods, data analysis procedures and techniques, and research evaluation. Chapter 4 provides some background information about two companies investigated in this research. Chapter 5, 6 and 7 present the research findings that address the three research questions respectively. Chapter 8 discusses the research findings and articulates the theoretical and practical implications of this research. As a concluding chapter, Chapter 9 provides a brief summary of this research, highlights the research contributions, addresses some limitations of this research, and suggests several areas for future research.

Chapter 2: Literature Review

2.1 Conceptualization of the Literature Space

This dissertation research is at the intersection of three separate but interrelated research fields – global information systems research, which is the research domain; research on virtual teams, which is the work configuration; and cross-cultural research, which is the perspective taken by this research to study the information technology work that is distributed globally. In this section, I begin with an introduction of the phenomenon of globally distributed information technology work, followed by a review of research in this domain. Then I continue with the review of related studies in the areas of virtual teams and cross-cultural research. I will then discuss the theoretical approaches depicted in this research and will end by summarizing issues and research gaps in each research area.

2.2 Globally Distributed Information Technology Work

2.2.1 The Concepts

The phenomenon of interest in this study is globally distributed information technology work. In order to define what globally distributed information technology work is, it is important to clarify some related terms: sourcing; insourcing/outsourcing/select-sourcing; onshore/offshore; global IT offshore outsourcing; global software development; and globally distributed information technology work. The term ***sourcing*** refers to organizational arrangement for obtaining information technology and systems products or services (Hirschheim and Dibbern, 2002). ***Insourcing/outsourcing*** relates to how the information technology/information systems (IT/IS) systems products and services are provided in a given

organization: if the IT service provider is the internal IT department or the subsidiary of that organization, it is called *insourcing*; if the IT service provider is an outside entity, it is called *outsourcing*; if the IT/IS products and services of a given organization are provided by a combination of internal and external providers, it is called *select-sourcing* (Chaudhury et al., 1995; Lacity and Willcocks, 2001; Lacity, 2002; Rottman and Lacity, 2004). *Onshore/offshore* is about where the service provider is located. If the service provider, either internal or external, is located in the same country as the organization, such an arrangement is called *onshore*. Similarly, if the service provider, either internal or external, is located in a different country from where the organization is located, it is called *offshore*. The 2x2 matrix of insourcing/outsourcing and onshore/offshore results in four basic IT/IS sourcing arrangements: *onshore insourcing*, *offshore insourcing*, *onshore outsourcing*, and *offshore outsourcing* (Sahay et al., 2003; Carmel and Tjia, 2005). There are additional terminologies that describe other variations such as nearshore, multishore, etc. (Carmel and Tjia, 2005). Figure 2.1 shows how those concepts are related to each other.
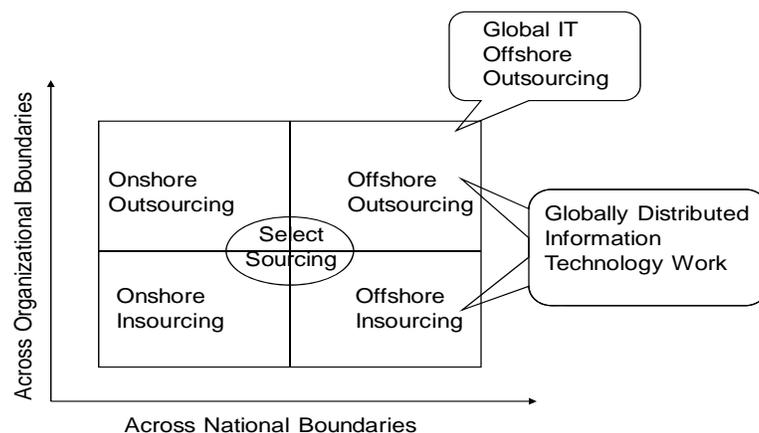
Figure 2.1:   **Globally Distributed Information Technology Work and Related Concepts**

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The terms information technology (IT), software, information systems (IS), are often used interchangeably. ***Global software development*** is often used as a synonym to ***globally distributed information technology work***. However, the concept of "information technology work" is more inclusive than the concept of "software" and "information systems development" because it can include hardware, software and information systems related development and management activities, and computer technology related research and development activities as well. Therefore, this study uses the term ***globally distributed information technology work*** and defines it as hardware, software and information systems development and management practices that involve collaborations between two or more organizations, or between one organization and its subsidiaries, which are across national boundaries. However, because of the mixed uses of terminologies in many other studies, different terms may be used when those studies are cited. G***lobal IT offshore outsourcing*** should be viewed as a subset of globally distributed information technology work. The work arrangements of *global IT offshore outsourcing* are across both the organizational and national boundaries, while the arrangements of *globally distributed information technology work* are across the national boundaries but not necessary the organizational boundaries.

2.2.2 The History

Global IT offshore outsourcing can be traced back to the financial and operational support areas in the 1960s and 1970s (Hirschheim and Dibbern, 2002; Lee et al., 2002). At that time, the cost of hardware was a major concern and the focus of global IT outsourcing was on hardware, facility, and operational management. From the 1970s to the 1980s, the focus of outsourcing began to shift from hardware to software (Mann, 2004). The cost of software and information systems development and the lack of skilled IT workers have become the dominant

factors affecting IT investment. Since the 1990s, software development and IT services have become dominant in global sourcing (Lee et al., 2002; Sahay et al., 2003).

More recently, the industry has seen two trends in global IT outsourcing practices. First, the global offshore IT outsourcing market is continuously growing (Carmel and Agarwal, 2001; Lee et al., 2002; Sahay et al., 2003). The U.S. is the primary client while India is the primary service provider of the global IT outsourcing market (Sahay et al., 2003; Laplante et al., 2004). It is projected that global IT offshore revenue may be worth of $110 billion by 2010, which accounts for 35% of global IT market (Chakrabarty et al., 2006). It is also projected that IT enabled services and business processes will still dominate the global IT offshore practices, while India will retain the leadership position among services providers (ibid). Second, while global IT offshore outsourcing has become a maturing practice; it is also becoming more and more diversified. Besides the U.S., western European countries, such as the UK and Germany, and Asian countries, including Japan and Korea, are actively pursuing outsourcing opportunities (Sahay et al., 2003; Hawk and Kaiser, 2004). In addition to current dominant service providers such as India, Ireland, and Israel, China and Russia are beginning to enter the IS outsourcing market (Gopal et al., 2002; ACM Report, 2006). At the same time, global IT offshore outsourcing participants are no longer limited to large corporations as more and more small suppliers are entering the market by focusing on their own specialties (Lacity and Willcocks, 2001). Another evidence of diversification is activity diversification, which refers to the wide variety of outsourcing interests including application packages, systems operation and management, system integration, and business processing (Lee et al., 2002, 2003; Sahay et al., 2003; ACM Report, 2006).

2.2.3 The Nature

In the early research, Lacity and Hirschheim (1993) classified the range of outsourcing options into three categories: Body Shop – the use of contract programmers or personnel from the outsourced company carrying development work that is managed by the outsourcing company; Project Management – outsourcing a specific project or portion of the information technology development work which may involve develop a new system of supporting an existing application; Total Outsourcing – the outsourced company is in charge of the majority of the information technology work. Later (Lacity and Hirschheim, 1995; Lacity and Willcocks, 2001), researchers classified outsourcing based on the criteria of how the budget of developing information systems is spent: Total Outsourcing – at least 80% of the IS budget is outsourced to third party providers; Selective Outsourcing – the IS function is selectively outsourced and accounts for between 20% and 80% of IS budget; Total Insourcing – over 85% of IS budget is retained to the internal IS department. And according to Lacity and Willcocks (2001), the survey showed that the majority of companies which engage in outsourcing use the selective outsourcing strategy.

While the previous taxonomies describe the outsourcing practices from the economic and strategic perspectives, little attention is paid to the types of information technology work being outsourced. Palvia (1995) cited Apte and Winniford's (1991) taxonomy of categorizing the work activities that are involved in outsourcing practices: Data entry and simple processing work – the tasks are well defined, routine, and labor intensive; Contract programming – a variety of tasks that are related systems analysis, design, coding, testing, implementation and subsequent maintenance; Facilities management – including operations and support of a system or data center; System integration – involving the whole software development life cycle from design,

implementation, and customization, etc.; Support operations – which provides maintenance type of services. Another emerging type of outsourcing work practice is ASP (application service provider), which can be described as "contracting all the telecommunications, hardware, software, and consulting necessary to deploy, run, and maintain hosted applications remotely to a service provider" (Smith and Kumar, 2004).

A recent report conducted by the Association for Computing Machinery (ACM Report, 2006, p. 19-20, p. 54-55) classifies current offshore IT work practices into six categories[1]: 1) IT research and development; 2) the high-end of software development such as requirement analysis, software architecture, software design, IS integration, project management, IT consulting, and business strategy; 3) programming/coding, software testing, and software maintenance; 4) physical product manufacturing such as semiconductors and information and communication technology components; 5) IT-enabled services/business process outsourcing (BPO)/data processing services, such as insurance claim processing, billing, and accounting; 6) call centers and telemarketing. The last three categories are usually referred as IT-enabled service or IT-related work, and constitute the majority of traditional IT offshore outsourcing practices. The first three categories are directly associated with software/information systems development, and their percentages in the overall offshore IT market are continuously increasing (Sahay et al., 2003; Carmel and Tjia, 2005).

Sahay, Nicholson, and Krishna (2003) argue that the concept of global software development is different from traditional manufacturing and service activities, and is broader than the concept of "software outsourcing". They describe four distinctive features of global software development: intangibility – which indicates the development deliverables are codes

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[1] This taxonomy is based on ACM report, 2006, and also adopts other resources, Sahay et al, 2003 (p. 10), and Carmel and Tjia, 2005 (p. 13-16).

and software packages; heterogeneity – which indicates the differences in software development processes and methodologies; scalability – which indicates the development activities may vary and may involve parts of or whole-life-cycle software and information systems development projects with different levels of complexity; and magnified social and human issues – which indicates global software development may encounter the increasing diversification of people (across national boundaries), practices, and technologies involved.

2.2.4 The Research Focus

The phenomena of globally distributed information technology work are situated within complex socio-cultural contexts and have profound impacts on stakeholders from macro to micro levels. At the global and societal level, the majority of research focuses on studying how societal factors such as policy and infrastructure may affect the development of a nation's IT industry and how the involvement in the global IT outsourcing market may impact a nation's economy and workforce. For example, Trauth (2000) studied the multinational and indigenous IT sectors in Ireland and developed an Influence-Impact framework to analyze how different factors from the societal context influenced the development of Irish information economy and how the effects of the information economy are manifested in Irish society. D'Costa and Sridharan (2004) focused on what factors might contribute to or hinder innovation in the Indian IT industry, in order for India to sustain the dominance in the global IT market. Mann (2004) examined the potential negative and positive impacts of global sourcing on the U.S. economy and IT workforce, and proposed two strategies to respond to the challenges of global offshore IT outsourcing.

Among existing literature on global information systems research, the organizational level of analysis is the dominant level of study. Those studies focus on IT outsourcing-related

organizational decision making such as whether or not to outsource, what, where, and how to outsource, how to implement the sourcing decisions, how to manage the risk and control the outsourced projects, and how to manage the outsourcing relationships. This research domain has seen a variety of synthesized work that integrates some disconnected but relevant empirical studies and theoretical developments. Recent examples include the work by Lacity and Willcocks (2001), Kern and Willcocks (2001, 2002), Lee et al. (2002, 2003), and Dibbern et al. (2004). Throughout the 1990s, Lacity, Willcocks, and Kern conducted extensive case and survey studies and published two books that discuss IT outsourcing related-issues including strategy and decision making, risk mitigation, emerging practices, and relationship management (Kern and Willcocks, 2001, 2002; Lacity and Willcocks, 2001). Lee et al. (2002, 2003) provided an outline to address the evolving perspective of outsourcing research and the corresponding changes in theoretical orientation. The newest effort is the work by Dibbern et al. (2004), who comprehensively surveyed a variety of IS journals, conference proceedings, and management journals. Dibbern et al. (2004) viewed IS outsourcing as "a management decision with enduring impacts and involves an on-going process" (Dibbern et al., 2004, p. 14), and developed an analytical framework based on five outsourcing stages – why, what, which, how, and outcome. At each stage, they classified literature according to its research approach (positivist, interpretative, conceptual, descriptive, or mathematical) and focus.

While these existing works demonstrate great efforts to bring together different IS outsourcing practices and academic literature, there is a lack of studies on how exactly global IT work is carried out in practice and how the surrounding socio-cultural factors may influence the dynamics of globally distributed information technology work. The book by Sahay et al. (2003) is one of the limited synthesized research examples that focus on how global IT outsourcing

work relationships are arranged, managed, and evolved within the complex socio-cultural context. In the book, they emphasized the importance of studying cultural influences and point out that cross-cultural issues are critical to managing global software development work. They focused on studying culture in the process of communication among actors across national and organizational borders and how cultural differences may shape subsequent communications.

A variety of studies have shown that culture is a critical influential factor in globally distributed information technology work and has impacts on a variety of issues – managing outsourcing relationships (Nicholson and Sahay, 2001; Sahay et al., 2003; Krishna et al., 2004), managing conflicts (Damian and Zowghi, 2003), building trust (Zolin et al., 2004), preference of software development methods (Hanisch et al., 2001; Borchers, 2003), preference of computer supported collaborative technologies (Massey et al., 2001), knowledge transfer and management (Sarker, 2003; Baba et al., 2004; Nicholson and Sahay, 2004), and the process and performance of globally distributed teamwork (Carmel, 1999; Earley and Gibson, 2002; Olson and Olson, 2003; Gluesing and Gibson, 2004).

2.3 Virtual Teams

2.3.1 Different Configuration of Virtual Work

There are different streams of literature addressing a variety of virtual work configurations and virtual environments, such as virtual teams, virtual organizations, virtual communities, etc. And the terms "virtual", "distributed", and "dispersed" are sometimes used interchangeably. Watson-Manheim et al. (2002) pointed out that the non-systematical use of the term "virtual" is problematic. Researchers and practitioners have called to unpack the assumptions, meanings and characteristics of "virtual" in order to systematically study the emergent phenomena of virtual work (Niederman and Beise, 1999; Schultze and Orlikowski,

2001; Espinosa et al., 2003; Dubé and Paré, 2004). Virtual teams conduct work primarily in the virtual work environment, but may also engage in face-to-face interactions. Current research on virtual teams focuses on addressing the challenging issues in virtual team performances.

2.3.2 The Challenges of Virtual Teams

One of the major challenges that a virtual team may face is effective communications and coordination. Compared to face-to-face interactions, ICTs are usually perceived as lean media that constrain the rich information exchanges and flexible negotiations (McDonough et al., 2001; Kraut et al., 2002). Particularly when distributed team members have no or limited prior collaboration history, it is difficult achieve shared understandings and group cohesion among team members because of the lack of mutual knowledge and supports for informal interactions (Crampton, 2001; Kraut et al., 2002). Furthermore, the difficulty of remote information access and sharing, late response, and non-response (silence) may affect maintaining awareness in virtual teams, which in turn will affect conflicts and trusts of team relationships, and have impacts on team performance (Crampton, 2001; Armstrong and Cole, 2002; Sarker and Sahay, 2004; Weisband, 2002). Several studies have emphasized the importance of establishing and maintaining awareness in collaborative work in general, and in virtual team in particular (Schmidt, 2002; Crampton, 2001, 2002; Weisband, 2002; Carroll et al., 2003; Hinds and Mortensen, 2005). Crampton (2001) utilized the term "mutual knowledge" to articulate the reciprocal relationships of awareness. According to Crampton (2001), mutual knowledge is not only about information sharing, but also about being aware of whether or not other team members receive and understand the information.

Another major challenge of virtual teamwork is conflict management. Griffith et al. (2003) categorized team conflicts into three types: relationship conflict, task conflict, and process

conflict. However, findings from some empirical studies show that it is difficult to clearly separate different conflicts, and one type of conflict may trigger other types of conflict when information exchange is less effective or there is lack of shared understanding (Mannix et al., 2002; Saker and Sahay, 2002; Griffith et al., 2003). Conflicts may have both beneficial and detrimental effects on team performances. On the one hand, task-related conflicts may help to bring different perspectives and viewpoints together, encourage the challenging of existing or dominant assumptions, provide opportunities for exploring different alternatives, and promoting creativity and innovations (Jehn and Mannix, 2001; Maugain, 2002; Ocker, 2005). On the other hand, relationship and process conflicts may affect team cohesiveness and have negative influences on team performances (Griffith et al., 2003; Paul et al., 2004). Therefore, how to effectively manage conflict in order to foster constructive conflict and resolve unconstructive conflict is a great challenge.

Trust is an important element and a highly beneficial catalyst of effective virtual teamwork. Empirical studies of virtual teams show that due to the temporary nature of virtual teams and the lack of prior working history among team members, virtual teams usually follow a swift trust model (Jarvenpaa and Leidner, 1999; Powell et al., 2004). According to the swift trust model, individuals in virtual teams tend to assume and use category-driven information to form some stereotypical impressions of others at the beginning (Jarvenpaa and Leidner, 1999). During the team process, trust develops very quickly, and to a great degree, depends on the task performance of the team members with respect to their work ethic and ability to effectively carry out the tasks. Another characteristic of swift trust is that it is temporal and fragile (Jarvenpaa and Leidner, 1999). The study by Zolin et al. (2004) indicates that geographically distributed workers may rely on early impressions of how their distributed team members perform tasks and deliver

commitments, but such initially perceived trustworthiness is relative stable over time instead of being temporal.

2.3.3 Global Virtual Teams

Global virtual teams can be seen as virtual teams that are globally distributed and consist of culturally diverse team members (Jarvenpaa and Leidner, 1999). A global virtual team can be defined as a collection of individuals who are organizationally and globally dispersed, and culturally diverse, and who communicate and coordinate work activity either asynchronously or in real time primarily through information and communication technologies (ICTs) (DeSanctis and Poole, 1997; Jarvenpaa and Leidner, 1999). The virtual work environment of global virtual teams is not independent of local place and context because the local context may influence the participation, work behavior, and accountability of the virtual team members (Schultze and Boland, 2000; Rennecker, 2002; Sarker and Sahay, 2004).

A variety of strategic and catalytic factors have contributed to the increasing trend of using globally distributed virtual teams for software and information systems development (Carmel, 1999; Herbsleb and Moitra, 2001). These include: 24/7 around-the-clock development activities; the desire to reduce development costs and have access to a global resource pool; and the proximity to the customer. In addition, some authors have further emphasized the contribution of diversity to work performance brought about by globally dispersed team members in heterogeneous teams (Adair, 1986; Harrison et al., 2000; Hartenian and Gudmundson, 2000; Maugain, 2003; Trauth et al., 2006). For example, Maugain (2003) argues that the different thinking modes and dissimilar problem solving methods brought in by diverse team members in multicultural R&D (Research & Design) teams will stimulate novel ideas and creativity. Hartenian and Gudmundson (2000) point out that a highly diverse group has a

tendency to make higher quality decisions, to be more creatively motivated, and to have a higher productivity potential than a less diverse group.

However, research also shows that the absence of regular face-to-face interactions and the breakdown of traditional communication and coordination mechanisms are negatively associated with the effectiveness of globally distributed software development teams (Cameral, 1999; Herbsleb and Mockus, 2003). Systems development tasks, particularly front-end activities, require formal and informal communication and coordination (Audy et al., 2004) to facilitate knowledge exchange and learning (Curtis et al., 1988). According to Herbsleb and Mockus (2003), the change of communication patterns and the lack of effective communication channels (formal or informal) in globally distributed software development teams can lead to delays in global software development projects. The study by Cramton and Webber (2005) shows a negative relationship between geographic dispersion and perceived team performance with respect to complex and interdependent tasks.

Cultural differences may further exacerbate communication problems (Herbsleb and Moitra, 2001). Carmel (1999) pointed out that the barriers of time, space, and cultural distances may be detrimental to building trust and achieving team cohesiveness in global virtual teams. Nicholson and Sahay (2004) argued that the barriers of knowledge sharing among knowledge workers in offshore software development are related to the embeddedness of knowledge in the local cultural context, and should be investigated at the interconnected societal, organizational, and individual levels of analysis.

2.3.4 Characteristics of Software Development Virtual Team

Huang and Trauth (2007) argue that while cultural factors may influence global virtual teams engaged in a variety of activities in general, they are particularly important to software

development work. Software and information systems development work has a set of unique characteristics. Some of these features lend themselves suitably to the virtual work environment, whereas some of these features add more difficulties to this work.

Software development usually follows certain life-cycles where each stage might be separated and accomplished at different geographic locations. The most common outsourced software development work is coding, testing, and maintenance (Sahay et al., 2003; Carmel and Tjia, 2005). Modular design can be used to divide the software development project into chunks of semi-independent activities and assign them to different development sites (Gorton and Motwani, 1996; Grinter et al., 1999; Herbsleb and Grinter, 1999). Distributing information systems development tasks globally may help speed up the development process because the development work can be carried on by global virtual team members 24/7 around-the-clock.

However, at the same time, the processes of software development are complex, interdependent, and iterative. Compared to other activities, such as new product development in manufacturing sectors, the products of software development are less tangible, and the knowledge perspectives involved in software development are more tacit and fast changing in nature (Sahay et al., 2003, Huang and Trauth, 2007). Software development work, especially large scale information systems development work, is highly uncertain and complex (Curtis et al, 1988; Mathiassen and Stage, 1990; Hoegl and Proserpio, 2004; Cramton and Webber, 2005). The requirement analysis phase of software development is very dynamic, and it is often impossible to specify the design entirely in advance (Herbsleb and Grinter, 1999; Audy et al., 2004). Hence the development process is iterative in nature and involves on-going interactions (Sahay et al., 2003). The uncertainty and interdependence of information systems development processes require both formal and ad hoc informal communication, which adds further

challenges to the work processes of global virtual teams (Cramton and Webber, 2005). Herbsleb and Mockus (2003) point out that the change of communication patterns and the lack of effective communication channels are the major causes of delays in global software development projects (Herbsleb and Mockus, 2003).

2.3.5 Cross-cultural Influences on Global Virtual Teams

Among those studies focusing on global virtual teams, there are discrepancies regarding whether or not culture is an important influential factor and how cultural differences affect teamwork processes.

Cramton (2001) studied globally dispersed student teams across four countries and point out that maintaining mutual knowledge is a central problem of dispersed collaborations. One of the problems that may lead to the failures of mutual knowledge is the difficulty in understanding the silence of communication. However, whether or not cultural differences may contribute to such difficulty is not acknowledged in the study. Saunders et al. (2004) argue that different global virtual team members might have different time visions. Another study by Sarker and Sahay (2004) on global virtual teams consisting of American and Norwegian students indicates that misunderstandings of silence may arise from dissimilar conversation styles as a result of cultural differences.

Hinds and Mortensen (2002) conducted a web-based survey on geographically distributed teams across Europe and the U.S. within a multinational company. Their findings showed that cultural heterogeneity was not significantly correlated with affective or task conflict. On the other hand, the interpretative case study by Damian and Zowghi (2003) on globally distributed requirements negotiations across Australia and the U.S. indicated that conflicts in common

understanding of requirements could be attributed to the differences in both functional and national cultures.

One reason for such discrepancies may be attributed to some methodological issues in global virtual team research. Martin et al. (2004) pointed out that much of the current empirical research has been conducted in laboratory settings, using student teams working on short-term projects, which may not be adequately capable of addressing issues and questions related to the contextual influences of the real work settings. Also the widely used survey methods usually could not provide in-depth understanding about "how" the cultural influences matter in work of global virtual teams.

2.4 Cross-cultural Research

2.4.1 Cultural Diversity and Globalization

There are two basic debates in cross-cultural research. The first debate concerns the cultural changes brought by the globalization process and whether globalization may lead to "cultural homogenization" or "cultural diversity" (Walsham, 2000, 2001). Second, if globalization and cultural diversity are two elements of a dualism, how should cultural differences be theorized and how should phenomena related to cultural diversity be studied?

According to Castells (1996), the globalization process involves the flows of capital, commodities, technology, cultural influences, and human resources across national boundaries, thereby creating a networked society. Castells (1996) also pointed out that the globalization process is selective and segmented with many imbalances, and the networked society is both centralized and decentralized, which shows heterogeneous and global-local duality characteristics. One stream of sociological and cultural research considers processes of globalization and flows of cultural elements across frontiers as leading to a global "cultural

homogenization" (Kellner, 2003; Schuerkens, 2003). This is widely criticized by the other stream of scholars who argue for cultural diversity (Walsham, 2000). Schuerkens (2003) criticizes such "cultural homogenization" arguments of globalization by pointing out that they usually ignore the existence and active role of local cultural perspectives. To illustrate the continuous interactions of local cultural elements and globalization influences, Schuerkens (2003, p. 217) cites Long's (1996) discussion: "Local situations are transformed by becoming part of wider global arenas and processes, while global dimensions are made meaningful in relation to specific local conditions and through the understandings and strategies of local actors." Hence the local cultural context is not a passive recipient of globalization and external cultural influences as indicated by the "global homogenization" argument. Nor is the local cultural context a static and deterministic factor that remains unchanged during the globalization process. The forms and meanings of local culture are constantly reconstructed by its members (Walsham, 2001; Schuerkens, 2003).

2.4.2 Conceptualizations of Culture

The concept of culture is by no means free of controversy (Brannen et al., 2004). Both the conceptualizations of culture and cultural research are complex in nature. In general, there are two different conceptualizations of culture: the dimensional view and the emergent view.

The dimensional view of culture depicts culture as values, attitudes, and norms which are shared by a group of people, are relatively stable, and influence how people behave (Brannen et al., 2004). The widely cited definition of culture by Hofstede (1984, p. 25) is one example: "Culture is the collective programming of the mind which distinguishes the members of one group or category of people from another." Drawing on the shared, stable, distinguishable, and predictive assumptions about culture, researchers attempt to define and generalize the patterns of

different cultures into several dimensions by using a given nation as the boundary condition. While the development of cultural dimensions is an inductive research process, the application of those cultural dimensions is usually deductive. To some extent, defined cultural dimensions provide a framework to compare and measure the cultural differences from one country to another. Researchers who adopt a dimensional view of culture usually take an etic approach to investigating culture and culture related phenomena (Pike, 1967; Avison and Myers, 1995). Following the etic approach, the role of the researcher is usually external to the researcher's field. It is assumed that knowledge is objective and reality can be described by measurable properties that are independent of the researchers and their instruments (Weisinger and Salipante, 2000). Surveys and questionnaires are the typical methods used in this type of cultural research.

The emergent view of culture, on the other hand, depicts culture as historically situated, emergent and contested, negotiated, and constantly interpreted and re-interpreted in social relations and interactions (Ong, 1987; Carrithers, 1992; Brannen et al., 2004). According to the emergent view, culture should not be treated as a set of predefined variables peculiar to a certain society (Avison and Myers, 1995; Goodall, 2002). Therefore, studies adopting the emergent view of culture usually have no predefined cultural variables. Researchers who adopt this view usually take an emic approach to exploring culture and cultural related phenomena (Pike, 1967; Avison and Myers, 1995). With the emic approach, the role of the researcher is inside the research field. It is assumed that knowledge is socially constructed and reality cannot be understood independent of the researchers and their instruments. Therefore, cultural phenomena are understood through the meanings that insiders assign to them (Weisinger and Salipante, 2000). Ethnography, interpretative case study, and grounded theory are commonly used methods in this type of cultural research.

2.4.3 Cross-cultural Influences

Cross-cultural factors may influence individuals' values, attitudes, and behaviors in various ways, such as communication style, perception of time, and conflict management. This section briefly summarizes some studies on cross-cultural differences in these dimensions. It should be noted that the majority of these studies depict national boundary for cross-cultural comparison. In addition, most studies on cross-cultural influences on individual behaviors are based on face-to-face interactions. There are few studies focusing on cross-cultural influences in the virtual work environment.

2.4.3.1 Culture and Communication Style

Communication style refers to the way people use language, including both verbal and nonverbal elements (Martin and NaKayama, 2005). Culture has profound impacts on communication styles (Lustig and Koster, 2003). For example, some cultural groups prefer a direct communication style, where the verbal message is direct and to the point, revealing the speaker's true intentions (Gardenswartz and Rowe, 2002, Martin and NaKayama, 2005). In comparison, some other cultural groups prefer an indirect communication style, where the verbal message is subtle and implicit and only hints at the speaker's intent (Gardenswartz and Rowe, 2002). Camel and Tjia (2005) exemplify a case of communication style differences between Indian and Dutch software usability engineers, where the Dutch engineers had a direct and assertive communication style while the Indian engineers had an indirect communication style and were reluctant to say "no". However, the particular job responsibilities of usability engineers require the assertive, straightforward communication style. Therefore special attention was given to developing the assertiveness of Indian usability engineers during the team building and coaching session.

2.4.3.2 Culture and Perception of Time

Research on relationships between culture and time usually focuses on analyzing the patterns and differences of time perceptions in a society at the national level (Brislin and Kim, 2003; Hall and Hall, 2003). Accordingly, individuals' time versions are usually shaped by the society they grow up and live in, but at the same time they will be "refined by the organization in which they work" (Saunders et al., 2004, p. 22).

According to Hall and Hall (1990, 2003), there are two major kinds of time perceptions: *monochronic* time and *polychronic* time. People who adopt *monochronic* time prefer doing one thing at a time, taking a time commitment seriously, and adhering to preset schedules (Hall and Hall, 2003). People with *polychromic* time orientation tend to do many things at a given time, view time commitment only as an objective to achieve when possible, and make changes to plans easily when needed (Hall and Hall, 2003). Brislin and Kim (2003) point out that even though different cultures fall into these two categories with varying degrees, variations exist because of professional, organizational, or even individual differences within the same culture.

Acknowledging time as a complex and multi-dimensional concept, Saunders et al. (2004) elicit four typical types of time versions, namely *clock*, *event*, *timeless*, and *harmonic* time, and discuss their characteristics along eight dimensions associated with time. The *clock* time version, which is dominant in American business environments, views time as a monochronic and definite entity that can be divided into different units and designated to given tasks. Based on the *clock* time version, time is a resource that can be allocated to increase work efficiency and productivity. The *event* time version, which is held by the Japanese culture, depicts time as a cyclical and recurrent entity that is event-driven and unfolds one event at a time. In this time version, procedures are important and long-term orientation is usually taken in planning. The

timeless time version, which is usually adopted by Hindus in India, views time as a polychronic and continuous phenomenon that has no clear boundary or ending. Multiple activities can occur at the same time. The *harmonic* time version, which is taken by the Confucian philosophy in China, views time as something intersubjective that takes into account others' perceptions and always seeks a harmony between people. Under this version, time, whether it is yours, mine, or others', is valuable and should be respected accordingly. Punctuality is considered to be an important and basic part of social manners. According to Saunders et al. (2004), when global virtual team members hold different time versions, they may have different views about timelines, deadlines, work rhythms, or punctuality, which may impose challenges to the temporal coordination of globally distributed information technology work.

The effect of culture on temporal separation is also manifested in the availability of global virtual team members during the projects (Ocker et al., 2007). Different countries have different holiday schedules. For example, in the U.S., holidays are usually one or two days in length. In China, important traditional holidays such as the Spring Festival, can last for a week. India is a very diverse and multicultural country. Both national holidays and many religious holidays are observed in India, many of which are not very well known to people from other nations. Even the ways that weekends are observed also varies among countries. While many countries take Saturday and Sunday as the weekend, the weekend in Israel is on Friday and Saturday (Espinosa and Carmel, 2003). In their case study of distributed software development across the UK and India, Nicholson and Sahay (2004) found that a 9:00 AM to 5:00 PM routine and a separation of work life from personal life are encouraged in the UK, while in India, the boundaries are unclear. Therefore, it is very important to take these variations into account when

planning activities and scheduling meetings in globally distributed software development projects.

2.4.3.3 Culture and Conflict Management

There are five different styles of conflict management. The degree of concerns for others and for the self is different in different styles (Montoya-Weiss et al., 2001; Griffith et al., 2003; Gudykunst and Kim, 2003; Paul et al., 2004):

- Avoidance style shows low concern for others and low concern for self. People with an avoidance style tend to withdraw from the conflict situation.

- Accommodation style shows high concern for others and low concern for self. People with an accommodating style tend to focus on commonalities and adapt to differences.

- Competition style shows low concern for others and high concern for self. People with a competition style tend to enforce one's own view and disregard other views.

- Compromise style shows moderate concern for others and moderate concern for self. People with a compromise style tend to find the common ground among different views.

- Collaborative style shows high concern for others and high concern for self. People with a collaborative style tend to integrate different views.

The cultural differences in conflict management style are usually attributed to the individualism-collectivism cultural variable (Gudykunst and Kim, 2003). Studies show that individualistic cultures prefer direct conflict management style such as compromise and collaboration, while collectivistic cultures prefer indirect conflict management style such as avoidance and accommodation (Ting-Toomey, 1988, Ting-Toomey and Oetzel, 2001). Gudykunst and Kim (2003) acknowledge that individual factors and ingroup/outgroup identities may mediate the individualism-collectivism cultural influences. As a result, although there are

some patterns with respect to the relationships between individualism-collectivism cultures and conflict management style, there can be differences among individuals within a given cultural group.

2.4.4 Cross-cultural Management

Cultural training is a common practice in cross-cultural management to prepare employee for more effective interpersonal relations when interacting with individuals from other cultures (Fowler, 2006). Studies indicate that there are two major issues in cross-cultural training programs: stereotypical and one-step. Goodall (2002) argues that that adopting a national boundary and cultural dimensional model in cross-cultural training may only provide certain cultural stereotypes that trainees may find contradictory in their real work experiences. Osland and Bird (2004) point out that while the dimensional models may be useful tools in explaining certain cultural behaviors, they may be misleading or even dangerous. They advocate instead a sense-making approach in cross-cultural trainings. This approach includes three steps: 1) the "thesis" step to develop hypotheses about the studied culture, which can build on existing stereotypes; 2) the "antithesis" step to identify the oppositional cultural paradoxes that contest the original thesis; and 3) the "synthesis" step to understand and make sense of the contradictory behaviors. Foster (2000) studied the cultural training for expatriates of multi-national companies and points out that most of those training programs focus on pre-departure training while fail to provide continuous training opportunities to expatriates during the work processes. Kealey et al. (2005) argue that current cross-cultural training only focuses on individual cross-cultural awareness and interpersonal communication skills, while failing to address other important knowledge and skills such as analyzing and understanding the local organizational and environmental contexts.

Krishna et al. (2004) studied cross-cultural management in several global software outsourcing cases. They point out that it is important to recognize the limits of cultural adaptation of expatriates, and suggest that one practice is to implement a cultural liaison position to bridge the cultural differences. Krishna et al. (2004) also highlight the importance of pro-posting cultural training and systematic on-the-job cross-cultural training in global software outsourcing practices.

2.4.5 Cross-cultural Research in Information Systems

As the IT industry becomes more globally interconnected, globally distributed information technology work often becomes the norm. Walsham (2001) presents a set of case studies on cross-cultural information systems production, use, and management. What can be synthesized from these cases is that the existing local socio-cultural context is a critical factor in mediating the globalization process in a specific context and, in turn, will have an impact on the complexity of globalization (Walsham, 2001). The importance of local cultural context was further highlighted by the panel participants at the 2002 International Conference on Information systems (ICIS) (Barrett et al., 2003).

There are two major issues existing in current research on cross-cultural information systems. Myers and Tan (2002) point out that most research on global information systems only focuses on the national level of cultural analysis. However, the cultural context is complex and multi-level in nature (Straub et al., 2002). Another issue is that many cross-cultural information systems studies often treat culture as a static concept and use predefined cultural dimensions (such as dimensions developed by Hofstede, 1984, 2001), which do not assist in providing an in-depth understanding of the complex phenomena. Therefore, several IS scholars call for better theorizing of culture and the involvement of multiple research methodologies (Myers and Tan,

2002; Straub et al., 2002; Walsham, 2002; Weisinger and Trauth, 2002, 2003; Sahay et al., 2003).

2.5 Theoretical Orientations

2.5.1 Socio-cultural Context of Globally Distributed Information Technology Work

Globally distributed information technology work is situated within a complex and multi-level socio-cultural context, which may range from national (societal), regional, organizational, or professional (functional) levels, to the team level (Dafoulas and Macaulay, 2001; Myers and Tan, 2002, Karahanna et al., 2005; Leung et al., 2005). Different cultural factors at different levels coexist, interact with each other, and together produce different work environments and dynamics (Straub et al., 2002). The relative influence of culture from different levels on globally distributed information technology work may vary depending on the specific context of the problem under investigation (Karahanna et al., 2005; Huang and Trauth, 2006). A variety of studies have shown that national culture differences are not the only dominant influential factors (Nicholson and Sahay, 2001, 2004; Eischen, 2003; Kriz and Fang, 2003; Pauleen, 2003; Weisinger and Trauth, 2002, 2003; Kaiser and Hawk, 2004). These findings support a need for theoretical approaches that go beyond national dimension cultural models as well as a need for interpretative methodologies to deepen our understanding of cultural differences (Myers and Tan, 2002; Walsham, 2002; Straub et al., 2002).

National Culture: A variety of cultural dimensional models exist at the national level of cultural analysis. Vinken et al. (2004) provide a general review and comparison of those models. In information systems related research, some cultural dimensional models have been widely applied, including models developed by Hall and Hall (1990), Trompenaars (1998), and Hofstede (1984, 2001). Hall and Hall (1990) classify cultures into high-context and low context

cultures that influence how people communicate and interact with each other. Another model was developed by Trompenaars (1998) based on the relationships with people and attitudes towards time, which include six cultural dimensions, such as universalism/particularism, individualism/communitarianism, affective/neutral, specific/diffuse, achieved/ascribed status, and sequential/synchronous time.

A third model developed by Hofstede's (1984, 2001) consists of five cultural dimensions, including individualism/collectivism, power distance, uncertainty avoidance, masculinity/femininity, and long-term/short-term orientation. This cultural dimensional model is the most commonly used model in global information systems research (Myers and Tan, 2002). Hofstede's work is based on his original survey research of IBM in the late 1960s plus some additional research in Asian countries that was conducted in later years. His dimensions have been frequently incorporated by scholars and practitioners and have been incorporated in different survey instruments to probe which cross-cultural differences are relevant and how such cultural differences affect the phenomena of interests. The wide applications of his model indicate its importance, relevance, and degree of robustness (Bing, 2001).

However, Hofstede's model has been criticized by several scholars from different perspectives. From the conceptual perspective, Weisinger and Trauth (2002, 2003) question the static and deterministic assumptions of Hofstede's model. They argue that Hofstede's model is not appropriate at the interaction level of analysis where participating members actively interpret and reinterpret the cultural meanings within the dynamic local settings. From the boundary perspective, Myers and Tan (2002) question the claim of "national culture" in Hofstede's model and point out that there are mismatches between the emergent national states and historically rooted cultures. From the methodological perspective, McSweeney (2002) and Sahay et al.

(2003) question the reductionist approach and survey method of Hofstede's research and argue for interpretative approaches. From the analytical perspective, Walsham (2002) compares the use of Hofstede's model and Giddens' structuration theory as analytical tools in studying cross-cultural work. He points out that Hofstede's model is lacking the analytical capability to actually study the detailed work patterns of cross-cultural work. Recognizing the values and limitation of Hofstede's model, scholars such as Goodall comments that "Hofstede's work is both valuable, and ... dangerously seductive" (2002, p. 259).

Researchers in the information systems field have explored different theories to study influences of national culture. For example, Walsham (2002) applied structuration theory as an analytical tool to analyze two case studies of cross-culture software production and use. He demonstrates how structuration theory could be used to reveal the dynamic nature of culture, the cross-cultural conflicts, and the detailed work patterns. Research that takes an emergent view of culture is usually longitudinal and interpretative in nature (Nicholson and Sahay, 2001, 2004; Walsham, 2002), and aims at providing in-depth interpretations regarding how culture affects individual work behaviors and how individuals recognize and negotiate those differences and conflicts brought by cultural influences.

Regional Culture: Several studies have demonstrated that regional culture is an important factor that shapes local cultural context. Saxenian (2006) studied the economic development and technological change of Silicon Valley and shows that Silicon Valley's open networks of communication and exchange across firms created a unique regional cultural context for development and innovation, which she refers to as "*regional advantage*". Eischen (2003) studied the information economy of the Andhra Pradesh region in India and points out the importance of studying the specific regional context. Kriz and Fang (2003) criticize treating

China as a simple homogenous entity in Western literature and pointed out that in China each region offers a dynamic cultural context of its own. Trauth et al. (2008b) studied and compared different environmental contexts of Massachusetts, North Carolina, and central Pennsylvania, noting that in those different regions, cultural factors such as attitudes and values regarding women, women working and women working in IT influence the experience of women in the IT workforce. These studies demonstrate the importance of recognizing the variations (regional cultural boundary) within the national cultural boundary.

Organizational Culture: Similar to the contrast between the dimensional and emergent views of culture in the societal context, Schultz and Hatch (1996) point out that in the organizational context, there are two different views of organizational culture – the *functionalism view* and the *interpretivism view*. The functionalism view argues that organizational culture is relatively stable, and a framework can be defined to analyze organizational culture and to shed light on the integrative patterns of the culture. The interpretivism view, on the other hand, argues that organizational culture may be ambiguous and unstable, and should be studied within a specific local context instead of using general frames (Schultz and Hatch, 1996). According to Weisinger and Trauth (2002, 2003), the multinational workplace is a good example of why a monolithic view of corporate culture cannot hold. Their analysis of the multinational information sector in Ireland shows that the culture of each workplace emerged as a unique entity resulting from the corporate culture and the industrial and national cultures of the local context (Trauth, 2000; Weisinger and Trauth, 2002, 2003). The case study by Kaiser and Hawk (2004) of long-term alliance outsourcing relationship between a U.S. company and an Indian company shows that the mutual understanding of ethnic and corporate cultures was an important factor to build stable and trust relationships.

Professional Culture: Team members of a global virtual team usually have different specialties and professional backgrounds (Constantine, 1995). A professional culture refers to the shared, occupational values and beliefs of a group of people (Sirmon and Lane, 2004). According to Dafoulas and Macaulay (2001), professional culture is usually ingrained in the educational processes and reinforced through the professional practices. Maznevski and Chudoba (2001) studied student virtual teams in which team members were from different majors and countries. Their findings show that students' educational backgrounds may directly or indirectly affect the preferences of using communication media. Dubé and Paré (2004) also mention that team members with different professional cultures may have their own knowledge bases, specific technical languages and work routines that may make team collaboration more difficult.

Team Culture: If a global virtual team has no prior experience in working together, it is important to study the process of how the team culture is developed. Gluesing and Gibson (2004) point out that the establishment of the right team context at the outset is very important to the team performance at the later stages. They also note that the team context building occurs through negotiation and developing shared understanding among team members (Early and Gibson, 2002). Evidence from the grounded action research by Pauleen (2003) on an ICT-supported distributed team that was across multiple boundaries (culture, organizational, etc.) shows the connection between culture and use of communication channel. In addition, the author emphasizes that traditional cultural models – such as Hofstede's and Hall's – cannot fully explain the choice of communication channels. This indicates that team culture may be seen as emergent and negotiated in the work processes (Pauleen, 2003).

It can be seen from the case examples illustrated at each level of cultural analysis that the socio-cultural context of global information technology work is multi-level and the socio-cultural

influences are dynamic. Therefore, it should not be pre-assumed that national culture differences are the only or dominant influential factor. Those cases also support the call for stronger theoretical approaches other than existing national dimensional cultural models and more sensitive and improved methodologies to deepen our understandings (Myers and Tan, 2002; Walsham, 2002; Straub et al., 2002).

2.5.2 Situating Cultural Theory

Several scholars propose different approaches to study the dynamics of socio-cultural context and cultural boundaries across different levels. For example, Walsham (2002) and Sahay et al. (2003) draw on the structuration theory of Giddens (1984) and emphasize the dynamic reciprocal relationships between the cultural context, social structures, and human agents. Brannen and Salk (2000) develop a cultural negotiation model for international joint ventures. In this model, they link national cultural origins, organizational structure and power relations, individual sense-making, and incidents encountered during interactions together as part of the negotiation process of the emergent work culture. Brannen and Salk (2000) treat the national cultural origins as the cultural influences, the organizational structure and power relations, and individual sense-making as the cultural mediating effects, the incidents as the negotiating events, and the emergent work culture as both the output of the current negotiation process and the input for future negotiation process. On the one hand, their study acknowledges the importance of national cultural influences on individuals' behaviors and attitudes in the joint ventures. On the other hand, their findings indicate that national cultural attributes alone are not effective determinants or predictors of the organizational culture of joint venture, but rather are parts of the external contextual influences. The contextual influences from the macro level (national culture and institutional environments) and meso level (organizational structure) are internalized

and constantly negotiated by individuals (micro level) through events and interactions, which in turn affect the organizational culture formation (meso level).

The situating cultural theory was proposed by Weisinger and Salipante (2000) based on their study of cross-cultural interaction in international joint ventures. It was further applied and developed by Weisinger and Trauth (2002, 2003) in the study of the multinational work environments in the Irish information sector in Ireland. The main thrust of the situating culture theory is that "cultural understanding is locally situated, behavioral, and embedded in everyday, socially negotiated work practices" (Weisinger and Trauth, 2002, p. 306). The situating culture theory proposes that, because of the multiple cultural influences at different levels, culture should be redefined as a locally based phenomenon that is grounded in everyday work practices. As a result, it advocates adopting an interpretative epistemology to study and understand the authentic local phenomena and local cultural context from an interpretative perspective.

This research adopts the situating culture theory to study the complex, multi-level socio-cultural context of globally distributed information technology work for the following reasons. First, situating culture theory conceptualizes culture as situated, emergent and negotiated. Second, it highlights the dynamics of cultural context instead of predefining cultures as dominant and static patterns. Third, instead of studying the deterministic relationships of the cultural influences from a given level on the cultural phenomena of interests, situating culture theory emphasizes the reciprocal relationships between the multi-level cultural contexts and individuals, and between individuals and the emergent cultural phenomena of interests (such as the local culture of multinational organizations, or the emergent culture of global virtual teams). However, while the situating culture theory demonstrates analytical strength in studying the complexity of cultural influences in the local facilities of multinational organizations, it has not widely been

applied and examined in other research instances. Also, it was developed and applied in studying the physical "place" type of work environment. It has not been applied to the virtual work environment. Therefore, the research proposed here will build on and extend situating culture theory.

2.5.3 Social Identity Theory

Straub et al. (2002) points out that most cultural definitions used in information systems research may explain macro-level behavior of certain cultural groups, but may overlook the role of individual agency. This is because those studies only view culture as a one-level structure and assume that national culture is the main determinant of individuals' membership. However, as previously discussed, the socio-cultural contexts of globally distributed information technology work are multi-leveled, where different cultural levels dynamically interact with one another, and the boundaries of different cultural levels are permeable. Such complexity of the cultural context indicates that we should not view culture only as a structural phenomenon and deduce the preset dimensions of a general social group to a specific individual (Straub et al., 2002).

Tajfel's social identity theory (1972, 1974, 1978) indicates that we, as individuals, constantly strive to define ourselves and others regarding the world in which we live, and we constantly categorize "the ordering of the social environment in terms of groupings of persons in a manner which make sense to individual" (Gudykunst and Kim 2003, p. 96). Therefore, social categorization and identification are processes which reflect individuals' similarities and differences between one another during social relations and interactions, and encompass the dynamic relationships between the influences of the complex socio-cultural context and the agency of individuals. Individuals who are engaged in globally distributed information technology work and are embedded in and influenced by the complex multi-leveled socio-

cultural contexts may compose their own social identities in different ways, thus displaying different value orientations and work behaviors.

Gudykunst and Kim (2003, p. 102) mention that there are two dimensions of individuals' cultural identities that affect intercultural communication: the strength of the identification and the content of the identities, which may vary from situation to situation. Example studies elicited by Gudykunst and Kim illustrate that a person's identification strength will increase when they visit other countries, as compared to when they stay in their own country. Both the strength of the identification and the content of the identities will affect value orientations and work behaviors of individuals.

Social identity theory has been applied to several virtual team research and global IT offshore outsourcing studies to examine the interconnection between the relationship dynamics of virtual teams and the memberships of social groups most often defined by national cultures (Leung et al., 2005; Levina and Kane, 2009). Levina and Kane (2009) draw on social identity theory to explore the necessary condition for appointed cultural liaisons or mangers with bi-cultural background to become boundary spanners, which is to achieve dual identification by defining a joint identity and identifying joint interests of two groups. Adair et al. (2006) propose a concept of third culture as a shared understanding or shared schema among team members, which can facilitating generating efficient team processes and outcomes. They argue that the formation of a third culture can either build upon the intersection of cultural similarities, or emerge from embracing and integrating cultural differences. Hakonen and Lipponen (2007) investigated the antecedents of identification process with virtual teams. Their research findings suggest that task interdependence and perceived quality of interaction are positively related to team identification. Gibbs (2009) studied the influence of culture on a global software team and

stressed the multidimensional nature of team members' cultural identities. Gelfand et al. (2007) reviewed recent cross-cultural research on organizational behavior and point out that empirical research is needed for understating the process of the emergence of a global identity, how individuals balance different identities, and how the enactment of different identities affects individuals negotiating and managing cultural interfaces.

In order to investigate how global virtual team members perceive cross-cultural differences in globally distributed information technology work, this research will adopt social identity theory to study the individual agency of global virtual team members. In this study, identity refers to a person's sense of self resulting from a sense of belonging to certain social groups, such as nations, ethnic groups, and organizations (Gudykunst and Kim, 2003; Levina and Kane, 2009). Straub et al. (2002) point out that there are two strengths of using social identity theory in globally distributed information systems research: the recognition that different levels of culture co-exist and interact in complex ways; and the recognition that how individuals draw on those cultural influences varies.

2.6 Summary of Literature Review

Based on previous discussions of related research backgrounds, three major gaps can be identified in existing literature on cross-cultural influences on globally distributed information technology work. First, there is a lack of theoretical frameworks to study how socio-cultural context influence globally distributed information technology work and how cross-cultural differences are negotiated in virtual environment. On the one hand, most existing literature focuses on the national level of cultural context and analyzes cultural influences from pre-defined dimensions. This is not adequate or robust enough for studying the multi-leveled socio-cultural context. On the other hand, although some scholars have developed some alternative

theoretical approaches and frameworks that are sensitive for studying complex and dynamic cross-cultural influences, the applications of those theoretical approaches have been limited, especially with regards to the virtual work environment. Second, from the empirical perspective, while the research on globally distributed information technology work is growing, there is lack of research on how exactly the work is carried out in practice and how the surrounding socio-cultural factors may influence the dynamics of actual work processes in detail. Third, from the methodological perspective, especially in global virtual team research, quasi-experiment studies and etic approaches are prevalent. Although those studies are very informative, they mainly address whether or not cross-cultural differences are relevant to teamwork, but do not provide insights on how they are relevant.

Chapter 3: Research Design

In chapter 3, I present the research design employed in this dissertation research. First, I describe the research objectives and introduce the research questions that guide this research. Then, I discuss the conceptualization of culture adopted in the research and the underlying epistemology. Following that, I discuss the research methodology, including the rationale for employing the research approach of interpretive case study, the criteria of selecting the two cases investigated in this research, the role of theory, data collected in this research, and the collection procedures, and the data analysis strategies and procedures. Then I describe how the research was evaluated during the research process. At the end, I summarize the key points discussed in this chapter.

3.1 Research Questions

The review of relevant literature shows that there exist research discrepancies and knowledge gaps regarding the complex relationships among the cultural factors and the globally distributed information technology work. The primary objectives of this research are to investigate *how* cultural factors affect the globally distributed information technology work and *how* organizations and global virtual team members manage those cultural influences in real settings. More specifically, this research seeks to address the following research questions:

1. How do cultural factors affect globally distributed information technology work?

2. How do global virtual team members construct their identities and negotiate the cultural differences?

3. How do organizations help global virtual team members to manage the cultural differences?

3.2 Conceptualization about Culture

In this research, I take the view that culture is historically situated and emergent, which is constantly interpreted and negotiated in social relations and interactions by a group of people within a particular socio-cultural context (Huang and Trauth, 2006). The conceptualization of culture as dynamic and emergent instead of static and predefined will provide researchers a flexible theoretical lens to examine the evolving and dynamic nature of globally distributed information technology work.

This view of culture also complies with the hermeneutic philosophy. Hermeneutics is one doctrine of philosophy, and is also a mode of analysis (Myers, 2004). As a mode of analysis, hermeneutics is concerned with the interpretation of text, speech, or action. The foundation of hermeneutic analysis is the hermeneutic circle, which refers to "the dialectic between understanding the text as a whole and the interpretation of its part" (Myers, 2004, p. 107). As a doctrine of philosophy, hermeneutics is concerned with the process of understanding. Philosophers Heidegger and Gadamer laid the foundation of modern hermenutics. Bernstein (1983) extended Gadamer's hermeneutics and pointed out that the process of understanding is situated in a historical context (the horizon) and is enabled by our experiences, prejudgments, and prejudices. The process of understanding is the fusion of horizon, in a sense that through understanding, the horizon is shifted to reflect the understanding.

Defining culture as "historically situated" acknowledges that the social actors (the global virtual team members) are situated in horizons (the cultural contexts) which have been

conditioned by a set of complex historical and cultural contingencies that constitute their beliefs, values, and prejudices. Through "interactions" (engaging in globally distributed information technology work), they interpret cultural differences and come to an understanding of cultural influences on their work activities. Through on-going communication, interpretation, and negotiation, the horizons of these global virtual team members are shifted to new levels. The fusion of such horizons forms a new context of their collaborative work, encompassing diverse perspectives.

3.3 Research Epistemology

Epistemology is concerned with the relationship between reality and knowledge and how to acquire knowledge (Orlikowski and Baroudi, 1991; Hirschheim, 1992; Walsham, 1995a). The epistemological stance of research affects the choice of research methods and evaluation criteria (Hirschheim, 1992; Lee, 2004). Therefore, it is important to make the underlying epistemology of research explicit (Orlikowski and Baroudi, 1991; Walsham, 1995b).

There are three major epistemological stances in current information systems research: positivist epistemology, interpretive epistemology, and critical epistemology (Orlikowski and Baroudi, 1991). Different epistemological stances have different assumptions about knowledge and how to acquire knowledge. Positivist epistemology assumes that reality has objective existence that is independent of individuals, and that can be described by measurable properties (Hirschheim, 1992; Myers, 1997; Goles and Hirschheim, 2000). The role of researcher is neutral and does not interfere with the phenomenon of study (Goles and Hirschheim, 2000). Positivist studies attempt to increase the confirmative and predictive understanding of the phenomenon through testing hypothesis and theory (Orlikowski and Baroudi, 1991). Interpretive epistemology

assumes that our knowledge of reality is a social construction of human actors in that human actors create and associate their own meanings as they interact with world around them (Walsham, 1995a, Orlikowski and Baroudi, 1991). Researchers are human actors was well. Therefore, the roles of researchers are not value-neutral and researchers' a priori assumptions, beliefs, values, and interests shape their understanding about the phenomena (Walsham, 1995a). Interpretive studies attempt to understand the phenomenon through investigating the meanings that the participating human actors assign to them (Orlikowski and Baroudi, 1991). Critical epistemology assumes that social reality is historically constituted and is produced and reproduced by human actors (Myers, 1997; Howcroft and Trauth, 2005). It assumes that human actors can change their social and economic conditions, but such a change is constrained by various forms of social, cultural, and political domination (Klein and Myers, 1999). The role of researchers is not value-neutral. Critical studies attempt to eliminate the causes of alienation and domination through critiquing and bringing the restrictive and alienating social conditions into the light (Orlikowski and Baroudi, 1991; Klein and Myers, 1999).

In this research, I take the stance of interpretive epistemology. My choice of interpretive epistemology is based on the nature of the phenomenon that I am interested in studying, my research objective, and the research questions that guide this study (Burrell and Morgan, 1979; Orlikowski and Baroudi, 1991; Goles and Hirschheim, 1999; Braa and Vidgen, 2001; Trauth, 2001; Creswell, 2003).

This research is focused on studying the ways in which cultural factors influence globally distributed information technology work. Globally distributed information technology work is situated within complex, multi-leveled, socio-cultural contexts, and the work is conducted by global virtual team members (i.e. the participating human actors). It is during the work processes

and among their social interactions that the global virtual team members constantly experience, interpret, and negotiate the cultural differences. To gain the knowledge of cultural influences on globally distributed development work entails assessing the subjective and inter-subjective meanings that global virtual team members assign to them.

The objective of this research is then to *understand* the dynamics of the phenomenon of interest (cultural influences on globally distributed information technology work) through examining the experiences and views of the participating human actors (i.e. global virtual team members). To achieve the research objective, I focus on addressing three research questions. The first research question is directed at understanding the complexity of cultural influences on globally distributed information technology work. The second research question is directed at understanding the agency of global virtual team members. The third research question is directed at understanding the effects of organizational managerial mechanisms. Therefore, my motivation for conducting this research is to *understand* the phenomenon, rather than predicting certain outcomes (objective of the positivist epistemology) or changing the social conditions (objective of the critical epistemology), thus lending it to an interpretive epistemological stance (Goles and Hirschheim, 1999; Braa and Vidgen, 2001).

3.4 Methodology

3.4.1 Interpretative Case Study

In this research, I employed a qualitative approach, more specifically an interpretative case study approach, as the research method. According to Yin (2002), a case study is an empirical inquiry that investigates a contemporary phenomenon in a real-life context, especially when the boundaries between the phenomenon and context are not clearly defined and it is

desirable to use multiple sources of evidence. The choice of an interpretive case study method is based on a set of seven criteria suggested collectively by Klein and Myers (1999); Trauth (2001), Yin (2002), and Creswell (2003): the research problem, the uncertainty surrounding the phenomenon, the research questions, the research epistemology, the desire to use multiple data sources, the researcher's skills, and academic support.

First, according to Yin (2002), a case study method is preferred when the research is about investigating a contemporary phenomenon in a real-life context. Globally distributed information technology work is a contemporary phenomenon. The socio-cultural contexts of globally distributed information technology work are complex in nature. Through investigating cases in real work settings, this research is intended to understand the complexity of cultural influences on globally distributed information technology work and the dynamics of cultural communication and negotiation.

Second, there are a number of uncertainties surrounding the research phenomenon. For example, there are discrepancies among the published literature regarding whether cultural factors have effects on global virtual teams or how exactly cultural factors affect the globally distributed information technology work. Hence, it is important to inductively generate an in-depth understanding of the research problem in real work settings (Trauth, 2001).

Third, my research questions are concerned with "*how*", in an attempt to examine the dynamic relationships among cultural influences, the identities and behaviors of global virtual team members, the organizational managerial mechanisms, and the practices of globally distributed information technology work. Trauth (2001) and Creswell (2002) point out that a qualitative approach is appropriate in order to respond to the "how" type of research questions, and to explore and probe the dynamic and complexity of the research phenomena.

Fourth, the epistemological stance of this research is interpretive. In order to understand how cultural factors influence the globally distributed information system development work, it is important to draw on the narratives of global virtual team members, which consist of thick descriptions of their firsthand insights (Klein and Myers, 1999; Walsham and Sahay, 1999; Trauth, 2001). It also requires researchers to reflect on the social and cultural background of the research settings (Klein and Myers, 1999; Yin, 2002), which lends this research to an interpretive case study approach.

Fifth, one feature of the case study strategy is the opportunity of collecting multiple sources of data (Yin, 2002). While interview is the one the major data collection methods to assess the experiences and views of the participants, it is also important for the researcher to be situated in the field, observe the surrounding context, and reflect on his or her own experience. According to Klein and Myers (1999), and Schultze (2000, 2001), reflexivity is important in interpretive study in that researchers need to reflect on how the interpretation is socially constructed through the interaction among the researchers, participants, and research settings. In addition, multiple data sources are needed in this research to facilitate the data analysis and to triangulate the interpretation of data (Yin, 2002).

The sixth factor that influences the choice of an interpretive case study approach is concerned with my own role as a researcher (Schultze, 2000, 2001; Trauth 2000, 2001). One of the premises of interpretive study is that the researcher is not value-neutral in the research process. Researchers who are involved in interpretive case studies should recognize that, researchers' attitudes and comfort levels towards uncertainties, their previous experiences and research skills will affect the research outcomes (Klein and Myers, 1999; Trauth, 2001; Walsham, 1995a, 2006; Yin, 2002). I was born and educated in China. I came to the U.S. to

pursue advanced graduate degrees and have been in the U.S. for approximately ten years. I am bilingual, fluent in both Mandarin (native language) and English (second language). During my doctoral study in the College of Information Sciences and Technology (IST), I took a class on qualitative methods and learned about different research skills necessary for conducting a case study. I have been involved with several research projects, through which I have gained experiences in all the phases of qualitative research (design, implementation, analysis and writing) and practiced different techniques for collecting and analyzing qualitative data (interview, participant observation, document analysis, and coding). One of the projects was to investigate the interactions between socio-cultural factors and the adoption of information technologies in higher education in China and India (Xiao et al., 2005). In that project, we adopted the case study strategy and interviewed international students from China and India. Therefore, I am prepared to conduct this interpretive case study, which is situated in the cultural contexts of China, India, and the U.S.

Last, but not the least, I have had tremendous support from my advisor, my thesis committee members and the IST community, from crafting the research ideas, identifying study sites, acquiring financial support, getting access to companies, to recruiting participants. This support has helped to build a foundation for me to conduct the interpretive case study in the field.

3.4.2 Case Design

In this research, the case unit of analysis is an organization. In particular, the cases studied in this research are multinational information technology (IT) companies that engage in globally distributed information technology work, involving collaborations among people in India, China, and the U.S. India, the U.S. and China, are all active players in global IT offshore

outsourcing market. The United States is the biggest offshore outsourcing country and India is the primary IT service provider in the current global IT offshore outsourcing market (ACM Report, 2006; Chakrabarty et al., 2006). Compared to India, China has a relatively small share of the global IT offshore outsourcing market (Farrell et al., 2004; De Filippo et al., 2005; ACM Report, 2006). Currently, the market share of China in global IT offshore outsourcing services is only 10% (Benni and Peng, 2008). China and India also have notable differences with respect to policy, infrastructure, economy, and culture (Trauth, 2000). However, several studies point out that China has great potential to compete in the global IT offshore outsourcing market in the future (Li and Gao, 2003; De Filippo et al., 2005; ACM Report, 2006). According to a global outsourcing report that ranks the world's most competitive and popular IT outsourcing destinations, China is rated number two in the current market (following India) and number one in the next decade (Minevich and Richter, 2005). However, while there are quite a few cross-cultural studies investigating global IT work collaborations between the U.S. and India (e.g. Sahay et al., 2003; Carmel and Tjia, 2005), studies of global IT work collaborations involved China are very limited. Therefore, one of my research objectives is to shed light on the global IT work collaborations involving China, in order to provide some insights into this important knowledge domain.

The two cases investigated in this research involved two multinational IT companies, SerTech and ComTech[2], Both companies are Fortune 500 companies that are headquartered in the United States and have business operations in more than 100 countries, including China and India. In SerTech and ComTech, there are abundant global IT work collaborations among the

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[2] All the names used in this dissertation are aliases to protect the confidentiality of the case company and the interview participants.

U.S., China and India. China and India play important roles in generating business revenue for both companies.

SerTech and ComTech differ in size, history and business focus. SerTech is larger than ComTech with respect to the number of employees. SerTech is also an older company than ComTech. The business focus of SerTech ranges from hardware and software to global IT services. ComTech, on the other hand, focuses on manufacturing hardware and providing global IT services.

Figure 3.1 illustrates the case design by showing how these two cases are related to each other and how they are situated in the multicultural context and the global context. Because both SerTech and ComTech are multinational IT companies, they are operating in a large global context. But this research focuses on studying the multicultural context involving China, India, and the U.S., aiming at examining how various cultural factors affect globally distributed information technology work and how to effective manage these cultural influences.
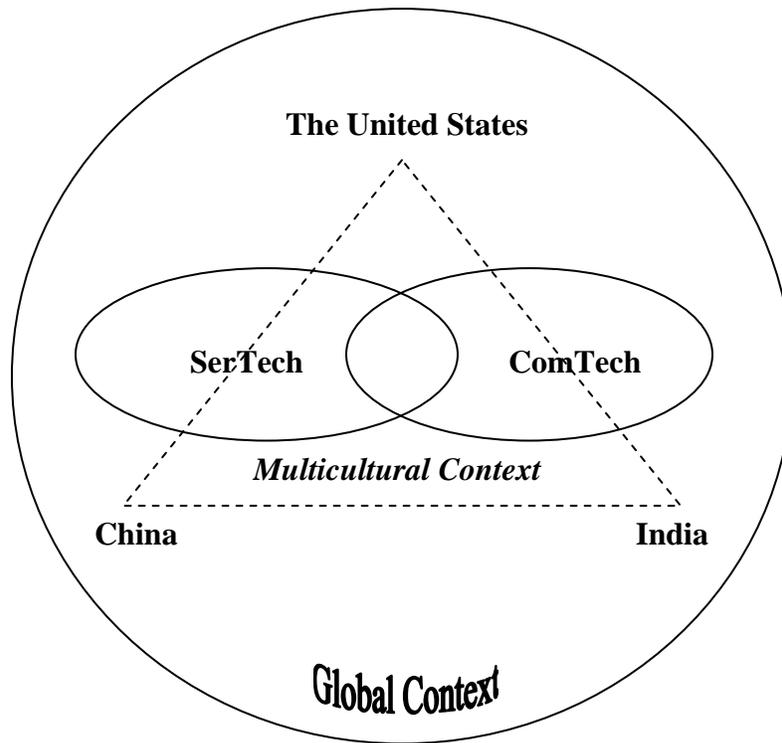
Figure 3.1:   Case Design

The rationale for conducting a multiple-case study in this research is two-fold. First, according to Yin (2002), the evidence from multiple cases is usually more compelling. The societal contexts of these two cases are similar in that this study examines the global IT work collaborations among the U.S., China, and India in both companies. But the organizational contexts of SerTech and ComTech are different. Therefore, analyzing the similarities and differences across these two cases will provide rich insights. Drawing on multiple cases can also facilitate the articulation of practical implications and the development of recommendations for managing globally distributed information systems work. Second, using a standard instrument to guide a study of multiple cases can facilitate theoretical replication and generalization across

multiple cases, thereby increasing the robustness of the theoretical development and theoretical implications as well (Yin, 2002).

3.4.3 Data Collection

In this research, data were collected during the fieldwork in India, China, and the U.S. Three techniques were used to collect data: interviews (including both face-to-face and phone interviews), participant observation, and document review. In the following sections, I discuss in detail how the case study sites were established, how data were collected, and what data was collected during the research process.

3.4.3.1 Establishing Case Study Sites

During the spring semester of 2006, my advisor, Dr. Trauth helped me to contact SerTech and ComTech, discussing the research ideas and plans with them, and asking for their permission to conduct the research onsite at their local office sites in India, China, and the U.S. A one-page document was used to communicate with the contact persons of SerTech and ComTech and to recruit participants (Appendix A). This document briefly described the research motivations, objectives, questions and contributions, outlined the criteria for recruiting participants, and provided an assurance for the confidentiality of participation. In early May, 2006, I got the permission from both SerTech and ComTech to conduct research onsite at their office locations in India and China.

From May 24 to June 3, 2006, I conducted fieldwork in Bangalore, India. From June 15 to June 24, 2006, I conducted fieldwork in Shanghai, China. As suggested before, both SerTech and ComTech have multiple offshore locations in India and China. Bangalore and Shanghai were chosen to be the fieldwork sites for two reasons. First, for both companies, Bangalore is one of

their major offshore operations in India, as is Shanghai in China. Second, not only SerTech and ComTech, but also many other multinational IT companies have business operations in these two cities. Conducting fieldwork in Bangalore and Shanghai gave me an opportunity to closely observe the centers of global IT offshore outsourcing. I collected interview data and participant observation data at both SerTech and ComTech during the onsite visits.

During the spring semester of 2007, we contacted SerTech and ComTech for gaining access to conduct onsite research at their office locations in the U.S. In February, 2007 the contact person at SerTech responded and approved me to visit their office in Spring City[3], where she was located. Between March 11 and March 17, 2007, I conducted fieldwork in Spring City, U.S., and collected interview data and participant observation data at SerTech.

I did not receive a response from ComTech until April, 2007. In April, 2007, the contact person at ComTech provided me with a list of names and the contact information of several potential participants. When I contacted them, I found that because of their different availability schedules, I could not arrange face-to-face interviews with them during the same period of time. Therefore, I conducted phone interviews with ComTech employees in the U.S.

3.4.3.2 Interview

An interview is a data collection technique that allows the researchers to directly interact with the informants, assess their experiences and perceptions, and develop an understanding of the phenomenon under study from the perspective of the participating human actors (Klein and Myers, 1999; Yin, 2002).

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[3] This is an alias.

A criterion sampling strategy is concerned with sampling the participants who meet some predetermined criteria (Patton, 2002). I utilized the criterion sampling strategy to recruit interviewees who were working at SerTech and ComTech in India, China, or the U.S., and who had had cross-cultural working experiences with colleagues or clients in China, India, and/or the U.S. on globally distributed software development projects (Patton, 2002). I also sought to recruit interviewees with different roles and job responsibilities in order to learn about different experiences and get diverse view points from the participants. The participants of this research can be grouped into three major categories according to their roles: team members, project and program managers at various levels, and human resource managers. The rationale for interviewing human resource managers was to inquire about how companies manage their global IT workforce and prepare their employees for global IT work more specifically. How interviewees were recruited and how interviews were scheduled varied by cases (SerTech and ComTech) and by locations (India, China, and the U.S.), the details of which are discussed in section 3.4.3.2.1 and 3.4.3.2.2 respectively.

The interviews were conducted in the form of face-to-face interviews and phone interviews. The interviews were semi-structured. An interview guide (Appendix B) was utilized to ensure that the specific research interests were brought into focus, and each individual interview was conducted in a systematic manner (Patton, 2002). At the same time, the interview process was open and interactive, in order to allow some flexibility for exploring and probing themes emerging from the interviews.

I adopted the critical incident interview technique in the interviews (Flanagan, 1954). Critical incidents can be defined as brief descriptions of vivid events that participants remember as being meaningful in their experiences (Arthur, 2001). The use of critical incident technique in

interviews has two advantages. First, this technique permits a focus on specific, concrete experiences of the participants and probes what is significant and meaningful to the participants (Arthur, 2001). Second, anchored in the concrete experiences, this technique helps to further explore the contextual influences of the events in depth (Heng et al., 1999).

The face-to-face interviews were conducted at the participants' offices or meeting room facilities in their office buildings. Each interview lasted approximately 45 to 60 minutes. A digital voice recorder was used to record the interviews given the participants' consent. I always kept a notebook in hand. Occasionally, I wrote down some brief notes about the interesting or important comments mentioned by the participants and some points that I needed in order to ask follow-up questions to get additional information. I ensured that I kept the note-taking to a minimum and only as necessary because it is important for the researcher to keep eye contact with interviewees and to be responsive and interactive during the face-to-face interview process (Mason, 2002). When the participants were unwilling to be audio recorded, I spent more time taking the interview notes. Five out of 44 interviews were not audio recorded. The interviews that were not recorded were more challenging than those that were recorded because I had to assume multiple roles (interviewer and note taker) at the same time and to multi-task.

In this research, some interviews were conducted via phone under three circumstances: (A). I could not visit onsite to conduct face-to-face interviews (e.g. phone interviews with three ComTech employees in the U.S.); (B). The participants worked at locations different from the sites that I visited (e.g. phone interviews with five SerTech employees in the U.S.); (C). The participants were traveling during my onsite visit so that they were unavailable for face-to-face interviews (e.g. phone interviews with one SerTech employee in India and one SerTech employee in the U.S.).

The phone interviews were conducted using phone devices with speaker-phone functionality so that the conversations could be audio recorded given the participants' consent. Each telephone interview lasted approximately 60 minutes. Similar to the process of face-to-face interviews, I took some brief interview notes during the process of phone interviews as well. All the recorded interviews were transcribed in this research.

3.4.3.2.1 Interviews at SerTech

The number of participants who were interviewed at SerTech (in India, China, and the U.S.) is summarized in Table 3.1. In each office location of SerTech, there was one contact person helping me to identify a list of potential interviewees who were interested in participating in this research.

The local contact person at the SerTech's office in India provided me a schedule sheet with the names of the participants, their building and room numbers, and the planned interviewing time. However, I soon found out that I could not take the schedules for granted. The majority of interviews either did not start on time or needed to be rescheduled to a different time because the participants were busily involved with other business matters and could not meet with me as planned. Usually I was unaware of the changes until the participants did not show up at a pre-scheduled time. Therefore, it took me a considerable amount of effort to coordinate and reschedule the interviews. At SerTech, India, I conducted fourteen face-to-face interviews and one telephone interview.

The interviews at SerTech, China, were also pre-scheduled by the local contact person. All the interviews that I conducted at SerTech, China, happened on time as scheduled. At SerTech, China, I conducted ten face-to-face interviews.

The local contact person at SerTech in the U.S. provided to me a list of names of people who were interested in the study and their email addresses. I sent out an initial contact email to those people on the list to schedule a time for an interview. I found out that several people on the list were not located at the SerTech office in Spring City. For these participants, I scheduled telephone interviews. Three days before going to the study site in Spring City, I contacted the pre-scheduled participants again to confirm their interview schedules. At SerTech, U.S., I conducted seven face-to-face interviews and six telephone interviews. All these interviews were conducted as scheduled.

Table 3.1:   Summary of Interviews Conducted at SerTech

SerTech	Face-to-face Interview	Phone Interview	Total Interviews
India	14	1	15
China	10	0	10
U.S.	7	6	13
Total	**31**	**7**	**38**

3.4.3.2.2 Interviews at ComTech

The number of participants that I interviewed at ComTech (in India, China, and the U.S.) is summarized in Table 3.2. In the case of ComTech, I did not have a local contact person in either India or China. Even though I expressed the desire to interviewing ten or more people at each location of ComTech, the contact person in ComTech only provided me a list of names and email addresses of three employees in India and two in China. When I sent them emails to arrange interviews, I found out that two ComTech employees in India were traveling outside

country during the time period of my onsite visit. Therefore, I only conducted one face-to-face interview at ComTech, India, and two face-to-face interviews at ComTech, China.

Table 3.2: **Summary of Interviews Conducted at ComTech**

ComTech	Face-to-face Interview	Phone Interview	Total Interviews
India	1	0	1
China	2	0	2
U.S.	0	3	3
Total	**3**	**3**	**6**

I received a list of names and email addresses of five ComTech employees in the U.S. from the contact person. I was unable to arrange face-to-face interviews during the same time period with three ComTech employees who responded to my contact emails. Therefore, I conducted phone interviews with these three participants at ComTech.

3.4.3.3 Participant Observation

Participant observation is a data collection technique that allows the researchers to gain direct and firsthand experience with the local setting, with the aim of developing a better understanding of the context (Patton, 2002). During my fieldwork, one of the important research activities was to immerse myself in the field, to observe the working and living contexts of the participants, and to document my personal account of the local settings.

Patton (2002) pointed out that one value of participant observation is to allow the researchers to be less dependent on prior conceptualizations of the setting and to allow the researchers to be open and generate their own views. Another value of participant observation is

that the researchers can reflect on their personal experiences to facilitate data interpretation during the data analysis stage (Patton, 2002).

Three sources of observational data were collected in course of this research. The first source is participant observation of the interviews. During each interview, I took interview notes to catch some interesting or important comments made by the informant. When I had some spare time, I would add my impressions to the interview notes about the interviewees, the interview processes, and my initial interpretations of their responses. For interviews that were not audio recorded, the interview notes were the major data source being analyzed. For interviews that were audio recorded, the interview notes were used as references to recall the interview processes and help me to interpret the data during the data analysis process.

The second source is the participant observation of the work activities and settings. During the onsite visits, I had the opportunity to engage in informal conversations with the local employees of the companies, observe the work settings and activities that took place at each site, and have lunches and coffee breaks at the companies' cafeterias. I kept field notes in the form of a research journal to document my everyday research activities, my informal interactions with the local employees, and my onsite observations of the work settings, work activities, and people's behavior. I also wrote down my reflections on these experiences and additional research thoughts. Furthermore, during the process of composing the research journal, I was actively seeking the connections among various pieces of evidence, between the evidence and the research questions, and between the evidence and my prior assumptions. In fact, some parts of the initial coding schema were generated during this process. This research journal also provided descriptive texts as a source for thick description during the process of analyzing data and reporting findings (Trauth, 2000; Patton, 2002).

The third source is the participant observation of the local cultural context, which was also recorded in the research journal. Each period of my fieldwork was not extensively long. Therefore, it was very important for me to maximize my cultural experiences by actively exploring different perspectives of the local context, watching local TV channels, reading local newspapers, shopping at local stores, visiting local attractions, trying different local foods, and talking to the local people such as taxi drivers. These observations and experiences provided me with an emic perspective of understanding the local cultural contexts, helping me to make connections to the literature and the narratives of the participants, hence facilitating data interpretation and triangulation (Trauth, 2000; Walsham, 2006).

3.4.3.4 Document Review

Yin (2002) pointed out that documentary information is a relevant and useful data source for case studies, and the most important use of documents is to corroborate information from other data sources, such as interviews.

In this research, I accessed the websites of SerTech and ComTech to search and review documents that are related to organizational strategies, operations, polices, and management. These documents are in various forms, including annual reports, news releases, strategic plans, white papers, and product and business show cases, etc. In addition, I routinely checked online sources such as Business Weekly and McKinsey to review news, articles, and case studies that were relevant to SerTech and ComTech.

The document review was conducted throughout the research process. Before I visited SerTech and ComTech onsite, I checked news articles and the companies' websites to get background information on SerTech, ComTech, and their local operations at each of the study

sites. During the interviews, sometimes the informants would talk about organizational developments and changes in the past, mention some specific strategies, programs, products, services and tools, or/and use acronyms and organizationally specific jargon. The online documents from the companies' websites were helpful in confirming and clarifying the information mentioned by the informants, and in some instances providing additional details (Yin, 2002; Oates, 2006). For example, a couple of interviewees in SerTech, India, talked about the company's cultural training program, CDT[4] (Cultural Diversity Training), during the first day of my onsite visit at SerTech's Bangalore facility. I used CDT as the keyword to search SerTech's website and other online sources, and found three relevant documents that provided detailed descriptions about the training objectives, models, and techniques of the CDT program. During the process of analyzing data and writing the thesis, I often turned to the companies' websites to check the available documents in order to clarify and corroborate information from interviews and participant observations.

3.4.4 Data Analysis

3.4.4.1 Initial Research Framework

An initial research framework (Figure 3.2) was constructed to provide preliminary guidance for analyzing the data. This initial research framework is informed by three theoretical orientations (e.g. situating cultural theory, the multi-leveled characteristic of the cultural context, and social identity theory), and other existing literature on global information technology work, cross-cultural research and global virtual teams, which are discussed in Chapter 2.5.

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[4] It is a pseudonym.

The initial research framework shows that the behaviors of global virtual team members are affected by their cultural backgrounds that may be related to cultural influences from the societal, regional, organizational, functional, and/or team level (multi-leveled characteristic of the cultural context) (Straub et al., 2002; Gallivan and Srite, 2005; Karahanna et al., 2005; Leidner and Kayworth, 2006). The behavior differences of global virtual team members have impacts on communication, coordination, or/and other aspects of globally distributed information technology work (Espinosa and Carmel, 2003; Lustig and Koster, 2003; Sahay et al., 2003; Sarker and Sahay, 2004; Saunders et al., 2004; Carmel and Tjia, 2005). Global virtual team members may draw upon a variety of different cultural influences to construct their identities and to negotiate cultural differences (social identity theory) (Tajfel, 1974, 1982; Tajfel and Turner, 1986; Straub et al., 2002; Gudykunst and Kim, 2003). Organizational managerial mechanisms, such as cross-cultural training, can play a role in preparing global virtual team members for the intercultural interactions during the work processes, and hence, facilitate globally distributed information technology work (Krishna et al., 2004). In addition, this research framework does not depict any predefined cultural dimensions (e.g. the collectivism/individualism dimension in Hofstede's work) to study the cultural influences. Adopting the situating cultural theory (Weisinger and Salipante, 2000; Weisinger and Trauth, 2002, 2003), this research seeks to generate an interpretive understanding of the complex and dynamic cultural influences through assessing how these influences are manifested in the experiences of global virtual team members.
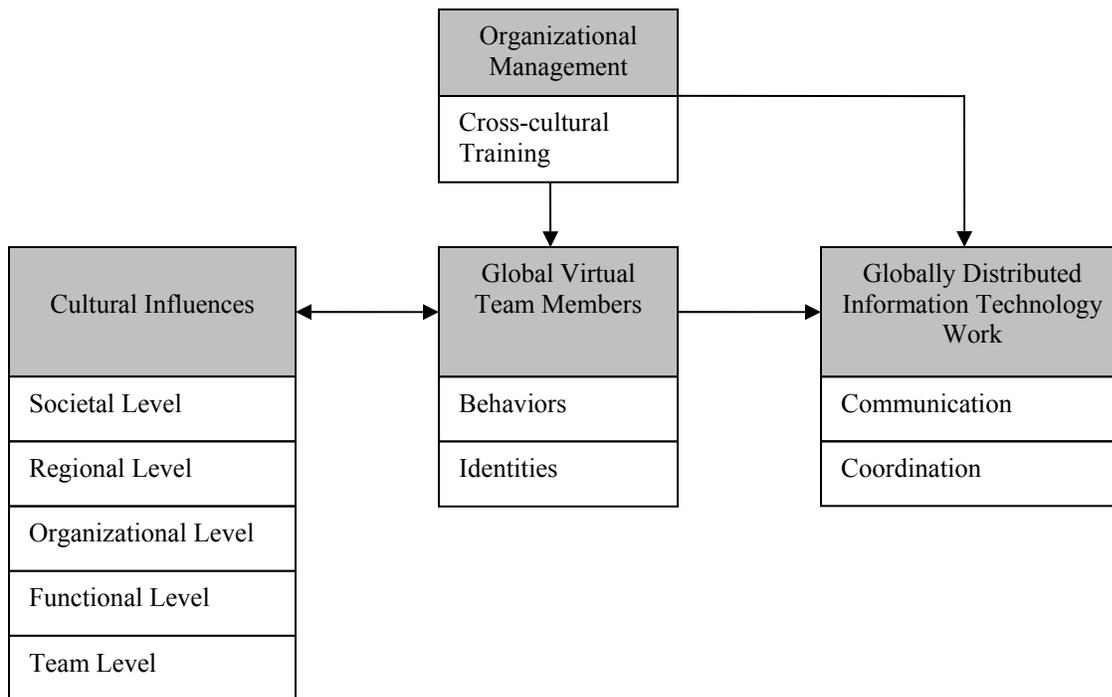
Figure 3.2:   Initial Research Framework

The objective of this research is not testing the relationships between the variables (or constructs) outlined in the initial research framework. Instead, this framework is utilized as a "sensitizing device" to inform the preliminary data analysis and to ensure that the relevant factors and their associations are taken into account (Eisenhardt, 1989; Klein and Myers, 1999). At the same time, this framework is open and subjected to modification during the process of data collection and data analysis (Eisenhardt, 1989). Towards the end of my research, I identify and develop some new concepts to modify or refine the initial research framework, to provide rich, empirical insights, and to draw some new implications (Walsham, 1995b, 2006).

3.4.4.2 Data Analysis Procedures

Figure 3.3 illustrates the data analysis procedures of this research. As data were collected from two companies in three different locations, these data can be categorized into six subunits – ComTech China, ComTech India, ComTech U.S., SerTech China, SerTech India, and SerTech U.S. There are two strategies to carry on the data analysis. One strategy is to group the six subunits into three country units, China, India, and the U.S. Data can be examined within the country units first and then across the units. The second strategy is to group the six subunits into two company units, ComTech and SerTech, and to conduct data analysis within the company units first and then across the units.

I adopted the first strategy to analyze data in order to answer the first research question (how cultural factors affect globally distributed information technology work), and the second research question (the ways in which global virtual team member construct their identities and negotiate cultural differences). Analyzing data within the country units first provides a focus on the unique cultural characteristics of each country that may have an influence on global virtual team members manifested through their work behaviors and identity constructions. The cross-unit analysis then is used to compare the cultural themes that emerged from each country unit analysis, and sheds light on the differences and similarities in cultural influences that may hinder or facilitate the globally distributed information technology work. Because of the interval between data collection in India and China and data collection in the U.S., I started with examining the data collected in China and India first.
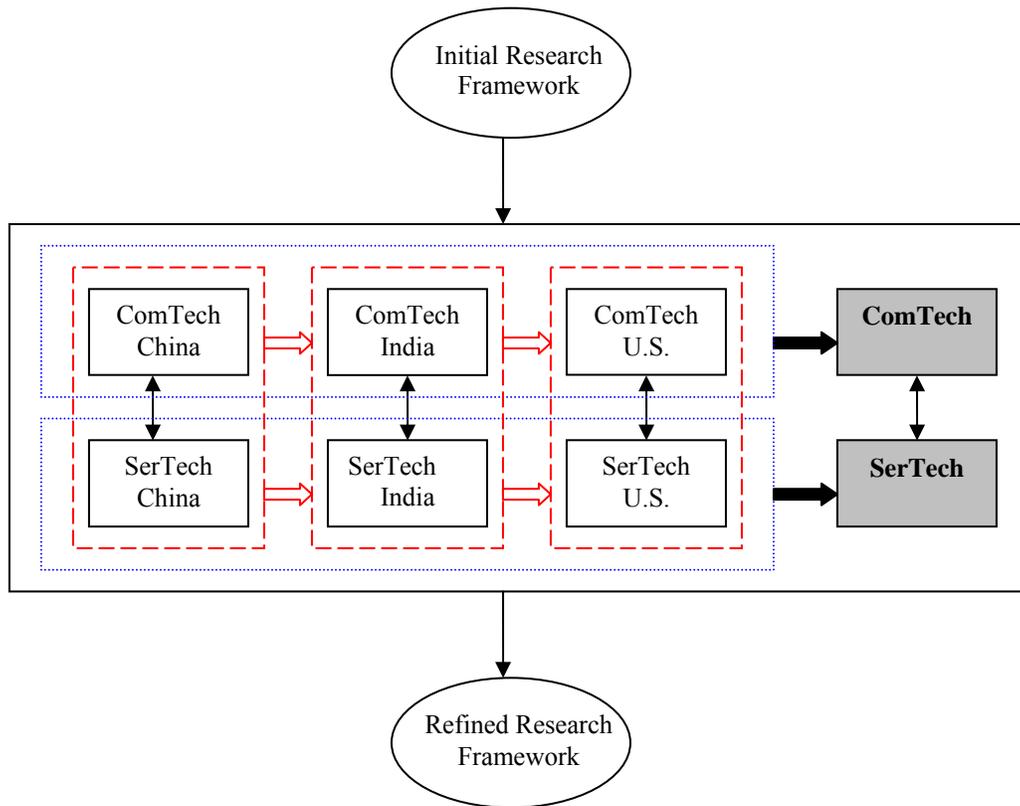
Figure 3.3:   Data Analysis Procedures

Within each country unit, the data collected from ComTech were examined first because data set from ComTech is smaller than that of SerTech and thus is relatively easier to analyze. The analysis was guided by the initial research framework and the field notes from participatory observations, and resulted in a preliminary coding schema. Based on the preliminary coding schema, the data collected from SerTech were analyzed and an augmented coding schema was produced. Then I applied the augmented coding schema to both ComTech and SerTech data again to check if there were further changes to the coding schema. Across the country units, I set the similar constructs of each country unit side by side, re-examined the evidence, and built

connections among the constructs and the research questions. Once the connections were developed, they were then mapped into the research framework.

The third research question is to investigate the influences of organizational practices on managing cultural differences in globally distributed information technology work. This research question is directed at studying organizational influences. Therefore, I employed the second strategy and used each company as a unit for data analysis. Within each company unit, the data collected from all three country locations were analyzed together. I focused not only on studying practices that are common across different locations, but also on identifying practices that are special to each location. When conducting cross-case analysis, I sought to identify effective practices that are similar between ComTech and SerTech, and effective practices that are unique to individual companies as well. Furthermore, I incorporated the findings of the previous two research questions into the findings of the third research question, in order to draw implications and recommendations for practices.

Table 3.3 summarizes the overall data analysis procedures and the associated data analysis activities. It shows that to respond to research question 1 and 2, data collected from ComTech, China, India, and the U.S. were analyzed first and the analysis was guided by the initial research framework. This step produced an initial research framework. During the second step, data collected from SerTech, China, India, and the U.S. were analyzed next and the analysis was guided by the initial coding schema. This step produced an extended coding schema. The third step involved identifying cross- case similarities and differences and finalizing the coding schema. To respond to research question 3, data collected from ComTech and SerTech were analyzed independently to produce two sets of coding schema. Then a cross-case analysis was conducted to identify patterns and evidence across cases. The next section (section 3.4.4.3)

provides a detailed discussion about the techniques used in data analysis, such as interpretative and reflexive reading, theoretical and open coding, data triangulation and breakdown analysis.

Table 3.3:   Data Analysis Procedures and Activities

Research Question	Data Analysis Procedures	Data Analysis Activities
Research Question 1	Analyzing data collected from ComTech, China, India and the U.S. separately	• Using the initial research framework as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing an initial coding schema
	Analyzing data collected from SerTech, China, India and the U.S. separately	• Using the initial coding schema as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing an extended coding schema
	Analyzing similarities and differences across ComTech and SerTech	• Data triangulation • Breakdown analysis • Comparison with literature • Finalizing the coding schema
Research Question 2	Analyzing data collected from ComTech, China, India and the U.S. separately	• Using the initial research framework as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing an initial coding schema
	Analyzing data collected from SerTech, China, India and the U.S. separately	• Using the initial coding schema as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing an extended coding schema
	Analyzing similarities and differences across ComTech and SerTech	• Data triangulation • Breakdown analysis • Comparison with literature • Finalizing the coding schema
Research Question 3	Analyzing all the data collected from ComTech	• Using initial research framework as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing one set of coding schemas
	Analyzing all the data collected from SerTech	• Using initial research framework as guidance • Interpretative and reflexive reading • Theoretical coding and open coding • Developing another set of coding schemas
	Analyzing similarities and differences across ComTech and SerTech	• Comparison between two sets of coding schemas • Data triangulation • Breakdown analysis • Comparison with literature • Finalizing the coding schemas

3.4.4.3 Data Analysis Techniques

In general, the data analysis was guided by a qualitative analysis strategy, in that it focused on examining the narratives of the participants, understanding how participants articulate and make sense of the phenomenon, and, at the same time, acknowledging how a researcher's personal beliefs and experiences shape the interpretation. The principle of the hermeneutic circle was followed during the analytical process to ensure that the interpretation of parts of the data was dialectically interrelated to constructing meaning of the whole (Klein and Myers, 1999; Myers, 2004; Trauth and Jessup, 2000). More specifically, a set of data analysis techniques were employed to examine the data, including interpretive reading, reflexive reading, theoretical coding, open coding, and data triangulation.

To review the data, I employed interpretive reading and reflexive reading techniques to generate meaning from the data (Trauth, 2000; Trauth and Jessup, 2000; Schultze, 2001; Mason, 2002). According to Mason (2002), an interpretive reading entails researchers constructing an account of what they think the data present or reveal. Such an account can draw on the interviewee's own interpretation and understanding of the phenomenon, reflect the researcher's interpretation, or integrate both perspectives (Mason, 2002). For example, with respect to negotiating cultural differences, Sachin, an Indian practitioner commented that within their work relationships with American or other global customers, most often they made adjustments and adapted to the cultures of global customers. This comment suggests that adaptation was the strategy used by Sachin to negotiate cultural differences in his work. It also indicates that his adaptation strategy drew upon a "customer/service provider" perspective, which was not particular to any specific cultures but rather implied a power relationship between customers and IT service providers. Hence the adaptation was one-way as a result of such a power relationship.

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This example illustrates how the interpretive reading technique was used to generate an in-depth understanding of the data.

A reflexive reading requires a researcher to locate oneself as part of data generation and explore one's own role and perspectives (Trauth, 2000; Mason, 2002). During the reflexive readings, I drew upon my life experiences (growing up and being educated in China, and living in the U.S. for ten years), research experiences, and fieldwork experiences in India, China, and the U.S. to make sense of the data. For example, it was suggested from the data that the reluctance of Chinese IT professionals to speak up was a cross-cultural challenge related to communication styles and work behaviors that affected global IT work involving Chinese team members. Some Chinese interviewees attributed the reluctance to speak up to the characteristics of the Chinese educational system in that Chinese students were often not encouraged to be outspoken in a teacher-centered class environment. At the same time, it was also suggested by some Chinese interviewees that the lack of fluent spoken-English skills limited the capability of Chinese IT professionals to be outspoken in live interactions. While reading these remarks, I recalled that when I first came to the U.S., I was surprised to see how interactive the classes were and that there were many in- and out-of-class discussions among professors and students. At the beginning, I was just a good listener in the classroom and internalized the knowledge by myself. Very soon I realized the importance of participating in discussions to my learning because the participants could challenge each other's thinking and have the opportunity to explore different ideas. However, at the same time, I had to overcome the linguistic barriers. Therefore, through a reflexive reading, this part of data was linked to my personal cross-cultural experience. It shows that there are multiple factors that may affect the not-speaking-up communication style of Chinese IT professionals. Due to educational influences, some Chinese IT professionals may be

unaware of the need to speak up in a participative teamwork environment; while constrained by the English language skills, some Chinese IT professionals may be unable to speak up. It also indicates that different initiatives are needed or need to be combined to address this issue.

To categorize the data, I employed theoretical coding and open coding techniques (Glaser, 1978, 2001; Strauss and Corbin, 1998; Patton, 2002; Trauth, 2000). Theoretical coding is a process of applying pre-defined codes to categorize data (Glaser, 1978, 2001). Guided by the research questions and the initial research framework and based on my interview notes and fieldwork notes, some codes were developed prior to reading the interview data. For example, one high-level theoretical proposition is that cultural influences from multiple levels (national, regional, organizational, functional, and/or team level) may affect globally distributed information technology work (Straub et al., 2002; Gallivan and Srite, 2005; Karahanna et al., 2005; Leidner and Kayworth, 2006). As a result, "national culture", "regional culture", "organizational culture", "functional culture", and "team culture" were adopted as high-level codes. As another example, during the interviews I noticed that "communication" and "coordination" were two major perspectives commented on by interviewees regarding globally distributed information technology work. Accordingly, "communication" and "coordination" became pre-defined codes. These pre-defined codes were then used to conduct theoretical coding during the data analysis.

For example, one interviewee suggested that the holiday schedules of different countries needed to be considered when planning for delivery schedules. Examining this data segment against the pre-defined codes, I assigned two codes, "national culture" and "coordination", to the text. In addition to this theoretical coding, I recognized that this data segment also indicates some specific aspects of "national culture" and "coordination", which is "holiday" and "scheduling".

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Therefore, these two concepts were also noted down in the text. The identification of these two concepts was part of an open coding process.

Open coding is an inductive process of discovering, sorting, and refining emerging themes and concepts from the data (Strauss and Corbin, 1998; Trauth, 2000). During the open coding process, those themes and concepts that emerged from the interpretive and reflexive readings of data were noted in the margin of the documents. As multiple transcripts were coded, the emerging themes and concepts were then analyzed and compared to find patterns. Once the patterns became evident, they were added to the coding schema (Patton, 2002). When a breakdown or an anomaly in understanding was encountered during the analysis, the coding schema was modified by either adding a new code or adjustment was made to the meaning of the existing codes (Agar, 1986; Trauth, 2000; Trauth and Jessup, 2001). Then the corresponding areas of text of the transcripts were revisited to make sure that the interpretation was consistent (Trauth, 2000; Trauth and Jessup, 2001). Therefore, the open coding process was iterative in nature until no further codes or relationships among the codes could be identified from the data.

The comment made by Sachin regarding cultural negotiation can be again used as an example (previously used to illustrate the interpretive reading technique). His comment indicated that he drew upon the perspective of "customer/service provider", a power relationship, to define the relationship in cultural negotiation. Further down in the data analysis process, I found that several other interviewees made similar comments. Hence the construct of "customer/service provider" was added as a code to depict one of the ways in which participants define their identities in negotiating cultural differences. Additionally, it was revealed from the data that the perspectives of "outsourcer/outsourcee" and "core team/supporting team" were also depicted by some participants to position themselves and their global collaborators in culture negotiation.

The comparison of these emerging constructs (i.e. "customer/service provider", "outsourcer/outsourcee", and "core team/supporting team") showed that they all indicated some form of power relationships, the party with less power adapting to the party with more power in negotiating cultural differences. Therefore, "power relationship" became a major category (or code) in the coding scheme and "customer/service provider", "outsourcer/outsourcee" and "core team/supporting team" became the sub-categories under the code of "power relationship".

The technique of data triangulation is concerned with comparing and cross-checking the consistency of information derived from different means or at different times (Patton, 2002, P. 559). One of the benefits of using multiple data collection techniques is to triangulate different data sources with the aim of examining the same phenomenon from different ways and adding to validity and credibility of conclusions drawn from data analysis (Trauth, 2000; Schwandt, 2001; Patton, 2002). To conduct data triangulation, I compared different interviews and triangulated the interview data with relevant documents and field notes generated from participant observations. For example, it was found from interview data that the cultural differences in perception of time had an effect on the project coordination of globally distributed information technology work. When I conducted interviews in India, I observed that it was very difficult to keep pre-arranged interviews on schedule. My interviewees sometimes showed up late or cancelled the meeting because of other priorities or just forgot about the appointment. My experiences in China and the U.S. were very different in that those interviews were conducted according to the original plans. These experiences showed that the views of adherence to a schedule were different in different cultures. Therefore, the participant observations from my fieldwork corroborated the finding derived from interviews.

3.5 Research Evaluation

The purpose of research evaluation is to ascertain if research is conducted in a systematic way, if data analysis is thorough and appropriately addresses the research questions, and if the research measures or explains what the researcher claims to be measuring or explaining (Mason, 2002; Patton, 2002). Influenced by the positivist epistemology, the traditional scientific research criteria emphasize objectivity (i.e. the research is free of researchers' bias), reliability (i.e. the study can be replicated with similar findings), and validity (i.e. the findings are accurate and are generalizable) (Mason, 2002; Patton, 2002; Oats, 2006). Scholars argue that different criteria are needed to justify the quality of interpretive research based on the interpretive epistemological stance, which assumes that knowledge of reality is a social construction of human actors, and the researcher is part of the research instruments (Denzin, 2001; Gasson, 2004; Golden-Biddle and Locke, 1993; Klein and Myers, 1999; Lincoln and Guba, 1985; Walsham, 1995b, 2006). Therefore, I employed a set of three criteria developed by Golden-Biddle and Locke (1993) to evaluate this interpretive case study research, which includes authenticity, plausibility, and criticality. These criteria have been adopted by information systems researchers to evaluate a variety of interpretive research types (for examples, see Day, 2007; Schultze, 2000; Trauth, 2000; Trauth and Jessup, 2000; Trauth, 2002; Walsham and Sahay, 1999).

Authenticity is concerned with convincing readers that the researcher has been genuine to the field experiences, and that the data have been systematically and consciously analyzed to reach conclusions (Golden-Biddle and Locke, 1993; Walsham and Sahay, 1999). To ensure authenticity, I used the technique of thick description in presenting research findings to provide detailed accounts of the socio-cultural contexts of the research and my experiences in the field settings (Trauth, 2000; Walsham and Sahay, 1999). I also adopted a reflexive approach to

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convey the interrelationships between my personal experiences and the interpretation of data (Schulze, 2000, 2001; Trauth, 2000). In addition, I employed the data triangulation technique to combine multiple sources of data and to ensure that different perspectives were taken into account.

Plausibility refers to the ability of text to connect the readers' world with the world under study so that the interpretations make sense to readers (Golden-Biddle and Locke, 1993). To ensure plausibility, I conducted different forms of member checking. During my fieldwork, I had opportunities to engage in informal conversations with the companies' local employees. Sometimes the conversational topics were about my initial research findings and ideas. These conversations provided me an opportunity to confirm some of my understandings and get more insights from the inside members. During the analytical process, I discussed my interpretations of data and the corresponding findings with people who are familiar with the cultural context in order to get their opinions. For example, one feature of Indian culture is that it is a very diverse country and that many different holidays are observed nationally, which adds difficulty to coordinating synchronous interactions in globally distributed information technology work. I checked this finding with two of my Indian colleagues. They confirmed the finding and provided me with more details about a wide variety of Indian holidays as well. Additionally, during the research process, I reported some of my research findings in conferences to get feedback from scholars and practitioners who are experts in the research domain (for examples, see Huang, 2006, 2007; Huang and Trauth, 2007, 2008).

Criticality is concerned with whether the text enables readers to reconsider those taken-for-granted ideas and beliefs (Golden-Biddle and Locke, 1993). One of the findings from the literature review is that the majority of published literature on cross-cultural information systems

research focuses on the national level of cultural context and analyzes cultural influences from pre-defined dimensions. I argue that this approach may not be robust enough for studying the diverse cultural influences of the multi-level socio-cultural context of globally distributed information technology work. After presenting the research findings, I revisit this argument in the discussion chapter, and illustrate how viewing culture as a dynamic and multi-leveled construct allows an opportunity to generate holistic and in-depth understandings of the phenomenon. By doing this, I attempt to provoke readers to recognize multiples perspectives and examine the differences in perspective (Walsham and Sahay, 1999).

3.6 Summary of Research Design

This chapter provided detailed discussions about the research design employed in this research, including research questions, epistemology, research methodology, and research evaluation. This research drew on an interpretive epistemological stance and employed an interpretive case study method to investigate how cultural differences affect globally distributed information development work and how to effectively manage these differences. Two multinational IT companies, ComTech and SerTech, were studied in this research. Multiple sources of data (interviews, participant observations, and document reviews) were collected from fieldwork in India, China, and the U.S. The analysis of data followed the principles of interpretive analysis and the hermeneutic circle (Klein and Myers, 1999). The interview data were reviewed by interpretive and reflexive reading and were analyzed using theoretical and open coding techniques. The technique of data triangulation was employed to combine different sources of data in order to examine the consistency of information derived by different means. A set of three evaluation criteria developed by Golden-Biddle and Locke (1993) was adopted to

evaluate this research. Thick description, data triangulation, member checking, and other techniques were used to ensure authenticity, plausibility, and criticality of the research.

Chapter 4: Globally Distributed Information Technology Work: The Cases of ComTech and SerTech

Chapter 4 provides some background information about ComTech and SerTech. It focuses on explaining what types of globally distributed information development work the participants of ComTech and SerTech were engaged in and how work was usually distributed and conducted collaboratively across different locations. It also illustrates what types of information and communication technologies (ICTs) were commonly used by participants in their daily global IT work.

4.1 ComTech

Participants from ComTech were mainly involved in two types of information systems related work: systems design and development and process optimization and management of customer service centers.

At ComTech, the company previously had development centers located in the U.S. that were in charge of all the work that was related to systems design and development. To date, ComTech has set up several development centers in different countries and is planning to expand its development capacity by establishing additional development centers offshore. The way that these development centers collaborate is described in subsequent paragraph.

First, when a development center is at its initiation stage, it is important to transfer knowledge from the established development centers to the new ones. These knowledge-transferring activities sometimes involve the new center sending staff members to other centers for training or experts from other centers visiting the new centers to help with the new center's

training and growth. In this collaborative relationship, onsite visits, face-to-face interactions, and training are most common approaches.

Second, the development of new systems needs to integrate different system functionalities. At ComTech, some development centers don't have the full capacity in every function area, while some development centers specialize in certain function areas. Therefore, development centers at different locations constantly collaborate with each other to develop and deliver a new system or to improve an existing system. In this collaborative relationship, work is conducted through mixed face-to-face and virtual interactions. The ComTech employees who participated in the research estimated that 20-30% of their collaborative work with other development centers was conducted in face-to-face environment while the other 70-80% was conducted in virtual environment.

Third, all the development centers need to work together to ensure that the specification and process of product design and development are consistent across different locations. The majority of this type of collaborative work is conducted in virtual environments.

Four out of six ComTech participants were mangers of customer service centers. ComTech operates about 30 service centers across the Americas, Asia, and Europe to support their customers worldwide. Their customers range from individual end users, small and medium-sized businesses to large businesses and governments. Different types of customers have different sets of service needs. Those offshore customer service centers not only support their local customers, but also support customers in other countries. As far as center agents are concerned, they interact with foreign customers entirely in virtual environment. ComTech is constantly striving to develop new processes or renovating current processes in order to provide better services to their customers. At ComTech, each business segment (defined by the types of

customers) has their own global design team to work on process change management, including gathering inputs from frontline agents, designing changes, pilot testing new deigns, and implementing the changes in similar units all over the world. At the same time, global quality control teams are responsible for establishing performance baselines and ensuring seamless support and standard service delivery across different service centers. According to ComTech informants who are members of these global design teams and quality control teams, 30% of their routine work was conducted in face-to-face environment while other 70% was conducted in the virtual environments.

Table 4.1 provides additional background information about ComTech's participants. Among six participants from ComTech, two of them worked in the area of systems design and development and four of them worked in the area of managing customer service centers. All of these six participants were at different managerial positions.

Table 4.1:   **Background Information of Participants at ComTech**

Work Location	America	India	China
	3	1	2
Type of IT Work	Systems Design and Development	Managing Customer Service Centers	
	2	4	
Position	IT Manager		
	6		

4.2 SerTech

Participants from SerTech were mainly involved with three types of information systems related work: systems research and development (R&D), business solutions, and information technology services.

In information systems R&D type of projects, the distributed global virtual team members are mainly internal SerTech employees, including both research staff and practitioners. Unless the R&D project is a long-term, large-scale project which involves researchers and practitioners from multiple locations, the face-to-face interaction opportunities for the team members is limited (about 0-10%). The project managers will have some chances to visit different research units. The majority of the work is conducted in virtual environments (about 90-100%). In addition, the coordination requirements for R&D type of projects are relatively flexible because the projects usually do not have rigid deadlines.

At SerTech, the business solution type of IT work usually involves integrating SerTech's specialties in IT consulting, research, software, systems, and emerging technologies to provide IT related business solutions according to the customer's business needs. SerTech provides a wide spectrum of business solutions to customers in different industries (such as banking, insurance, government, healthcare, automotive, retail, media, etc.). In the business solution type of projects, the requirements gathering and analysis phase is conducted onsite, involving face-to-face interactions among end customers and SerTech business solution specialists from different units. The solution design and development work will then be transferred to SerTech offshore solution centers or will be distributed between onshore and offshore business solution units. In this stage, the work is primarily conducted in the virtual environments involving collaborations among clients, onshore units, and offshore units. The business solution implementation will be

conducted onsite with the end-user customers. The business solution type of work usually runs under a definite timeline so the coordination needs are high. Since different clients may have similar business issues, SerTech strives to produce replicable and reusable solutions that can be easily adopted by a variety of customers.

SerTech also provides a wide spectrum of information technology services, including IT strategy and architecture, middleware service, server service, systems integrations and operations, application services, etc. In this study, the majority of participants from the service delivery division worked in the application services area. With respect to service delivery, SerTech utilized a global delivery model. A global delivery model refers to a service provider utilizing an optimized delivering structure to provide IT services to customers seamlessly by involving skills and resources from several of its global locations (Ang and Inkpen, 2008; Chakranarty, 2006).

Application services work can be further divided into application development, system integration, and application management. For application development and system integration work, it follows the general development cycle, including requirement gathering and analysis, design, coding, and testing. The degrees of involvement of the offshore services units vary for different projects. In some projects, the offshore services units are only involved in the coding part of projects, in which case, the offshore units only virtually interact with onsite internal team members. Face-to-face interaction is limited. As the degree of involvement of the offshore unit increases, the percentage of face-to-face interactions between the offshore unit and customers will increase. Also the communication and coordination issues in virtual environments may become more complex.

At the start of a typical application management type of project, several team members of an offshore unit will visit the client and work onsite with both the onshore team and customers for a period of time in order to transfer knowledge. After this knowledge transfer stage, the offshore services unit will then begin to manage the applications for the client remotely. During the management process, the work involves routine monitoring and problem solving or developing some additional new applications, depending on the customer's needs. In some complex projects, there will always be one or two members from the offshore units working onsite with the client to address urgent issues or to provide detailed information to the remote team members in order to solve any problems that may arise. In some large scale projects, several onshore and offshore units work together to provide a variety of information technology services needs for a given client. Tan, an IT professional in China, stressed that:

> Service is people business. In services work, the deliverables, the process, and the perception of the customers, all contribute to the final quality of services delivery. You can control the deliverables. You can improve the process. But all the people whom are involved in the services delivery – their attitude, their soft skills, and their professionalism – cannot be trained within a short period of time. These are our great challenges. [Tan, SerTech, China]

His articulation highlights one unique characteristic of IT services work: the production of the services and the consuming of the services are not separate (Chesbrough and Spohrer, 2006; Peppard, 2003; Rai and Sambamurthy, 2006; Sheehan, 2006). Instead, they are synchronized. Rust and Miu (2006) argue that customer perceptions, attitudes, and satisfaction levels are essential measures to ensure the quality of the entire service delivery process. Therefore, the quality of IT service work is dependent on the interactive process of services delivery, in which the human factors play essential roles.

Table 4.2 provides additional background information about SerTech's participants. Among 38 participants from SerTech, nine of them worked in the area of systems research and development, ten of them worked in the area of developing and implementing IT related business solutions, fifteen of them worked in the area of information technology services, and four of them worked in the human resource departments. With respect to job position, 17 participants were at non-managerial positions, seventeen participants were IT specialist and at managerial positions, and four participants are human resource managers.

Table 4.2:   Background Information of Participants at SerTech

Work Location	America	India	China	
	13	15	10	
Type of IT Work	Systems research and development	Business solutions	Information Technology Service	Human Resource (HR)
	9	10	15	4
Position	Staff Member	IT Manager	HR Manager	
	17	17	4	

4.3 The Use of Information and Communication Technologies in Virtual Work

The virtual collaborations of globally distributed information technology work are supported by a combination of various information and communication technologies (ICTs). Email, instant messages (IM), phone calls, phone conferences, web conferences, video conferences, and team space are among the major ones used by the participants in their virtual work. Different ICTs provide different utilities (technological features) to enable distributed collaborations (McKinney and Whiteside, 2006, Thissen et al., 2007). Among these

technologies, IM, phone calls, and various virtual conferencing tools support synchronous interactions while email and team space can provide support for asynchronous interactions. However, there is no "one-size-fits-all" pattern of using these communication technologies to achieve a frictionless teamwork process (Grosse, 2002; Sarker and Sahay, 2004; Saunders and Ahuja, 2006). The findings of this study indicate that the adoption of communication technologies in globally distributed information technology work is affected by a set of distribution, organization, as well as project related factors, and some individual behavioral factors, which is illustrated in Figure 4.1.
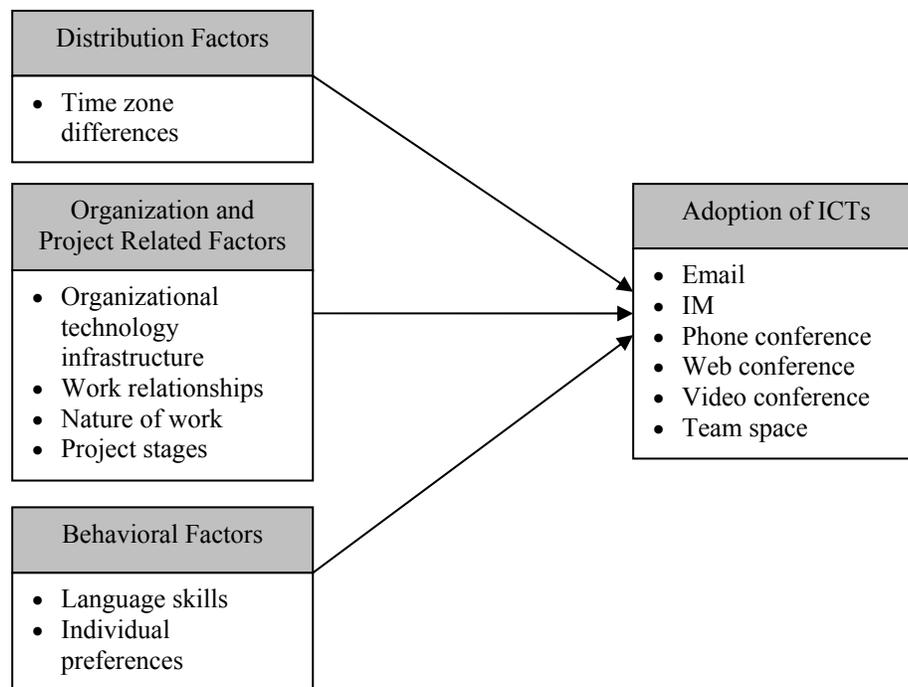
Figure 4.1:   Factors influencing the adoption of ICTs in Globally Distributed Information Technology Work

When information technology projects are distributed across multiple countries, the teams that work on those projects are not only geographically dispersed, most often they are temporally separated as well. Time zone difference is one of the major factors that affect the use of ICTs to communicate and coordinate with remote team members in globally distributed IT work (Espinosa and Carmel, 2003, O'Leary and Cummings, 2007). Each project uses routine, synchronous virtual conferences (via telephone, web, or video), and regular status reports as part of its communication and coordination mechanisms. In addition to these pre-scheduled communication and coordination activities, emails, instant messages, phone calls, and various virtual conferencing tools are also used ad hoc. Time zone differences restrict the use of synchronous communication technologies. When time zone differences are large and there is little or no overlap of regular working hours among remote sites, communication with various team members is primarily via email exchanges. Table 4.3 shows the time zone differences between the U.S. and some selected countries, including India and China.

Table 4.3:   Time Zone Differences Between the U.S. (EDT) and Selected Countries

Hours	US	Brazil	UK	Germany	Sweden	Israel	India	China	Japan
Daylight Saving Time	0	1-2	5	6	6	7	9.5	12	13
Standard Time	0	1-2	5	6	6	7	10.5	13	14

Another distribution related factor is the local infrastructure of the remote sites. To schedule a virtual conference among remote sites with large time zone differences, the personnel at either one or all of the remote locations need to be flexible in order to allow the virtual conference to be scheduled outside their regular working hours, which may cause some work-life

balance issues. The distributed team members may have the option to attend a virtual conference from home if it is scheduled outside their regular working hours. However, this option will be constrained by the infrastructure condition of each physical location. Jack, a project manager in the U.S., gave an example from his experience, which shows the influence of infrastructure on the use of ICTs in a distributed system development project involved with the U.S. and India.

> We have the time-zone problem, and there is a lot of hassles……I can get up at 6 AM but I hate that……If I don't get up at 6 am, if I get up at 9 am or 8 am and call them, they would be at home. They don't have a good communication infrastructure at home in India, so they have to go back to the office for conference calls. [Jack, SerTech, the U.S.]

Organization and project related factors have effects on the adoption of communication technologies as well. Both ComTech and SerTech have developed or set up systems for their employees to communicate and collaborate internally. If the members of a global virtual team are all internal staff employees, these systems, which include instant messaging software and team space software, are extensively used. In contrast, if the distributed work relationship involves external clients, these systems may not be used because the external clients don't have the same technological supports.

In addition, the nature of the work and the stage of the project can also influence how ICTs are used in the work processes. For example, at SerTech, video conferencing is primarily used to interact with external clients for business solution and IT service projects, while it is rarely used in systems research and development type of projects. At different stages of a given project, the communication and coordination intensities and needs are usually different. Using application services type of projects at SerTech as examples, onsite face-to-face interactions with the client and frequently scheduled video and telephone conferences are very typical during the

beginning knowledge transfer stage. Once the remote service delivering teams take over the services tasks (i.e. applications management or/and development), online supporting tools, emails, and weekly or bi-weekly virtual conferences (mainly telephone conferences) become the primary communication and coordination mechanisms.

Another set of factors that affect how ICTs are adopted in globally distributed projects are related to the behaviors of individual team members such as their language skills and individual preferences. As English is commonly used in business communications, the use of different communication technologies requires different sets of English language skills. Reading and writing skills are required in email and IM communications, while listening and speaking skills are required in live conversations through virtual conferencing tools. It was found that some IT professionals in China could read and write English well but had challenges engaging in live conversations. Therefore, they might be more inclined to using emails and IMs in everyday virtual communications. The relationships between the English language skills and communications will be further discussed in Section 5.1.2.

Participants of this research also discussed their individual preferences among alternative communication technologies. For example, regarding IM, Rohit, Frank and Hui (all were employees of SerTech) rationalized why they preferred or did not prefer using it. According to Rohit and Frank, IM is a useful tool for synchronous informal interactions and getting quick responses for questions.

> I probably have 200 people in my IM list. I can check to see if someone is online anytime, day or night. If they are online, I can just message them. [IM] is used a lot. I don't have to set up a phone call or write an email because email is not interactive. [Rohit, SerTech, India]

Frank also suggested that he used IM as a multitasking tool to work with different colleagues (collocated or remote) simultaneously.

> IM helps a lot, in real time. If there is a quick question, I can see if [my remote team member] is available to answer it [through IM]……I always have multiple IM sessions open when I am at my desk. [Frank, SerTech, the U.S.]

While agreeing that IM is a useful multitasking tool, Hui mentioned that she did not use IM very often because she could not type very fast.

> I personally don't like using [IM] that much because I don't type very fast. I am the type of person who picks up the phone and talks. But I know most of my team members use [IM] a lot. To me it is a multi-tasking tool. I don't like to use it as a main communication tool. [Hui, SerTech, the U.S.]

4.4 Summary

Globally distributed information technology work consists of a wide spectrum of activities that vary in configuration, complexity, and duration (ACM Report, 2006). Different types of globally distributed information technology work require different skills, knowledge, and capabilities and have different communication and coordination needs as well (Sahay et al., 2003). This subsection describes the types of work that the participants of this research were engaged in, the work processes, and how information and communication technologies were used during those work processes. In this research, the participants from ComTech were mainly involved with systems design and development and managing customer service centers. The participants from SerTech were mainly involved with systems research and development, business solutions, and information technology services. Email, instant messages (IM), team space, and different virtual conferencing tools were used by the participants in their virtual

collaborations. On the one hand, different ICTs provide different utilities to support various collaboration needs during the work process of globally distributed information IT collaborations. On the other hand, how these technologies are used is affected by the combinations of different factors such as time zone difference, technological infrastructure in the organization, work relationships, project tasks and stages, and the language skills, and personal preferences of global virtual team members.

Chapter 5: Cultural Influences on Globally Distributed Information Technology Work

This chapter presents the findings that address the research question of how cultural factors affect globally distributed information technology work. It is organized to discuss the influences of national cultural, organizational cultural, and other cultural factors (including regional culture and professional culture) on globally distributed information technology work. Section 5.1 focuses on national cultural influences. In particular, it provides insights on how cultural influences at the societal level results in differences in norms, values, behaviors, and skills held by global virtual team members and how these differences affect various perspectives of globally distributed information technology work, including face-to-face interactions, virtual communication, communication and work styles, coordination, and team dynamics. Section 5.2 focuses on articulating the influences of the organizational cultures of ComTech and SerTech on their employees in global IT work. Section 5.3 illustrates the influences of regional cultures and professional cultures on global IT work. Section 5.4 provides a summary for this chapter.

5.1 The Influences of National Culture

5.1.1 National Cultural Influences on Face-to-Face Interactions

The percentage of face-to-face interaction in globally distributed information technology projects varies, depending on the project type and the demands of different stages within a given project. Nevertheless, face-to-face interaction plays an important role in distributed IT work (Child, 2001; Oshri et al., 2005). In some projects, the initial onsite face-to-face meetings with clients is the key step in identifying clients' needs and gathering requirements for developing

information systems, or to transfer knowledge in order to provide IT services required by the clients. In some projects, the kick-off face-to-face meeting lays a foundation for the future work by setting up the goals and detailed plans. Some intermediate face-to-face meetings are usually arranged on an as-needed basis. In addition to these benefits of face-to-face meetings to the development process, another important benefit of face-to-face meeting is to provide socialization opportunities to build social ties in terms of trust and rapport between remote team members (Child, 2001; Oshri et al., 2005).

5.1.1.1 Benefits of Face-to-Face Interactions in Globally Distributed Information Technology Work

The importance of face-to-face interaction was asserted by the interviewees. There are three advantages of face-to-face interaction that are commonly acknowledged by Chinese, Indian and American IT professionals at ComTech and SerTech. The first advantage is the richness of face-to-face interactions. During face-to-face interactions, participants can observe each other's facial expressions and body language, which facilitate their ability to gauge the reactions and attitudes of their counterparts. Jason, a technical lead working in the U.S., compared face-to-face interaction with other virtual interactions, and stated that:

> In face-to-face, it is easier to pick up subtle facial expression. It is easier to pick up if somebody really understands what you said. Over email or phone, it is just not very clear. [Jason, SerTech, the U.S.]

Furthermore, several interviewees mentioned that in face-to-face settings, it was more convenient for them to employ shared objects such as drawing or writing on whiteboard to facilitate discussions. They pointed out that even though video conferencing technologies can

provide some visual cues, they are not as rich as face-to-face interactions. Similarly, even though certain collaborative technologies can support same-time interactions with shared objects, they are not as extemporaneous as face-to-face interactions. Eric, a research staff member of SerTech, the U.S., asserted that:

> We don't have a good technical solution…..The audio and video quality is often an issue. It lacks of visual cues…..Often there are technical issues when sharing visual presentation and other materials. You have to work around the technical issues and plan the contingencies in case something fails. [Eric, SerTech, the U.S.]

Second, face-to-face interactions can provide an opportunity to develop mutual understanding and promote a variety of awareness (Cramton, 2001; Herbsleb and Moitra, 2001). The findings of this research show that there are three types of awareness that can result from face-to-face interactions. The first type of awareness is at the individual level. The interviewees mentioned that meeting their remote team members in person helps in developing a stronger personal relationship. Some personal identities are imperceptible in non-visual virtual interaction. For example, the interviewees mentioned that they were usually surprised by the age differences when they met their remote team members the first time because the project managers in India and China were usually younger than their counterparts in the U.S. It was also suggested that the personal relationships developed during face-to-face interactions are beneficiary to future virtual interactions, in that the virtual interactions will be more open and interactive.

The second type of awareness is at the work level, knowing who has what domain knowledge and who is charge of or capable of what. Such awareness is particularly important for globally distributed IT projects with respect to coordinating activities (Kraut and Streeter, 1995;

Orlikowski, 2002; Ye et al., 2007). Several studies reveal that the lack of this awareness causes delays in distributed projects (Herbsleb and Mockus, 2003; Herbsleb, 2007). As Jason, a technical lead in the U.S. pointed out:

> If you interact with them [face-to-face] for a week, you will be able to find out a lot about what parts they work well and their skill level in a short period of time. If you have to do it through email, it just takes a lot longer. [Jason, SerTech, the U.S.]

The third type of awareness is about the context, knowing the surrounding work environment of the remote team members. The significance of this awareness was exclusively emphasized by Indian and Chinese IT professionals. Several Indian IT professionals stressed that arranging some onsite visits to India is very important for their clients (external or internal) to develop an "appreciation" for the difficulties of getting to work on time in Bangalore.

> It is also important for them to physically visit this location. If they look at the environment, look at the roads and see the traffic flow, they are in a much better position to understand why you are late for a call by 5 minutes. Otherwise they are not going to appreciate it. [Shilpa, SerTech, India]

> We strongly advocate that, in this business, they need to visit [India] at some point of time……The Americans need to appreciate what is the problem or what is the environment we are in or what type of infrastructure we have here. To get to work, you cannot precisely say by what time you will be where…We work around it. A lot of things are getting better and better. So at least a good understanding will help. [Raj, SerTech, India]

Similarly, Xia, a regional director in China, mentioned that sometimes their American counterparts were skeptical about the capability and work quality of those Chinese colleagues, and that such skepticisms would change after onsite visits to China.

If they have never been in this country and have never seen how their colleagues work here, they just cannot imagine there is a group of very talented people here who can do as much of work and as good of work......But after they come here for a visit, usually their attitudes change a lot. [Xia, ComTech, China]

Third, the combination of these three types of awareness can contribute to building trust relationships among distributed team members. It was suggested by the interviewees that building trust relationships takes much longer in virtual environments, and that face-to-face meetings help to ramp up the process. The trust relationships will in turn facilitate the communication, coordination, and knowledge sharing in the virtual work process (Kanawattanachai and Yoo, 2002; Lander et al., 2004; Kotlarsky and Oshri, 2005).

5.1.1.2 Cultural Differences in the Expectation of Face-to-Face Interactions

Although the importance of face-to-face interactions was acknowledged by most interviewees, it seems that the expectations of face-to-face interaction vary in different cultures. The expectation variations are manifested in two ways. First, face-to-face interactions, work related or non-work related, are attributed with more value in Asian countries. It was pointed out that, for people in an Asian country, paying a face-to-face visit to partners or customers is viewed as a gesture of respect. Second, people in India and China pay more attention to building personal relationships during face-to-face meetings than their counterparts in the U.S., who seem to be more focused on work and professional matters. As Keith, a program director in the U.S., suggested:

Pure business is fine for western people. It will not affect how they participate. But for Asian people, they want to mix business relationship with others to feel the closeness, to feel more relaxed to participate. [Keith, SerTech, the U.S.]

Sania, an Indian manager who was in charge of application service delivery, described one of her experiences when she was doing knowledge transfer work onsite in the U.S.:

India is very hospitable … They [Indians] will be eager to establish relationships….In the U.S., people are not as outgoing as Indians. We were at work. Quickly after 5, everyone left. Nobody worried about the fact that I was new there. So the expectation was very different. [Sania, SerTech, India]

Peng, a Chinese project manager, described an incident he encountered during the initial requirements gathering and analysis stage of a development project, in which the American team members visited China for three weeks:

When they were here for the face-to-face meetings [in 2004], I spent the first weekend to accompany them to visit local attractions. But the next weekend, I arranged a travel agent for them. They told me that it was not necessary because it consumed too much of my time. At that time when I internalized it, I could not stop wondering whether it was because I did not do a good job. From our [Chinese] perspective, we view spending time together as a way of building close relationships. We are happy to do that because it will bring us closer. Maybe from their perspective, they really were being considerate and did not want to occupy too much of my time. I did not know what the real reason was. I did not know how to interpret it. I was confused. [Peng, SerTech, China]

These two examples illustrate the cultural differences in the expectations of face-to-face interactions between people from China and India, and people from the U.S. In China, the personal relationship is closely interconnected to business relationship. It is viewed as important to develop personal relationships in order to achieve positive business relationships. There is a special term to denote such interconnection, "Guanxi" (Leung et al., 1995; Graham and Lam, 2004; So and Walker, 2006). In the example given by Peng, the American team members didn't realize the criticality of "Guanxi" in doing business in China. Because of not realizing the importance of spending time together as a way of developing strong personal and business

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relationships, the American team members missed a good opportunity for developing shared understandings and building a stronger personal relationship with their Chinese counterparts.

5.1.1.3 Summary

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                        ┌────────────────────────┐
                        │   Cultural Influences  │
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                        │ • Relationship Orientation │
                        │   o Variations in the  │
                        │     expectation of face- │
                        │     to-face interactions │
                        └────────────────────────┘
                                    │
┌────────────────────────┐         │         ┌────────────────────────┐
│ Awareness Developed in │         ▼         │   Effects on Globally  │
│ Face-to-Face Interactions │               │   Distributed IT work  │
├────────────────────────┤──────────────────├────────────────────────┤
│ • Knowing the person   │                  │ • Facilitating         │
│ • Knowing the expertise │                 │   communication        │
│ • Knowing the local    │                  │ • Knowledge            │
│   contexts             │                  │   coordination         │
│                        │                  │ • Trust development     │
└────────────────────────┘                  └────────────────────────┘
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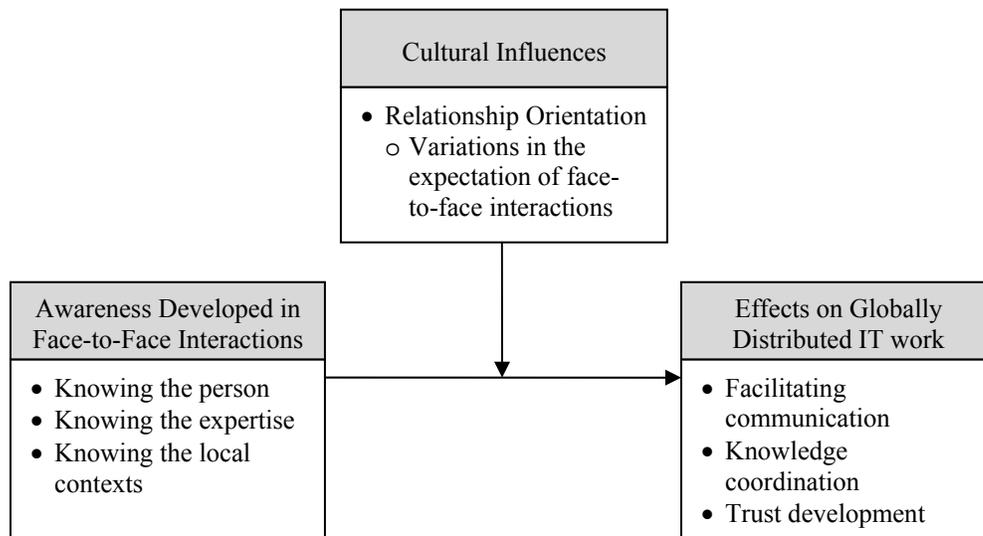
Figure 5.1:   Potential Benefits of Face-to-Face Interactions and Cultural Influences

Figure 5.1 shows that, on one hand, face-to-face interactions are beneficial to globally distributed information technology work; on the other hand, it is important to recognize the variations in the expectations of face-to-face interactions as a result of cultural differences. As the arrangement of face-to-face interactions is restricted by budgetary and other constraints, it is important to take full advantage of these limited opportunities, and to implement effective mechanisms in face-to-face meetings to support the development of mutual understanding and common ground.

5.1.2 Language Skills and Virtual Communication

The skill level of global virtual team members has a great impact on the process and outcome of globally distributed information technology work. IT/IS scholars and practitioners usually categorize essential workforce skills into three sets: technical skills, business skills, and soft (or human) skills (Trauth et al., 1993; Lee et al., 1995; Hirschheim et al., 2005; Scheibe et al., 2006). While different business domains (i.e. the financial or pharmaceutical sectors) and different technical positions (i.e. IT architects, systems analysts, or software engineers) may demand different combinations of technical and business skills, the requirements of soft skills are relatively common across various IT/IS occupations. Soft skills include attributes such as communication and presentation skills, team work and leadership abilities, and cultural understanding (Trauth et al., 1993; Lee et al., 1995; Denning and Dunham, 2001; Hirschheim et al., 2005). These skills are acquired through the three main channels, including school education, organizational training, and on-the-job learning.

This section is focused at discussing one of the soft skills, English language skill, in globally distributed information technology work. The English language skill is one of the critical factors that affect communication in globally distributed information technology work because English is primarily used not only in the international business community, but also in the IT field. The availability of a proficiently-English speaking IT workforce is cited as a key advantage for Ireland, India, and Israel to succeed in the software export market (Carmel, 2003; Heeks and Nicholson, 2004; Farrell and Grant, 2005; ACM Report, 2006). While comparing China to India with respect to their competitiveness in the global IT services market, it is often pointed out that the relatively poor English skill level of the Chinese IT workforce is a

competitive barrier for China (Carmel, 2003; Li and Gao, 2003; Minevich and Richter, 2005; OECD Report, 2006).

All four basic elements of linguistic skills—reading, writing, listening, and speaking— are relevant and important in virtual communication. Information exchanges using email and instant messaging draw on reading and writing skills. Teleconferencing and videoconferencing call upon listening and speaking skills. Process documentation and various reports that are important artifacts in information technology development work invoke technical writing skills. In virtual environments, because of the lack of contextual clues such as gestures, facial expressions, and shared objects, the effectiveness of communication relies most on how language is used and understood.

Regardless of whether it is spoken as a first or second language, English is no longer only labeled as British English or American English. During the process of its spreading throughout the world, English has been embodied with local cultural elements and has fragmented into many dialects (Mydans, 2001), which may add difficulty to communication between people from different regions. My research findings reveal that: 1) The use of English and the interpretation of it by the reciprocal party are related to local cultural contexts; 2) For agents working in the remote customer service centers, the lack of shared cultural contexts adds difficulty to their interactions with foreign customers; 3) For American IT professionals, when English is their native language, they have a tendency to use slang in oral and informal written communication; 4) For Indian IT professionals, even though they may be fluent in English, their accents and pacing generate communication barriers in oral communication while the major issue in their written communication and documentation is a lack of clarity; 5) For Chinese IT professionals, their degree of proficiency with the English language has a profound impact on a variety of

issues in their daily work, such as their preferred communication mediums, participation levels in teleconference meetings, and written communications.

5.1.2.1 The Use of English Language and Cultural Contexts

Communication is a two-way process. The use of English and the interpretation of it by the reciprocal party are related to the local cultural contexts. More often, global IT professionals work on projects that involve collaboration among three or more regions, or work on multiple projects and collaborate with different people from different regions at the same time. Therefore, they need to be sensitive to the cultural differences in the use of English language and need to make adjustments and adapt to different situations. For example, Tabu, a service delivery manager in India who worked with both American and Swedish customers, commented on the language challenges she encountered when interacting with customers in Sweden:

> English is not their native language. They also have to shift to English and it is difficult for them to understand all the dialectics of India, with a lot of local accents. It is the same the other way. We have to get used to the local Swedish accent. In the written communication, one example I can give you is that in Sweden, they use exclamation mark to express happiness. If you work with American clients, exclamation mark is not something good. So we have to understand that they are fine or they are happy. Even when they say "hi" in email, they put an exclamation mark. It took us sometime to get used to that. [Tabu, SerTech, India]

In this instance, the exclamation mark "!" is used differently in written communications in the United States and Sweden. In the United States context, the exclamation mark is usually used to express strong feelings such as astonishment, imperative, or warning. But in the Swedish language, it is more widely used and can be found "after all exclamations, greetings, commands, imperatives and warnings" (Holmes and Hinchliffe, 1997, p. 179). In this instance, the Indian IT

professionals who worked on this project eventually learned about this nuance and made adjustments from their previous experience of communicating with American clients.

5.1.2.2 The Importance of Shared Context in Customer Service Work

For IT professionals who work in the offshore customer support centers, the lack of shared contexts brings additional challenges to how they help customers solve technical problems over the phone. Linda, a ComTech quality control manager of customer service centers, exemplified a common scenario in which the technical support agents had difficulty understanding certain terms used by customers.

> An American customer may refer to, for example, certain high-speed Internet service provider in the U.S. The customer may tell a tech support agent that my [Blue Lake][5] is not working with my computer. The agents in India may not know that [Blue Lake] is a cable and Internet service provider that supports such and such. That may cause confusion when they are trying to diagnose a technical problem over the phone. I know of many occurrences like that. [Linda, ComTech, the U.S.]

Many times, the conversation of a technical support phone call may drift away from the technical focus. The topics sometimes shift to weather, sports, news, or even personal stories. Under these circumstances, the technical support agents need to have the knowledge about these topics in order to follow the conversations. One of the examples was given by Ashwin, a program manager working at ComTech, India. An American customer called in for a technical problem but started talking about a recently passed-away pet. Without knowing that pets are sometimes viewed as family members in America and that the customer was trying to express a

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[5] "Blue Lake" is pseudo name for a regional high-speed Internet service provider.

feeling of frustration, the Indian agent did not understand why the customer bought up this topic and did not know how to react to it.

To address this issue, a variety of practices are implemented to help technical support agents to bond with the customers. For example, to prepare agents to support American customers, American TV channels are available and are played in lounges at ComTech's customer service centers in India. Agents are required to read major American newspapers on a daily basis. Before each shift of work, agents break into groups and talk about the most recent topics related to America. Similar practices are also implemented to prepare agents to support customers in other regions.

5.1.2.3 American IT Professionals and English Communication

In this section, the term American IT professional refers to IT workers who were born and grew up in the United States and whose native language is English. As the IT market increasingly globalizes, the IT workforce is correspondingly mobilizing. In American or American-based multinational IT companies, the nationalities of employees within local workforces are diverse. Among the sixteen participants I interviewed in the United States (at both ComTech and SerTech), only seven are American-born and speak English as their native language. As native English speakers, American IT professionals are inclined to speak fast and use slang and idioms in conversations (Anawati and Craig, 2006). Of course, "fast" is a relative term because when American IT professionals speak at their normal pace, it may be perceived as fast by their counterparts who speak English as second language.

One Chinese project manager recalled their first teleconference meeting with their American colleagues:

> In our first meeting, I think it never occurred to them that the other side did not speak English. English is not their native language. They mixed slang and talked very fast. After they finished, I might get 60% or 70% of what they talked about. Those people under me, those team leads, they had no idea. After that, I talked to the PM [project manager] in the United States, asking them not using slang and talking a little bit slower. [Peng, SerTech, China]

American IT professionals also pointed out that it is important for them to avoid using slang and idioms that are peculiar to the American culture but are difficult for their foreign collaborators to understand. Keith, who is a program director, talked about his approaches in virtual communication:

> I usually like to repeat the questions and the comments to make sure that there isn't a variance in understanding or there are no blurs, and to make sure we are talking about the same thing. There is no misunderstanding. I am also very conscious when I speak, not using slang. I am also very conscious of speaking very slowly, and annunciating my word to make sure they understand……In emails and instant massages, I make sure I use words that are slang free. There are no terms or words that have double meanings, to ensure that my message is clear and precise and getting across directly. [Keith, SerTech, the U.S.]

5.1.2.4 Indian IT Professionals and English Communication

It is said that English is an unofficial national language in India (Cheney et al., 2005). India is made up of 29 states and six territories. According to the World Fact Book published by the Central Intelligence Agency (CIA), there are fourteen major official languages (with scripts of their own) in India, not counting the nearly hundreds of distinct dialects. India's education system, especially higher education, is deeply influenced by the British colonial period, when English was exclusively used in universities (Altbach, 1993; Jayaram, 1993; Agarwal, 2007). After gaining independence in 1947, the proposition was brought up to replace English with an

Indian language in education—Hindi being the chosen one. Hindi as a national language is primarily spoken in six states by 30% of all Indians (Cheney et al., 2005). Even though it is argued that a common language other than English is necessary for the integration of the country, the non-Hindi speaking states are resisting the imposition of Hindi as such a common language for fear of giving an unjust advantage to the Hindi speaking population (Altbach, 1993; Jayaram, 1993). People in the non-Hindi speaking states prefer English over Hindi as their second and link language, in addition to their different mother tongues. Therefore, English is the most widely spoken second language in India, followed by Hindi. Cheney et al. (2005) estimated that there were 350 million English speaking Indians in the country.

In general, there are two major types of schools in India: state-run public schools and private schools. English education in India varies in different states and in different school systems. As a result, the Indian IT workforce is made up of engineering graduates with a wide range of proficiency in English (ACM, 2006). The English education in some state-run public schools takes a grammar-based approach, which does not prepare students to use the language effectively in either spoken or written communications (Jayaram, 1993; Froumin et al., 2007). In addition, the political battles over regional languages and English are ongoing, with some local governments attempting to force private schools to teach in their local languages instead of English (Economist, 2006; Moritsugu, 2006). This trend worried leaders in the Indian software sector. They asserted that in order to make up the potential IT talent shortage of 50,000 by 2010, it is necessary to encourage and improve English learning rather than ignore it (NASSCOM, 2006a, 2006b).

Even though Indian IT professionals are usually regarded as being fluent in English, their spoken English is often characterized as having strong accents, being softly spoken, and, at

the same time, speaking very fast—by both Indian and American IT professionals. These issues bring challenges to spoken communication in the virtual environment and may lead to communication barriers and cause misunderstandings in the work processes of globally distributed information technology development. With regard to accents, Shilpa, an Indian IT professional pointed out that:

> India being such as diverse country, we have so many regional accents. It is not funny. Even for us, sometimes it is difficult to follow the accents of our own people from other parts of India. [Shilpa, SerTech, India]

Spoken communications in virtual environments, such as teleconferences, rely on the quality of telecommunication infrastructures, including the connectivity and clarity of land-based phone lines. Several American IT professionals who have collaborated with IT professionals in India for extended periods of time recalled that the phones in India were less reliable in earlier days, causing static noises and frequent dropped calls. The setup of the teleconference rooms in local offices sometimes was not acoustically sound. Consequently the obstacles caused by infrastructural issues may worsen the communication difficulties brought by accents and pacing (Christiansen, 2007). Jack, an operation manager, gave an example:

> I am certainly guilty of speaking fast but they don't have trouble hearing me. It was worse because of the acoustics of the place they ran. The room was not buffered, with carpet or stuff like that. It was very echoing. With their accents, plus that they would not talk louder enough, I would have hard time to pick up the voice from the signals. I remembered to ask them to please speak slowly because the echo exacerbated their accents. [Jack, SerTech, the U.S.]

Different parties that interact with Indian IT professionals may have different attitudes when dealing with such language challenges in virtual communication. When the counterparts

are collaborators or internal customers working in the same company, their attitudes are more open and tolerant. However, the external customers, especially those who are new to IT offshore outsourcing business or who have limited experiences interacting with people from other cultures, are less forgiving. Bruce, a software architect and project manager, discussed such difference:

> They all obviously had accent. But again a lot of our people here have accents. I would say that for a person who has stayed in the IT industry for any substantial amount of time, they are accustomed to dealing with Indian accent or European accent. I personally did not have any issue….We had a customer in Iowa. You have to understand that it is not a multi-cultural environment. It is like a 100% American. The customer needed to interface with all of us, the development team, the architect, the product manager, and the marketing manager. The development team [in India] had to explain the features in the upcoming release. The customer you could tell that they were bold-line rude because they had a very hard time understanding the accents. If you combine that with the fact that the Indians (you know, not to stereotype) tend to be more soft spoken, it may lead uncomfortable situations. [Bruce, SerTech, the U.S.]

In addition to spoken English, it was also noted that Indian IT practitioners need to improve their technical writing capabilities and develop proper documentation skills.

> They also severely lacked documentation skills. The English, you could tell it was Indian English, which in itself it was not bad. The grammatical errors were evident. The lack of details was evident. [Bruce, SerTech, the U.S.]

> They haven't got that type of training unfortunately. Excellent, excellent technical training. But their ability to communicate both in writing and in oral form is lacking. [Jack, SerTech, the U.S.]

The writing skill is not only important for clear written virtual communications, but also for producing quality documentation in software development. Documentation is a critical activity in every phase of the software development process, regardless of whether the waterfall

model or iterative model is employed. Komi-Sirviö and Tihinen (2005) pointed out that detailed documentation can reduce misunderstandings in distributed software development. Lee et al. (2006) investigated 22 globally distributed projects to identify the most effective coping strategy for globally distributed software development. It is suggested that comprehensive and accurate documentation is not only used to minimize misunderstanding in communication, but also used as a practice to codify knowledge and therefore facilitate knowledge sharing in globally distributed software development environments (Lee et al., 2006).

One reason for this issue is the lack of technical writing training in some Indian engineering programs. Even though written communication is taught in Indian schools, it is usually taught as an isolated subject that is not integrated with other engineering courses in the curriculum (Patil and Riemer, 2004). Another explanation was articulated by Sunil, a senior program architect and Indian native. He inferred that the lack of clarity and quality in documentation is because it is not valued by software developers in India. He pointed out that because the IT offshore outsourcing business is growing so fast in India, "they cannot even keep up with their own pace." He added:

> They don't have enough people to do all the work……It is less important to them at this time of the point. Nobody wants to do the paper work. Nobody wants to document anything. They just want to get it over and move on. [Sunil, SerTech, the U.S.]

He mentioned that clients currently accept this situation because the price of offshore outsourcing work is low. It was his belief that the issue might not get resolved quickly because the growing speed of work in India will not slow down in the near future.

In order to improve English education, some tactics have been proposed to renovate and decentralize India's educational systems and simultaneously encourage public-private partnerships to set up special training institutions and skill certification programs (Farrell et al., 2005; Sengupta, 2006). The IT industry and IT organizations in India have also taken their own initiatives. India's National Association of Software and Service Companies (NASSCOM) is a non-profit organization and the premier trade body of the IT software and services industry in India (http://www.nasscom.in/). In 2007, NASSCOM began working with the Ministry of Human Resource Development to create a new program, called "Finish Schools" for engineering students (NASSCOM, 2007a, 2007b). The "Finish Schools" program is designed to provide eight to ten weeks of training for newly graduated engineering students who have not yet been placed in industry. This program is said to focus on both technical and soft skills development (including language skills) and to help students acquire industry-specific knowledge through courses delivered by trained faculty and practicing IT industry consultants (NASSCOM, 2007b). In addition to setting up standards and training programs to enhance the skills of existing engineering students, it is reported that the Ministry of Human Resource Development plans to launch several new Indian Institutes of Information Technology (IIITs), with support from NASSCOM, in order to produce advanced research and highly skilled professionals in cutting-edge technology fields (NASSCOM, 2007b). Many Indian-based IT companies and global IT companies such as ComTech and SerTech have also invested heavily in training to impart English skills to their employees.

5.1.2.5 Chinese IT Professionals and English Communication

English is a secondary language in China. In my interviews, both Chinese IT professionals and American IT professionals who have had experience working with people in China were strongly vocal about the English language barriers in their virtual collaborations. Here are some examples:

> Language barrier is probably the biggest challenge for us to work with people in China. [Hui, SerTech, the U.S.]

> Clearly the number one challenge above all else is language……Language issues overpower all the others. [Frank, SerTech, the U.S.]

> Our biggest disadvantage is language compared to Ireland, India, and Brazil, etc. when dealing with American and European customers. [Peng, SerTech, China]

> We have to get over the communication hurdle. The biggest advantage of India is their English capability. [Jing, SerTech, China]

China differs from India in that English has only been the dominant foreign language of the Chinese educational curriculum for more than twenty years (Chang, 2006). It was not until 1982 that English became the main foreign language in secondary education in China (Li, 2006). Since then, English education has been significantly expanded, developed, and improved in China. Starting in 2001, the Ministry of Education of China began to require that English be taught from grade three at the primary school level onwards. This practice has been implemented nationwide since 2002 (Li, 2006). At the college level, at least two more years of English education are mandatory for most students (except for those who are in different language majors). Also, according to the Ministry of Education, all college students are required to pass

the nationwide College English Test Band Four (CET-4) —without this a student cannot be accredited with a Bachelor's degree even after finishing all other curriculum requirements.

However, one of the major issues of English education in China is that Chinese students can read English fluently, but cannot orally communicate or readily understand the spoken language (Lin, 2002). It is called "deaf and dumb" English (Lin, 2002), in that the learning approach is reading-intensive, thus fails to address the need for the development of comprehensive English language skills. Lin (2002) pointed out that the shortage of qualified English teachers; the lack of language learning facilities, such as language labs and multi-media classrooms; and out-dated curriculums and evaluation systems are the major problems in today's Chinese English-teaching programs. These issues may take a long time to resolve. Several Chinese IT professionals commented that because India had an early start in the global IT offshore outsourcing market, and India has the advantage of English language fluency, it will take China at least five to ten years to catch up with the Indian global IT market.

As a result, there are discrepancies regarding the proficiency levels of different linguistic skills, with spoken English being the most challenging. The participants stressed that among Chinese IT professionals in general, their reading ability is better than their listening comprehension, and their listening comprehension capacity is better than their speaking skills. Therefore, in globally distributed information technology work, some communication technologies, such as email, that are asynchronous and are concerned with reading and writing capabilities, may be preferred by Chinese IT professionals over other communication technologies, such as a teleconferencing, that are synchronous and involve listening comprehension and speaking abilities.

If you write an email, they will be able to understand you much better. But [in] live conversations over the phone, especially not seeing each other and no body language to help them, do pose some challenges. When writing email, you can take some time to think about it if you are not sure, but when you speak, you cannot stop for 10 minutes to think about how to say it. [Peng, SerTech, China]

However, sometimes the delay of email responses may affect the progress of projects, especially when there is a certain degree of interdependency among tasks that need input from dispersed team members (Herbsleb and Mockus, 2003). Software developer, Tao, gave one example:

Those virtual communications can basically satisfy most of our needs, through emails…But one problem is that email cannot solve [the] problem right away. For an example, when I am trying to solve a technical problem, I may have some questions…The customers are not right by your sides to explain it so I cannot make assumptions and continue the work without checking with them first…And then the whole schedule will be affected. [Tao, SerTech, China]

Another aspect of the Chinese English language problem is that spoken language barriers become more pronounced in confrontational situations. The practitioners in my study felt that it was easy to handle routine, day-to-day work. However, in situations where conflicts are involved, the proficiency of language skills, especially listening comprehension and speaking skills, becomes a challenge. One manager I spoke with articulated a confrontational scenario in detail:

When everything goes smoothly; situations are very normal; our engineers should be able to handle it. But when things get complicated, what I observe is when there is a confrontation with different opinions, everyone has their reasons to think they are the right one, that's when the language becomes a barrier……Our folks usually are not able to grasp the key points or the key arguments right away. And therefore, they are usually slow in responding because they are little bit confused. So at the end we always said that [they] always win because they are

much faster in reacting and our people are still trying to figure out what is going on. [Xia, ComTech, China]

Conflicts, especially task related conflicts, are often viewed as important learning opportunities in the information technology development process. Conflict may result in the challenging of existing assumptions, the exploration of alternative solutions, and the fostering of innovative ideas and creativity—though they may also have detrimental effects on team performance (Jehn and Mannix, 2001; Paul et al., 2004; Walz et al., 1993). One benefit of using globally distributed virtual teams in information technology development is getting to take advantage of the diverse knowledge perspectives of such team members (Earley and Mosakowski, 2000; Maugain, 2003; Trauth et al., 2006). However, during the virtual communication process, if it is difficult for some perspectives to be conveyed or understood because of language barriers, the benefits of having diverse virtual teams may not be fully realized.

Both Chinese and American IT professionals have developed different communication strategies to address the challenges brought by the use of English as the communication standard in international business. One strategy is to combine emails and conference calls in sequence. In one project, the American team members sent detailed meeting agendas before each teleconference so that the Chinese team members had contexts for the topics beforehand. In another project, the Chinese project manager composed meeting minutes after every teleconference and distributed them to all the collocated and distant team members to confirm understanding and avoid miscommunication or misinterpretation.

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What we do is to develop the meeting agenda, and write down the topics we are talking about before any meeting. If the other side knows what you are talking about, they have a context. It will be much easier for them to understand verse having to think what it is about. [Hui, SerTech, the U.S.]

Another strategy is to use teleconferences or phone calls concurrently with messaging systems. This allows remote team members to type their questions or key terms using instant messaging to help clarify any uncertain points in verbal communications.

What we ended up doing was that when we had a conference call, we would use IM at the same time. We would type the question. They answered. Then we typed what we thought they said and then they could correct us. So IM along with the phone call was really helpful. [Frank, SerTech, the U.S.]

The English language difficulties that Chinese IT professionals have mainly relate to spoken English and oral communication in virtual environments. However, this does not mean that Chinese IT professionals do not have problems with technical writing or documentation skills. It is merely that the issue of spoken English proficiency overwhelms the other challenges they face regarding English language skills.

China is continuously making efforts to improve its English education standards. Liao (2000) pointed out that the methods of communicative language teaching, such as emphasizing listening and speaking and using English as the instruction medium in English classes, are increasingly being adopted by many Chinese schools and teachers. In China, there are also many privately operated English training schools. However, these programs are for-profit and their major purpose is to provide test training to students who plan to take the Test of English as a Foreign Language (TOEFL) and Graduate Record Examination (GRE) types of Standard English tests (Li 2006). Unlike in India, there has not been a joint IT industry-government initiative for

language and communication training to prepare Chinese IT professionals for global IT work. One reason for this may be that China's strategy for software industry development focuses primarily on their domestic software and services market.

Therefore, the bulk of language and communication training tasks in China are falling on individual companies. Farrell and Grant (2005) reported that some major IT companies hired native English speakers to train Chinese employees in language skills. To overcome these language issues, particularly speaking skill deficiencies, both ComTech and SerTech have implemented several informal learning programs, including "Open-Your-Mouth", "English Corner", and "English-Speaking-Friday", in addition to formal language training programs. The purpose of the Open-Your-Mouth program is to encourage employees to practice spoken English by asking them to give public speeches on selected topics in English. In the English Corner program, there is a period of designated time every week, such as a lunch break, that people get together in small groups to carry on conversations using only English. Usually each group consists of a mix of people with better spoken English skills and those with lower ability levels. On English-Speaking-Friday each employee is required to only speak and communicate in English. These formal and informal training programs are helping to create immersive English-leaning environments for the company's Chinese employees.

5.1.2.6 Summary

Table 5.1 provides a summary of the findings of how issues related to English language skills affect globally distributed information technology work. This table is organized based on what the major issues are, what influential factors are correlated to these issues, how these issues affect globally distributed IT work, and how these issues are currently being addressed.

Communication is a major challenge in globally distributed IT work, particularly in the virtual environment. The English language skill level and communication ability of global IT professionals is an essential factor affecting the communication processes and work dynamics of globally distributed information technology work. First, both the use of English and the interpretation of the English language are related to local cultural contexts. Second, the English language skills of both Indian and Chinese IT professionals are influenced by their personal experiences with language education; those experiences are tightly intertwined with the cultural, political, and economic histories of these two nations. Because it will take a relatively long time for current educational reforms in India and China to affect the work place, IT companies are implementing a variety of their own training programs to improve the language and communication skills of their employees more quickly. In India, the IT industry has been actively working with the government and universities to set up model training programs, such as "Finish Schools" programs, to address the potential talent shortage in the Indian IT service industry.

Table 5.1: The effects of employees' English language skills on globally distributed information technology work

	Language skill related issues	Influential factors	Impacts on work	Initiatives
America	- Speaking too fast - Using culturally embedded slang and idioms	- Use of English is related to their own local cultural contexts	- It is difficult for people in other cultures to understand slang and idioms	- Avoid using slang, idioms, and ambiguous terms
India	- Uneven language skills - Accent in spoken English, speaking too fast, soft spoken - Lacking technical writing skills and proper documentation skills	- India is multicultural and linguistically diverse - Language education in India is widespread but not unified (private schools vs. public schools; different state government policies) - Lacking proper technical writing training in some engineering programs - Fast market growth causing shortages of qualified workers	- Poor telecommunication infrastructure quality may augment problems of spoken English, adding difficulty to virtual communications - External customers are more negative about language skill issues - Lack of detailed documentation causes misunderstandings in globally distributed projects - Attitudes about language and communication training vary	- Public-private partnerships to set up training institutions and skill certification programs - Language and communication training provided by companies based on demand
China	- Poor English skills are the major barrier for Chinese employees - Spoken English skills are the most challenging issue - Language barriers are most pronounced in conflict situations	- English only recently became the main foreign language in Chinese educational curriculums - Lacking qualified teachers and facilities makes English teaching reading-intensive, overlooking communicative competence	- Asynchronous communication media are preferred over synchronous media, affecting project progress - Unable to engage in debates or contribute constructively during conflicts	- Formal and informal language and communication training programs within companies - Open-Your-Mouth - English Corner - English-Speaking Day - Adopting different communication strategies

5.1.3 National Cultural Influences on Communication and Work Styles

The focus of this section is at how differences in national cultural factors are manifested in the differences in communication and work styles of American, Indian, and Chinese IT professionals. The research findings show that the communication style of American IT professionals was usually open and direct and their work style was characterized as task-centered. Chinese IT professionals had a tendency to not be outspoken while interacting with the remote team members. Indian IT professionals were more inclined to an indirect communication style and were reluctant to say no to work requests and deadlines. They might also be unwilling to raise potential problems openly. These differences, in turn, can have impacts on globally distributed information technology work.

5.1.3.1 American IT Professionals

5.1.3.1.1 Open and Direct Communication Style

According to Hall and Hall (1990), the low-context cultures, such as the United States, have a direct communication style. Direct communication refers to the fact that the information is explicated stated and the meaning is often on the surface (Hall and Hall 1990; Brett et al. 2006). Open communication indicates that the interactions or dialogues among group members are free and frank. Open communication style is usually associated with the importance of freedom and equality in American value systems (Sinha, 2004).

The open and direct communication style of American IT professionals was acknowledged by Chinese and Indian IT professionals. Several Indian IT professionals suggested that they felt easier in interacting with American team members than to interact with people in the U.K. or Japan because of the directness of communication. It was also noted that in conflict

situations, Indian team members might sometimes take the direct comments of the American team members personally even though those comments were meant to be task oriented, which would have negative effects on the relationships. For example, Nazar, an Indian manager who was in charge of IT service delivery at SerTech, pointed out that:

> The U.S. team is more process oriented. The Indian team is more relationship oriented. I have seen somebody on the other side, in some conflict situation, being direct. Somebody on our side, who was not experienced, would take it personally and justify things differently. [Nazar, SerTech, India]

Chinese IT professionals pointed out that their work relationships with American team members were dialectical as a result of the openness of the communication. Such open communications help to build trust relationships among remote team members.

> We can negotiate the differences. They are open with negotiation. If you are frank and honest about your situation, they will be understandable, as long as you can lay out the facts. [Hong, SerTech, China]

These findings indicate that the open and direct communication style of American IT professionals may have both positive and negative effects on the teamwork dynamics of globally distributed information technology work. Therefore, it is important to take the advantages of beneficial effects of the open and direct communication while being cautious about the potential negative effects, especially in conflict situations.

5.1.3.1.2 Task-Centered Work Style

The participants noted that work style of American IT professionals is generally task-centered and process-oriented, emphasizing detailed project planning, documenting, and following processes. As Tao, a Chinese software developer, stressed:

They emphasize on completing the work step by step according to planning and schedule. They are very process oriented. They are very strict on keeping with the schedule. [Tao, SerTech, China]

A mature process is important to ensure the on-time, on-budget, and quality deliveries in software development projects, particularly large-scale and multi-person projects, (Jiang et al., 2004). However, the distributed development projects are facing additional challenges including coordinating development activities, developing and maintaining collaborative relationships among remote development sites. It was suggested by the participants that sometimes people are too focused at the tasks, not taking into account of the working contexts of the remote sites. This usually happened at the beginning of the projects.

Of course they knew about the time zone differences. It just did not occur to them when they fixed the meeting time. They called at 9 o'clock in the evening and expected us to be in the office. They were not sensitive about it was 9 o'clock in the evening here. But people have learned. [Sania, SerTech, India]

As discussed previously, this task-centered work style is also manifested in face-to-face interactions, where the aspect of relationship building is sometimes overlooked by American IT professionals. Therefore, it is important for American IT professionals to develop an awareness of the working contexts of the remote team member, be sensitive about the differences, and be attentive to their special needs.

5.1.3.2 Chinese IT Professionals

5.1.3.2.1 Not Speaking Up

It is found that the reluctance of Chinese IT professionals to speak up is one major cross-cultural challenge related to communication styles and work behaviors that affect globally

distributed information technology work between the U.S. and China. Some studies point out that the reluctance to speak up is a result of the high hierarchical order in the culture, where people are less likely to voice their concerns or challenge their superiors (Morrison and Milliken, 2000; Rao, 2004; Yuan and Vogel, 2006; Xiao et al., 2006). My research findings indicate that hierarchical thinking is only one of the factors that correlate to being reticent. There are three factors that are interconnected and affect the communication style of Chinese IT professionals.

First, some Chinese software developers are not conscious of the need to speak up and participate in virtual conferences. Some practitioners attributed that to the characteristics of the Chinese educational system, in which they were often told to just listen well and learn in a teacher-centered class environment and were not encouraged to be outspoken.

> In America, they encourage students to speak up, express themselves well. But for [us], that is a major gap. So when we are dealing with the U.S. team……a lot of times, I should say some of the engineering teams are not able to express the situations well, and therefore cause some so called unnecessary impacts to your programs. Because the other side may think you are not technically capable……That is one culture difference I see that causes some challenges within the teams. [The] other side may think Asians are not as technically capable as Americans. But that is not the case. Asian Chinese are more influenced by their childhood education: teachers teach you and you don't have to speak up. [Xia, ComTech, China]

Second, some Chinese software developers are unwilling to speak up. According to the participants, the unwillingness to speak up was attributed to an introverted personality type held by many people of Chinese culture. This introverted personality style influences behavior by which opinions are held internally and conflicts are avoided through suppression of perspectives or feelings.

[Chinese] people are more introverted. They are more internal. All the values are inside……They are not willing to speak up as they should be. Sometimes this works against them because if you are shy and they feel like if you don't want to challenge the colleagues or managers……When they talk to colleagues in different locations, and especially if they don't know those people, if there are some obvious things that they see are wrong, they usually do not come out and say it: "Hi, I don't think it is right". They usually don't say it. If they don't say it, things will just continue. And when it gets to certain points, it starts to blow up, [and then] that will become too late. [Peng, SerTech, China]

Several cross-cultural management studies point out that the historical influence of Confucian philosophy in China has a significant impact on the communication styles, work behaviors, and business culture in China (Martinsons and Westwood, 1997; Hooker, 2003; Zimmermann et al., 2003). The Confucian school of philosophy values achieving and maintaining harmony and balance in the social realm (Martinsons and Hempel, 1995; Martinsons and Westwood, 1997). It advocates being moderate in both thoughts and actions. The Confucian philosophy also emphasizes the importance of preserving order and respect for elderly and authority figures is highly valued (Hooker, 2003). When such values are manifested in communication styles and work behaviors, they result in keeping thoughts internal, indirectness, and high-context communication styles, as compared with the open and direct characteristics of communication styles from the U.S. (or most western) cultures (Zakaria et al., 2004).

Third, some Chinese software developers are unable to speak up because of the English language barriers (Wei, 2007). It was noted in previous discussions that the lack of fluent spoken English skills limits the capability of Chinese IT professionals to be participative in teleconferences or videoconferences.

As reflected in the comments of the participants, the indirectness and quiet demeanor of the Chinese team members may be perceived as a lack of confidence and a lack of technical

capability by their American counterparts. This situation may have further negative effects on building trust in relationships between distributed team members. On the other hand, the combination of issues in language proficiency and indirect communication style will impose more challenges on surfacing different perspectives and bring forward constructive conflicts during the virtual work processes.

5.1.3.2.2 Not Taking Initiative

It was noted by the participants in the U.S. who were collaborating with colleagues in China in R&D projects that their Chinese team members tend to follow the instructions instead of proactively taking the initiative on their own. When given a piece of work with clear instructions, they are accountable to delivering the work on schedule. This style of work fits well when the task goal is to follow the instructions and processes to get the work done on time, or when the role of team members in China is to support the American core teams by finishing small pieces of work passed on them. However, the same work style may hinder the generation of new ideas in R&D type of projects.

> A lot of times, they need a lot of orders to follow. You give them some direction and they do it that way. But we are trying to come up with new ways and look at different processes. [Jason, SerTech, the U.S.]

Lisa, a senior manager working at ComTech, the U.S., who had cross-cultural working experiences with Chinese colleagues in both face-to-face and virtual settings, commented that:

> One of the cultural differences I noticed was the lack of desire to make a decision. They would always want to hold the decision to the next level of the chain of command. Even simple day-to-day decisions, they would be afraid of making them. [Lisa, ComTech, the U.S.]

Hui, a participant from SerTech, the U.S., who was a project manager and Chinese native, suggested that such order-following style is related to education environment of China:

> I guess it is because of the way we are raised, like in schools. You follow the orders. You are not encouraged to go outside your normal thinking patterns. I compare the cultural differences, how I grew up compared to my children who were born here. How we learned things in China was very different. We have a very different culture. [Hui, SerTech, the U.S.]

The general education environment (both basic education and higher education) of China is structured and teacher-centered and focuses on receiving information instead of exploring (Turner and Acker, 2002). In school, students are usually the passive recipients of knowledge content, rather than questioning both the teachers and the accepted norms. The learning approach is usually repetitive and memory-based as a result of the test-centered evaluation systems (Turner, 2006). In life, the elderly are viewed as sources of wisdom whose advice should be always followed. Consequently, these norms influence the work style of some Chinese IT professionals.

English language skills and IT workforce development are two biggest concerns perceived by Chinese IT professionals when they articulated the challenges relating to China increasing its share of the global IT market in the future. Both of these issues are tied to education. The participants in China concurred that there are many talents in China but these talents are not properly developed through the educational pipelines. In IT related programs, like many other engineering programs, practical training is neglected and students do not have strong hands-on skills (Farrell and Grant, 2005; ACM Report, 2006).

5.1.3.3 Indian IT Professionals

5.1.3.3.1 Not Saying No

The cultural influences on communication styles of Indian IT professionals are manifested in two aspects. First, the Indian IT professional tends to be unwilling to contradict remote team members or defend their own stands during a conflict situation, especially when it involves external customers. An example was given by Susan, an American director in charge of application services delivery:

> A customer in New York complained about some issues. He kept ranting and raving on the phone. In fact, the Indian team had taken some actions about those already. But they saw the customer was so angry. They stepped back and kept internally. After the phone conference, they told me that they did this and that, and they did try this but that was not working. I asked why you didn't say so during the meeting. [Susan, SerTech, the U.S.]

Second, Indian IT professionals tend to not say no when asked if they can take over some tasks and meet certain deadlines. This issue is commonly suggested in published case studies on globally distributed information technology projects (Nicholson and Sahay, 2001; Sahay et al., 2003; Carmel and Tjia, 2005; Treinen and Miller-Frost, 2006).

Several participants in India noted that the interpretation of commitment is culturally different in India compared to the U.S. or other European countries. When an Indian software developer says "yes" to a piece of work or to a certain deadline, it sometimes means "yes I will try it", instead of "yes I can do it". However, such a "yes" may be taken as a firm commitment by the remote team members or the end customers. And the failure to fulfill such a commitment will generate tension and mistrust among the distributed team members.

The participants in India acknowledged that the relationship-oriented and hierarchy-structured culture of India is one of the reasons that Indian team members are unwilling to say no to external and internal customers. Hierarchical structuring is deeply ingrained in India (Nicholson and Sahay, 2001; Das, 2002, Panda and Gupta, 2004, Sinha, 2004). Nicholson and Sahay (2001) point out that the caste system has contributed to the value systems of India with respect to power and relationships. Nazar, a participant working in India, emphasized that:

> The whole hierarchical thinking is deeply ingrained in the way we grow up, in the social structures that we have. This is difficult to change. [Nazar, SerTech, India]

Moreover, my findings indicate that the Indian IT professionals may not say no to their collocated team members as well. For an example, Rohit, a program director who worked in the U.S. for ten years and recently returned to India to lead a new research lab, mentioned that:

> When I worked in this context, even though I am exposed to the U.S. work culture, I still find myself falling into a trap, not being able to say "No, I cannot do that". [Rohit, SerTech, India]

Sinha (2004) suggests that the spiritual traditions of India impart beliefs in goodness, helping others, and giving. He also notes that Indians usually adapt to contextual demands as a result of living in a highly pluralistic society. Therefore, when facing a request from others, they will say "yes" as a sign of being accommodating and cooperative.

5.1.3.3.2 Not Reporting Bad News

Several participants in the U.S. pointed out that when a problem emerged in the project, some of their remote team members in India might avoid escalating it. They would try to fix the problem on their own instead of bringing it out into the open. The intention was not negative.

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However, sometimes the problem cannot be easily solved and when it is finally surfaced, it might take much more costly measures to remedy the situation.

Not reporting bad news is a major risk factor in distributed IT projects that may lead to project failures (Keil and Robey, 2001; Tan et al., 2003, Ramingwong and Sajeev, 2007). Some published studies suggest that the behavior of not reporting bad news is affected by a combination of individual factor, organizational factors, and situational factors (Smith and Keil, 2003; Tan et al., 2003; Keil et al., 2007).

My findings show that the view towards "reporting bad news" is culturally constituted. The participants in India suggested that reporting bad news is taken as admitting failure by some team members in India. One of the Indian cultural norms is that admitting failure would not only bring shame to oneself but also to the family or the group (Sinha and Sinha, 1990; Nicholson and Sahay, 2001; Sinha, 2004). Some participants also pointed out that the environment of India is highly competitive. People work very hard to fight for the opportunities and prove themselves. They are afraid that admitting failure will hurt their credibility or reputation. It was noted that this is usually the case of why some young developers not reporting bad news.

> I think the Indian culture is not accepting defeat, especially the younger generation that is just coming from college. They want to prove themselves in the IT space, never going to accept defeat. It is a positive sign, helping them to achieve. But the down side of it is that they don't admit a failure and ask for help. [Raj, SerTech, India]

It was suggested by the participants that it is important to foster a trust and collective environment so that team members is more willing to raise potential issues and seek help. They also emphasized the importance of managers' role to monitor the project progress, encourage team members to be forthcoming, and give constructive feedbacks to raised issues instead of

passing blame. In addition, several participants in India pointed out that mentoring can also be helpful because it provides another channel for some team members to seek advice and help. And mentoring can play a big role in the professional development of new employees.

5.1.3.4 Summary

Figure 5.2 summarizes the research findings of how the cultural differences at the societal level affect the communication and work styles of global IT professionals, and in turn affect the relationship dynamics of global virtual teams that engage in globally distributed information technology work. It shows that cultural differences at the societal level (including value system, hierarchical structure, and relationship orientation), together with other influences (including the influences of educational system and competitive environment), can have effects on the communication and work styles of global virtual team members. More specifically, American IT professionals are likely to be open and direct in communication and be task focused during work processes; Chinese IT professionals have a tendency to not speak up and to not take the initiative; Indian IT professionals have a tendency to not say no and to not report bad news. These differences impact relationship development during the work processes of globally distributed IT collaborations. For example, not reporting bad news may cause mistrust among remote team members; not speaking up and taking initiative may be misinterpreted as a lack of competence; being too open and direct in communication may lead to conflict, while being only task-focused may be detrimental to relationship development.
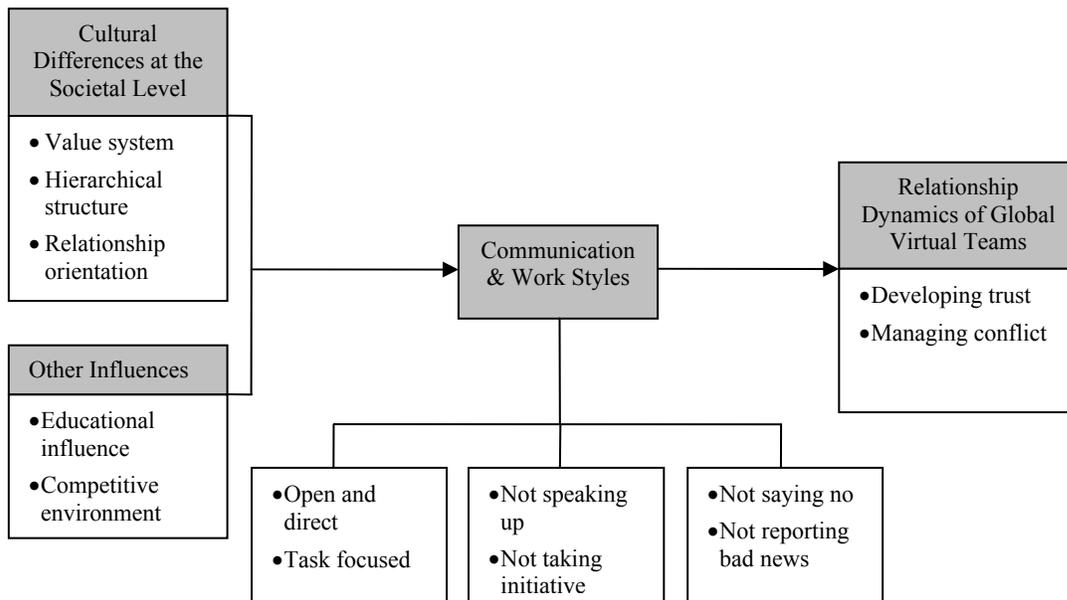
Figure 5.2:   The Influences of National Culture on Communication and Work Styles

5.1.4 The Influences of National Culture on Temporal Coordination

Espinosa et al. (2007) identified three major types of coordination needs in distributed software development: technical coordination, temporal coordination, and software process coordination. Temporal coordination refers to the mechanisms needed to schedule software development tasks, synchronize activities, and allocate resources in order to optimally utilize distributed resources and adhere to scheduled timelines (Espinosa et al., 2007; Massey et al., 2003; McGrath, 1990, 1991). Herbsleb (2007) points out that the absence or disruption of many mechanisms (such as formal and informal communication) used to coordinate the work in co-located settings is the fundamental problem of globally distributed software development (Sangwan et al., 2006). With respect to temporal coordination mechanisms, temporal separation restrains the likelihood of synchronous communication, immediate information exchange, on-

demand support, and real-time problem solving (Cummings et al., 2007). Temporal separation may cause problems in the workflow of globally distributed projects, lead to longer issue resolution time, and cause coordination delay (Espinosa and Carmel, 2003). The study by Komi-Sirviö and Tihinen (2005) shows that in some cases, temporal separation also reduces the team members' willingness to have meetings and exchange information, which leads to redundant work or no work at all due to lack of awareness and false assumptions.

The research findings reveal that temporal separation is a culturally bounded concept, incorporating time zone differences and variations in perception of time. Cultural factors at the societal level can affect the temporal coordination of globally distributed information technology work in the following ways: 1) language issues; 2) time estimation and commitment; 3) adherence to a schedule; and 4) availability/unavailability for synchronous communication.

5.1.4.1 Language Issues

It was argued in the previous section (Section 4.4.1) that the use and interpretation of English language are related to the local cultural context. When distributed team members coordinate the development tasks and negotiate the deadlines, sometimes instead of using a precise description about time, they use expressions that are known to people at the local site but might be misinterpreted by team members at the remote sites. Below is an example about how the concept of "business hours" means different things in India and the U.S. In the U.S., "business hours" usually means 9 to 5. But in India, "business hours" is an elastic concept with no clear boundary (Nicholson and Sahay, 2004). The misinterpretations about time and schedule, in turn, will affect the project timelines. An example was given by Sunil, who was a senior software architect working in the U.S. who has an Indian ethnic background:

Certain words in the U.S. mean something. But they don't take that exactly over there because that is not the proper wording they use. [One time], we said that we needed the information by the "end of Friday, end of business day Friday." In the U.S., "end of business day Friday" is 5 o'clock eastern time or 2 o'clock at the western coast. So the information had to be collected by then. In India, when they say "end of Friday," it is not 5 o'clock. It is midnight. They work longer hours there. Their 'business hours' does not mean the same as our business hours. So we ended up not getting the information. [Sunil, SerTech, the U.S.]

This example indicates that it is important to decode the meanings behind each other's language about time, develop a protocol for time communication, and specify time requirements as accurately as possible in the communication (Komi-Sirviö and Tihinen, 2005).

Another language-related issue is that individuals' language skills may affect their preference for using asynchronous communication technologies to coordinate activities, which may cause delays in the development process. As previously discussed (Section 4.4.5), some Chinese IT professionals prefer email to teleconferencing or videoconferencing because their reading and writing capabilities are better than their listening comprehension and speech skills (Huang and Trauth, 2007). However, especially when there is a certain degree of interdependency among tasks that need input from dispersed team members, the delay of email responses may affect the progress of the project (Herbsleb and Mockus, 2003).

5.1.4.2 Time Estimation and Commitment

In order to make a software development project run according to schedule, project managers need to evaluate and allocate resources based on the coordination need of task dependencies and timelines. Their evaluation is based on the inputs of time estimation and commitment from the project team members. The research findings suggest that culture has an impact on the estimation and commitment to the schedule. For example, several participants

noted that the interpretation of "commitment" is culturally different in India. When an Indian software developer says "yes" to a certain deadline, it generally means that "yes I will try it" instead of "yes I can do it" (Carmel and Tjia, 2005; Winker et al., 2008). For example, Susan, a program director working in the U.S., mentioned that:

> Between the U.S. and India, I see quite a bit of cultural difference in terms of understanding the time commitment and deadline. If you make the date and ask if they can make it, they would say there is no problem. Even if there is a problem, they would want to fix it on their own. But it is important to make only an accomplishable commitment. [Susan, SerTech, the U.S.]

This finding is consistent with characteristics of the "polychronic" time vision suggested by Hall and Hall (1990), and the "timeless" time vision suggested by Saunders et al. (2004). Saunders et al. (2004) argue that under the influence of Hinduism and Buddhism, time in Indian culture is viewed as continuous and recurrent. Therefore, in Indian culture, people tend to be very flexible and optimistic in estimating the time necessary for a task and in making time commitments (Carmel and Tjia, 2005). One indication of the "polychronic" time vision is that the commitment is only viewed as an objective to achieve if possible, rather than taken literally (Hall and Hall, 1990).

Furthermore, as discussed in the previous section (Section 4.5.3.1), the relationship-oriented and hierarchy-structured characteristics of Indian culture are also reasons that Indian team members are unwilling to say "no" to a deadline requested by their managers or team members. Such value systems are often drawn upon by fellow Indians and are manifested in their social behaviors, such as a desire to please and a sense of obligation to one's superiors.

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However, a "yes" to a deadline may be taken as a firm commitment by the remote team members or the project manager. The failure to fulfill such a commitment will not only cause schedule delays, but also generate tension and mistrust among the distributed team members.

5.1.4.3 Adherence to a Schedule

Adherence to a schedule is closely associated with time commitment in that a realistic estimation about time and seriousness about commitment to it will lead to being on schedule. The research findings suggest that in both China and the U.S., adherence to a schedule is highly valued in the business culture and is practiced in everyday work activities. For example, Jack, a manager in the U.S., articulated the importance of adherence to a schedule from the perspective of the development process:

> We are very process orientated. In order to deliver on time and ensure the delivery quality, it is important to follow the process step by step according to the planning and schedule. [Jack, SerTech, the U.S.]

Hong, a team lead in China, pointed out that adherence to a schedule is an important part of accountability:

> You have the ownership of the task. You are responsible for it. If you cannot deliver it, even though it may not be your direct fault, you are still accountable for it. So you have to push things forward and make it happen. The rhythm is tense. [Hong, SerTech, China]

For the punctuality aspect, Ling, a developer working in China, stressed that:

> In our line of business, punctuality is one of the fundamental behavioral norms. We are serious about our work. But we are laid back when we are off work. [Ling, SerTech, China]

Sunil, a senior software architect in the U.S. with Indian ethnic background, made a comparison of the behavioral differences in punctuality between India and U.S.:

> If there is a meeting at 9 o'clock, people may come at 9 o'clock, ten minutes after, or even twenty minutes after. That is OK in their culture. Here, if we have a meeting at 9 o'clock, people start to come five minutes before the meeting. The punctuality is very important to us. Not on time may be accepted there, but it is not acceptable here. [Sunil, SerTech, the U.S.]

My fieldwork experiences in China and India illustrate the differences in the way that adherence to a schedule is viewed in India and China. The interviews at SerTech, India, were pre-scheduled by the local contact person. However, I soon found out that these schedules could not be taken for granted. The majority of interviews either did not start on time or needed to be rescheduled to a different time because the participants were busily involved with other business matters and could not meet as planned. Usually I was unaware of the changes until the participants did not show up at the pre-scheduled time. Therefore, it took a considerable amount of effort to coordinate and reschedule the interviews. While the interviews at SerTech, China, were also pre-scheduled by the local contact person, all the interviews that I conducted there were on time and were as scheduled.

The punctuality issue was commonly mentioned in the interviews with the Indian IT professionals. They suggested that although not being on time is still somehow accepted and even expected on some occasions, the business culture in India has been undergoing changes as a result of the continuous increase in international business interactions. In addition, they argued that while the global IT business is growing at a very high speed in India, the local infrastructure development has been lagging behind and is unable to support the growth, especially in those major IT hub cities, such as Mumbai, New Delhi, and Bangalore (Kobayashi-Hillary, 2005).

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Because of the under-developed physical infrastructure, many IT employees have to battle their way to work every day. Yet, tele-work or mobile work is still not feasible. These infrastructure issues add additional challenges to coordinating globally distributed software development temporarily. Shilpa, an executive in India, described such a challenge:

> You can plan to leave home one hour earlier. But you still cannot be on time for the meeting and for the call because you have these problems [of traffic jam]. We don't have 1-800 facility here so we cannot kind of call in for a conference call using a mobile phone. There are confidentiality issues and regulation issues. It is not that flexible. [Shilpa, SerTech, India]

5.1.4.4 Availability/Unavailability for Synchronous Interaction

Due to the restrictions of regular working hours and time zone differences, global virtual team members might be unavailable to work on some development tasks or unavailable to interact synchronously with their remote team members. This can be defined as *time-zone-difference unavailability*, which arises because of the time zone differences among remote sites. In addition, there are two types of unavailability that are specifically related to the local cultural contexts: *holiday unavailability* and *social unavailability*.

Holiday unavailability is caused by different holiday schedules in different countries. Of the countries in this research, India appears to have the most complex holiday system. Since India is a very diverse country, people observe not only the national holidays (New Year, Republic Day, Labor Day, Independence Day, etc.), but also holidays related to different religions, such as Hindu (e.g. Pongal, Maha Shivratri, Ganesh Chaturthi, Diwali), Islam (e.g. Muharram, Ramadan, Milad-Un-Nabi), Christian (e.g. Easter, Christmas), Sikhism (e.g. Guru Nanak Jayanti), and Jainism (e.g. Mahavir Jayanti). Adding more complexity to the issue of holiday unavailability is that a project might be distributed across multiple sites. It is challenging

for global virtual team members to keep track of all the variations regarding *holiday unavailability*. Eric, a developer in the U.S., pointed out:

> Different countries, different religions, they all have different holidays…
> Whatever the holiday is, you actually have to take that into consideration when
> you do things, like scheduling meetings and understanding the availability. A lot
> of times, the word does not get out that tomorrow is such and such holiday and
> [someone] will be off for a week……There are some huge variations in holiday
> schedules. It sounds like a simple problem. But that is actually one of the issues
> causing a lot of headache. [Eric, SerTech, the U.S.]

Social unavailability is concerned with being unavailable as a result of family needs and social obligations. Examples of *social unavailability* include jury duty, childcare, etc. *Social unavailability* is a culturally embedded concept because some of these family needs and social obligations are unique to some cultures. For instance, both China and India are relationship-oriented countries (Hofstede, 1984; Sinha, 2004). Taking care of one's elders at home and being attentive to one's extended family is a cultural norm in China and India (Trauth et al., 2008c). Therefore, they may have additional family needs that make them unavailable. Raj, an executive in India, pointed out that:

> For example, somebody will not understand, culturally we still have to take care
> of parents because there is no social security system here for the elderly.
> Everything is taken care by the family. We have to be with them. All of these add
> up to the cost. [Raj, SerTech, India]

Along with these two types of unavailability, I also found two types of availability in this research, *flexible availability* and *accommodating availability*. Both *flexible availability* and *accommodating availability* can function as enabling mechanisms to facilitate the temporal coordination of globally distributed software development.

Flexible availability refers to being available outside the normal working hours. In Indian culture, under the influence of polychronic time perception, there is no clear boundary between work and life, and plans may be altered flexibly to satisfy different demands (Hall and Hall, 2003; Nicholson and Sahay, 2004). This indicates that people might be unavailable when expected to be available, but will also be available when expected to be unavailable. Rohit was a program director in India who had previously worked in the U.S. for ten years. He drew on his personal experience to make a comparison with respect to work-life balance between India and the U.S.:

> There is a cultural difference between US and India with respect to how long can somebody be expected to stay at work. In the U.S., the work-life balance is a very significant thing……. Here in India, I think the culture is very different in a sense that work never ends. People expect you to be at work all the time. [Rohit, SerTech, India]

The participants noted that software developers in India will work extra hours to make up the time of holiday or other leaves, and will be willing work overtime when needed. Such *flexible availability* was also seen by the Indian participants as a means of gaining advantage in a competitive environment. For example, Arul, a developer working in India, pointed out:

> In the U.S., they make a big fuss about 9-5 work hours or work overtime. But here we are willing to adjust. We grew up in a competitive environment. We know that we have to make extra effort to compete, and to gain advantages. [Arul, SerTech, India]

Accommodating availability refers to the willingness to shift the working hours to create a larger overlap window for the synchronous activities. The research findings show that such accommodations are mutual. Global virtual team members either take turns to shift their working

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hours, or they meet at a middle ground. For instance, one participant in China mentioned that their project team used to schedule to meet at 8:00 AM American Central time, which corresponded to 9:00 PM Beijing time on the same day. Usually after the team members in China finished the meeting and wrapped up the work, it would be close to 11:00 PM and they had to catch a bus or train to return home. Safety was also a concern when retuning home late. They then switched the meeting time to 7:00 PM American Central time, which corresponded to 8:00 AM Beijing time plus one day. This illustrates the accommodations that are negotiated based on the contextual needs.

5.1.4.5 Summary

Figure 5.3 summarizes the research findings of how cultural differences at the societal affect the temporal coordination of globally distributed information technology work (Huang and Trauth, 2008). It shows that time-based behaviors of global virtual team members (influenced by culture) are found to contribute to time separation in workplaces, and that time separation impacts on temporal coordination of globally distributed software development. Furthermore, other contextual factors such as time zone differences and infrastructural conditions (i.e. telecommunication infrastructure and transportation infrastructure) affect the time separation as well. In particular, the research findings suggest that the influence of culture on time is manifested in multiple ways, including: *language issues*, *time estimation and commitment*, *adherence to a schedule*, and *availability/unavailability for synchronous interaction*. It is also suggested that there are several cultural differences at the societal level can have effects on the team members' time-based behaviors, such as cultural differences in time perception, hierarchical structure, relationship orientation, and social obligation.

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┌─────────────────────┐
│  Other Influences   │
├─────────────────────┤
│ • Time zone         │
│   differences       │
│ • Infrastructure    │
└─────────────────────┘
           │
           ▼
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│  Cultural    │   │ Time-based   │   │  Temporal    │   │  Temporal    │
│ Differences  │ ─▶│  Behaviors   │ ─▶│ Separation in│ ─▶│ Coordination │
│ at the       │   │              │   │  Workplace   │   │              │
│ Societal Level│  │              │   │              │   │              │
├──────────────┤   ├──────────────┤   └──────────────┘   ├──────────────┤
│• Time        │   │• Language    │                      │• Project     │
│ perception   │   │ issues       │                      │ Scheduling   │
│• Hierarchical│   │- Time        │                      │• Meeting     │
│ structure    │   │ expressions  │                      │ Deadlines    │
│• Relationship│   │- Choice of   │                      └──────────────┘
│ orientation  │   │ communication│
│• Social      │   │ media        │
│ obligation   │   │• Time        │
└──────────────┘   │ estimation   │
                   │ and commitment│
                   │• Adherence to a│
                   │ schedule     │
                   │• Availability/│
                   │ Unavailability│
                   │ for synchronous│
                   │ interaction  │
                   │- Holiday     │
                   │- Social      │
                   │- Flexible    │
                   │- Accommodating│
                   └──────────────┘
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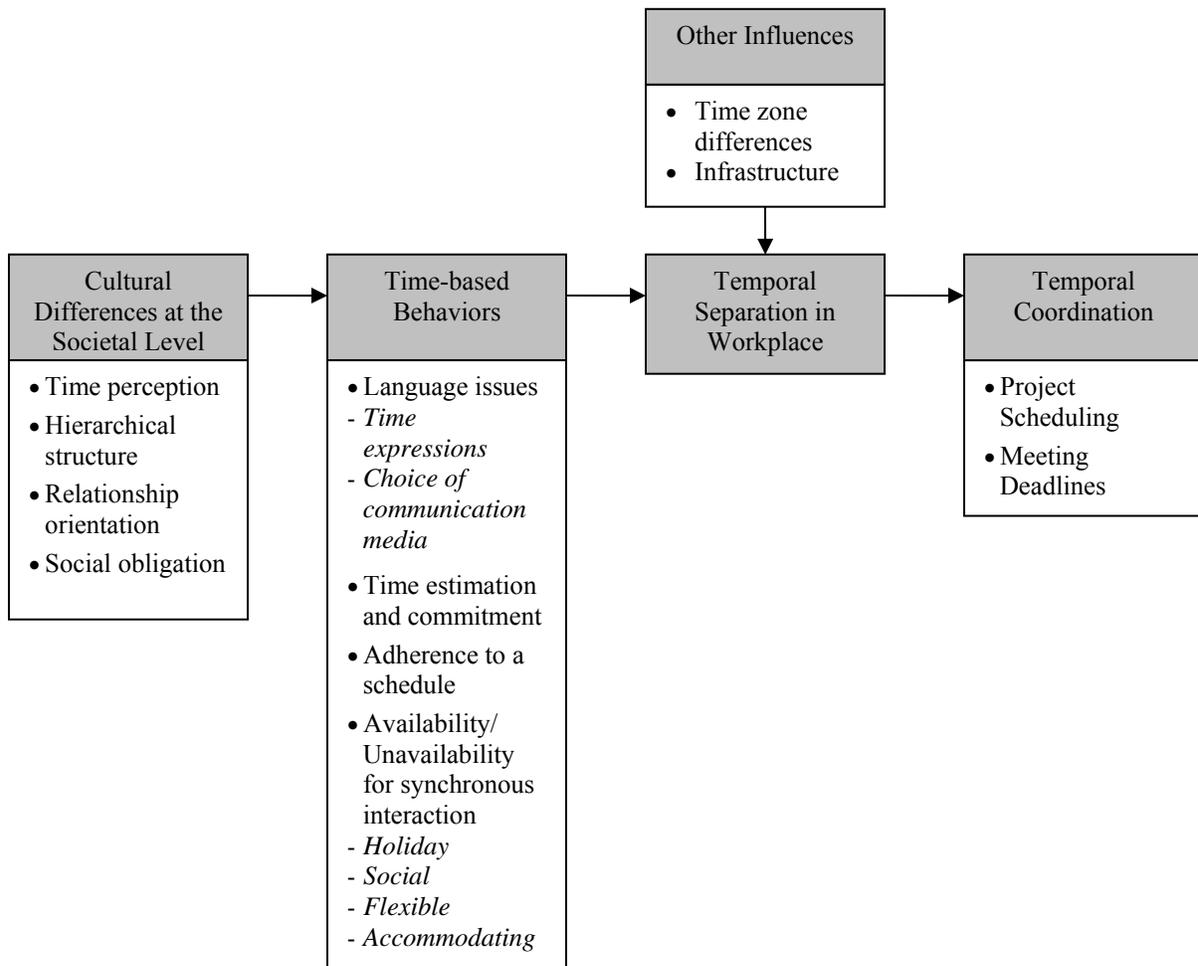**Figure 5.3:   The Influences of National Culture on Temporal Coordination**

5.2 The Influences of Organizational Cultures

The focus of this section is to reveal how the participants from ComTech and SerTech speak about the organizational cultures of ComTech and SerTech and how such organizational cultures may shape the norms, values, and work behaviors of their employees and hence affect the global IT work.

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5.2.1 ComTech

The ComTech employees who participated in this research commented on three perspectives of ComTech's organizational culture: open, change, and regional separation.

Some of ComTech's participants suggested that one perspective of ComTech's organizational culture is the openness, which helps to foster an encouraging environment for different opinions and diversity. It may help to bring forward issues during the process of global IT collaborations (whether task related or relationship related) and aid in search for solutions. Such an open organization culture is beneficiary for cross-cultural communications and interactions among remote global virtual team members.

Some of ComTech's participants mentioned that another perspective of ComTech's organizational culture was about change. They suggested that ComTech as a global IT company constantly sought to innovate its business processes and services. At ComTech, each business segment (defined by the types of end users) has a design team usually consisting of team members from different countries. The design team is responsible for designing, implementing, and evaluating a wide variety of changes in business processes such as customer services processes. According to ComTech's participants, such a focus on change has three effects on their global IT work. First, it provides good learning opportunities for ComTech's employees. Second, it requires employees promptly adapt to changes. Third, it possibly results in additional work pressure on employees.

Some of ComTech's participants indicated that different sites (or regions) of ComTech seemed to have some of their own cultures and protocols, and sometimes it was difficult to work collaboratively across different sites to achieve a collective goal at the global level. Linda, a ComTech director working in the U.S., suggested that such separation could be traced back to

the organizational history of ComTech. When ComTech originally built development and customer services centers in each region, it focused on supporting the local customers and tailoring itself to local demands. As a result, each site was developed independently, not being connected to the headquarters or to other centers. When there is a need to standardize processes or to collaborate across different sites, sometimes the objectives of regional successes and the objectives of global success are not aligned. This can be an obstacle to global IT work. It was noted by ComTech's participants that such separation was now being addressed by top management of ComTech, such as hiring new executives to oversee global collaborations and an emphasis on objective alignment both vertically and horizontally.

> [ComTech] has historically, whether it realizes it or not, been a regional company… They developed a culture historically where the individual site felt that they were their own sites. That may be typically a life cycle of an organization, getting it off the ground and then standardizing it later. People initially were very independent. European business unit was independent from Asian business unit. We forgot that we also need to focus on our internal business partners within the organization. We need to play like team. I think we have recognized that and we need to modify that. [Linda, ComTech, the U.S.]

5.2.2 SerTech

Three values of SerTech's organizational culture were highlighted by SerTech's participants: global, diverse, and alignment. These three values are interconnected.

The participants acknowledged that that SerTech is a truly global company because the company has been establishing facilities in many different locations to serve customers all over the world and has been hiring local talents to facilitate better interactions with customers from different locations. SerTech has operations in more than 100 countries. Interview participants from SerTech pointed out that such a global/local presence helped to bridge some potential

cross-cultural differences experienced in global IT work because those team members who were local to the customer functioned as a bridge to alleviate the cross-cultural distance.

> One big advantage we have is the local presence. [SerTech] has offices in more than 100 countries. All of these people in these countries know their customers. They are local to their cultures. So they can fill the gaps if there is any. The big advantage for us is that [SerTech] is global and diverse by itself. [Shilpa, SerTech, India]

The research findings indicate that diversity at SerTech had three perspectives, including global diversity, local diversity, and valuing the diversity of local cultures. Global diversity is related to the global presence of SerTech. Some SerTech's participants asserted that working at SerTech provided good opportunities to learn to work with people from different cultures because a large percentage of their work involved collaborating with colleagues or customers from other countries.

> You cannot work in [SerTech] without constantly communicating with people in other cultures because we are always working with cross-cultural teams. [Jian, SerTech, the U.S.]

Local diversity refers to the diverse ethnic and gender backgrounds of SerTech's employees at local sites. For an example, Jason, a technical lead working at SerTech, the U.S. mentioned that he had four team members in his local team in the U.S., among which one was Indian, one was Chinese, and two were American by their ethnic backgrounds. He was born and grew up in Holland. Therefore, he experienced cultural differences not only from virtual work with his remote team members, but also from face-to-face work with his co-located team members. He believed that working within a diverse local team laid a foundation for him to work with a diverse global team.

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The third perspective of diversity in SerTech is reflected in how SerTech values the diversity of local cultures and their contribution to the company as a whole. In June 2006, SerTech had a large gathering in Bangalore attended by almost eleven thousand people including ten thousand local employees. In November 2006, SerTech had another gathering in Beijing attended by 2500 local employees. The objective of both events was to pay tribute to the accomplishments of SerTech India and China, to highlight their important roles as an integrated part of the global enterprise, and to envision the future growth of SerTech, India and China. I visited SerTech right before the Bangalore gathering. There were posters everywhere broadcasting this event and it was the subject of many conversations.

When I visited SerTech's facilities at Bangalore (India), Shanghai (China) and Spring City (the U.S.), I noticed that each of these sites had unique collections of historical and cultural artifacts displayed in the public areas of their buildings such as reception lobbies, hallways, and dining centers. As an example, when stepping into some SerTech buildings in Bangalore, I noticed that Indian map hanging in the guest waiting areas with some sited highlighted, which represented the major service delivery and research centers of SerTech that were established in India. It clearly shows that SerTech has facilities distributed in the southern, northern, eastern, western, and central regions of India. This map, together with other posters and displays in the lobby, reveals several important messages: SerTech is devoted making India its biggest service delivery base outside the U.S.; India is a vital part of SerTech's global strategy; and SerTech values the contributions of its Indian employees to the company's overall growth. As another example, one of the SerTech's facilities in Spring City had some interesting exhibitions of products and systems that had been developed by SerTech engineers and scientists in the past and in recent times. They showcased of SerTech being a pioneer and leader in the IT industry.

The facility at which I spent most of my time conducting interviews has several interconnected buildings that appear to be individual buildings from outside but are actually jointed together inside. Several participants with whom I interviewed made comments about the buildings, saying that the original idea behind this architecture was to emphasize the importance of collaboration. The SerTech facility I visited in Shanghai was a brand new facility that had just opened in early 2006. They also had maps there showing recent developments in China and the distribution of their global customers.

The value of alignment is reflected in how the company is striving to develop a corporate culture, at the global level, that can serve as a sense-making device to guide the behaviors of its global workforce. For example, a protocol of responding to any email requests within 24 hours was implemented in the company. It was suggested by the participants that on the one hand, SerTech valued the diversity of the local cultures, while on the other hand, it emphasized the value alignment between headquarters and subsidiaries, and among subsidiaries as well. Establishing and promoting a global value system enables SerTech to leverage its diverse talents to produce greater synergy among different sites of the company. This is reflected in the narratives of individuals from all three countries.

> Value in [SerTech] is not an empty statement. We want to see it is embedded in each employee's belief, behavior, and work. [Tan, SerTech, China]

> It is important to understand the corporate culture. These days a multinational company has employees from all over the world, working in different countries. No matter which national cultural background they have, they also need to adopt the corporate culture. [Ling, SerTech, China]

Of course there are many different local values. What SerTech does is to rationalize it and bring it to one level, such as punctuality, responding to the customers, work process and evaluation. [Karthik, SerTech, India]

The forms of communication and coordination are different in each culture. But there is a global [SerTech] culture that is slowly building up around each of these differences. [Ankur, SerTech, India]

Every site has its local culture, unique for local customers and local employees. But the core corporate values, wherever you go, they are consistent. [Hui, SerTech, the U.S.]

5.2.3 Leadership, Employees' Background, and Organizational Culture

Participants from both ComTech and SerTech suggested that the ways in which organizational cultures were perceived and adopted by employees might be influenced by two factors: leadership and employees' background.

Schein (2004) articulates the relationships between organizational culture and leadership and points out that they are intertwined and co-evolved during the organizational development process. At the founding stage of an organization, leadership serves as a major driving force in creating and shaping the organizational culture (Schein, 2004). As the organization develops, the created organizational culture will affect the actions and styles of its successive leaders, who can manage the organizational culture, and transform it as well (Den Hartog et al., 1996; Ogbonna and Harris, 2000). It is a dynamic, ongoing process (Schein, 2004).

In addition, a number of studies have shown that management also plays an important role in influencing employees' perceptions of organizational culture (Corley, 2004; Hatch and Schultz, 2002; Prati et al., 2009; Ravasi and Schultz, 2006; Schein, 2004; Scott and Lane, 2000). The beliefs and actions of managers influence how employees perceive and make sense of

organizational culture and how employees indentify with the organization (Hatch and Schultz, 2002; Prati et al., 2009; Ravasi and Schultz, 2006). The findings of this research agree with this assertion.

Lisa from ComTech, the U.S., had once worked as an expatriate manager at ComTech, China. She commented on the not-speaking-up work style of her Chinese colleagues. She exerted her influence as a manager to instill ComTech's organizational culture of openness and encouraged the voicing of different opinions during her management there. When asked about the effectiveness of her managerial intervention, she pointed out that the effect was localized and temporary. While she had a strong influence on her subordinates, they had various experiences when interacting with other employees outside her unit, which were under different managerial influences and were not consistent.

> Do they really adopt the culture of openness? Yes and no. I managed about 100 people. Within our unit, it took efforts of the management team as a whole. The senior managers practiced it on their subordinates. So we have a good culture in our unit. However, we dealt with so many other units in the organization. They might not have this kind of influence. When they stepped out our group, they had to revert back to the old ways. They might have to keep switching back and forth. That probably held them back from developing or changing. [Lisa, ComTech, the U.S.]

Chun from SerTech, China acknowledged that the project team or the function unit was the place where employees made sense of organizational culture. Hence employees' perceptions about the organizational culture mainly depend on whether or not and how the project managers or unit leaders integrate the core values in their management. Tan, a human resource manager working at SerTech, China, also asserted that it was critical to develop a highly qualified

management team because mangers were the mediators who should hold the values and convey the values to their employees and fellow team members.

> The penetration of high level values to low level units, or day-by-day work is very important. The company needs to take extra steps to make sure that local employees understand and see the values. Otherwise, these values would be nothing but slogans. How the managers manage the unit affects the culture of the unit. You experience the culture in your unit and your everyday work. That is where you get the messages. [SerTech] is a large company. You can speak about the culture, you can do training about the culture, but can you make sure that the culture is consistent at lower level? [Chun, SerTech, China]

The research findings show that employees' background is another factor that can affect the acculturation process of employees towards the organizational culture. It was pointed out by the participants that while the organizational culture of multi-national IT companies usually consists of a set of core values, the understanding and adoption of those cultural norms by local employees are related to their previous work experiences. For an example, Xia from ComTech, China suggested that some Chinese employees who only have had work experiences in domestic companies may have the most difficulties in adapting to the organizational culture of multinational companies such as ComTech. Garg and Ma (2005) pointed out that while Chinese owned and operated domestic companies have embraced some values of a capitalist system, their main managerial doctrines are deeply intertwined with the Confucianism philosophy and the socialist and communist political systems (Lewis, 2006; Lowe, 2003; Tang and Ward, 2003). Therefore, the organizational culture of many domestic Chinese companies remains an evident contrast to the organizational culture of those western based multinational companies.

> Technically, they are all experienced… [But] culture wise, you do see a difference. If they have worked for multinational companies before, they are closer to adapt [to our] culture. If they have worked for Taiwan companies before,

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they are probably a little distance away. If they have only worked for local companies, they are further out. [Xia, ComTech, China]

Several participants who had either learning and/or working experiences in Western countries such as the U.S. and Canada also indicated that such experiences helped them adapt to the organizational culture of ComTech and SerTech. Ankur from SerTech, India studied in the U.S. in early 1990s, and worked in different European countries for a period of time. He mentioned that in early 1990s when the IT industry was not as globalized as today and IT offshore outsourcing opportunities were limited, gaining these international experiences was a great asset that enabled him to contribute to the development and growth of SerTech facilities in India. As another example, Jing from SerTech, China, made a comparison between her and her collocated team members and suggested that because of her educational and working experiences in Canada, she had fewer difficulties than her colleagues with respect to communicating with American remote team members and adjusting to the corporate culture of SerTech.

> I stayed abroad for several years, so I don't think I have any big communication problems. For other team members, yes they might have some issues… From professional perspective, my educational and working experience in Canada has a significant impact on me. I learned the work style, problem solving, and culture from them. From personal life perspective, I am still very traditional. [Jing, SerTech, China]

5.2.4 Summary
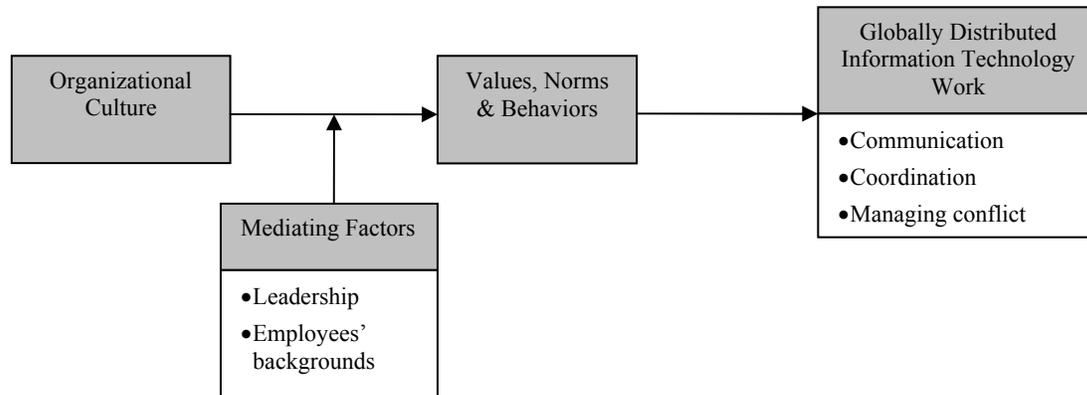
Figure 5.4:   The Influences of Organizational Culture on Globally Distributed Information Technology Work

Figure 5.4 summarizes the research findings of how the organizational cultures of ComTech and SerTech have impacts on their employees regarding values, norms, and work behaviors, and in turn affect globally distributed information technology work. ComTech's participants suggested three perspectives of ComTech's organizational culture: open, change, and regional separation. SerTech's participants described their organizational culture as global, diverse, and value alignment. The research findings indicate that some perspectives of the organizational culture can facilitate globally distributed information technology work. However, some perspectives of the organizational culture may become obstacles to collaborations that are across multiple sites in global IT work. In addition, it was found that the ways in which organizational cultures were perceived and adopted by employees were affected by the local leadership within teams or units and employees' background.

5.3 Other Cultural Influences

My research findings reveal two additional cultural influences on globally distributed information technology work, including the influences of regional culture and professional culture.

5.3.1 Regional Culture

A region in this research refers to a geographic area within a nation. A set of information systems literature has studied the relationships among information technology, regional culture, and regional economic development (Benner, 2002; D'Costa, 2006; Phillips, 2006; Saxenian, 1994, 2006; Trauth, 2000; Trauth et al., 2008a, 2008b; Zhao and Qian, 2008). These studies show that regional culture plays an important role in fostering an environment for adopting information technologies and developing high-tech industries, and thus in stimulating the growth of regional economies. Yet research is quite limited regarding the effects of regional culture on collaborations in globally distributed information technology work. This research reveals two findings that are relevant to the influences of regional culture.

5.3.1.1 The diversity of regional culture in India

The diversity of regional culture in India was referred to as a valuable asset by Indian IT professionals for them to draw on to make sense of and negotiate the cultural differences that emerged in their collaborations with global virtual team members. Panda and Gupta (2004) and other scholars (Das, 2002; Gupta and Wang, 2009; Messner, 2008; Craig Storti, 2007; Sinha, 2004) have asserted that: "India is a multilingual, multi-ethnic, multi-religious and multicultural society." (Panda and Gupta, 2004, p. 34)

Indian IT professionals pointed out that working collaboratively with people from different cultures was not a new challenge for them because they were born and raised in a diverse, multicultural environment. In their daily life, they interact with people who are from different regions of India, have different cultural heritages, and speak different mother tongues. They have developed the mindset of being open to differences and being flexible to changes. For example, Sania from SerTech, India, made a remark about the cultural diversity within India and why that was an advantage for them in cross-cultural global IT work.

> I think we have an advantage of being Indian. We experience different regional cultures anywhere we go. It is not unusual at all that we need to deal with multiple regional cultures all the times. [Sania, SerTech, India]

5.3.1.2 The urban culture of Shanghai

The second finding about regional culture is concerned with the local cultural context of Shanghai (China). Chinese IT professionals suggested that the urban culture of Shanghai is outward-oriented and bears the characteristics of a world's city, which has a positive impact on their global IT work (Sun and Chen, 2007).

Shanghai has been named as the economic capital of China (compared to Beijing as the political capital of China). It is suggested in the literature that the modern industrial development of Shanghai began as early as the late 19th century, following the incursion of Western settlements and the signing of Treaty of Nanjing (Sun and Chen, 2007; Wu, 2004). Shanghai quickly flourished to become the Chinese center of commerce, which was partly enabled by two factors: its important port location for trade and its local tradition of easy acceptance to outsiders (Wu, 2004). Since the 1990s, as a result of Chinese socioeconomic reform and the open door

policy, Shanghai has grown to become one of the world's centers of commerce (Gamble, 2003; Gupta and Wang, 2009; Sun and Chen, 2007; Wu, 2004). Scholars argue that the urban culture of Shanghai helps shape the pattern of accelerating economic growth and Shanghai's urban culture in turn has been transformed by the economic development and globalization (Sun and Chen, 2007). As a result, today's urban culture of Shanghai is a hybrid of Chinese traditional culture and Western commercial culture (Gamble, 2003; Sun and Chen, 2007; Wu, 2004).

Several Chinese IT professionals spoke about Shanghai being an international city and the center for multinational companies, and, as a result, being the gathering place of people from all over the world. It provides abundant opportunities for them to interact with people from many different countries and regions and to learn about different cultures. Xia from ComTech, China, pointed out that, like New York City, Shanghai is also a melting pot where east meets west and tradition meets modernization. Peng from SerTech, China, mentioned that living in Shanghai; one could notice the influences of Western culture (in particular the American culture) almost everywhere, such as food, music, Hollywood movies, sports, brand name fashions, etc. Jing from SerTech, China, mentioned that she felt a cultural shock when she returned to Shanghai after living in Canada for several years.

> Shanghai has changed a lot. It is truly an international city. Anything you can buy in Canada or America, you can find it here, probably a lot more. I felt that the work style in Canada is more relaxed than here. Here in Shanghai, the rhythm is even faster. It is more energetic and has more opportunities. [Jing, SerTech, China]

During my onsite visits to ComTech and SerTech in Shanghai, I was impressed to learn that all the Chinese IT professionals I interviewed had an English first name. Zhao from SerTech, China commented that the use of English first names made it easier to for their

American colleagues to interact with Chinese team members because it was difficult to pronounce and remember Chinese first names. During my conversations with my friends in Shanghai, I came to know that having English first names is not limited to people who work for multinational companies. In Shanghai, many people of the younger generation have an English first name and use it frequently. This is another illustration of the urban culture of Shanghai being outward-oriented.

5.3.2 Professional Culture

A professional culture refers to the shared, occupational values and beliefs of a specific occupation or profession (Dafoulas and Macaulay, 2001; Sirmon and Lane, 2004). The granularity of occupational classification can be broad or refined. At a very broad level, those professions that are related to information technology (hardware, software, or systems) design, development, implementation, maintenance, and management can all be classified as one information technology profession. At a refined level, IT project teams usually consist of people with different IT expertise that can be categorized into different IT professional groups (i.e. project manager, system analyst, software engineer, etc.). (Dafoulas and Macaulay, 2001)

In this research, two themes were identified regarding the influences of professional culture. First, at a refined level, it was noted by some participants that the work styles of team members were different because of their occupations. Second, at a relatively broader level, some participants from SerTech suggested that the cultural differences between research and production affected the collaborations between research personnel and production personnel.

Several participants commented about the differences in team members' work styles as a result of their specific IT professions. For an example, Peng was a project manager working at

SerTech, China. He had been involved in a systems development project for two years, working closely with a project manager, a development team leader, and a testing team leader in the U.S. via face-to-face meetings, emails, and weekly teleconferences. He described his experiences of interacting with these three virtual team members with different professional backgrounds.

> For example, the testing team leader is very focused on details and is not very process orientated…The project manager is strongly process oriented…The development team leader does not care about schedule, resource and cost. As far as you solve the problem, he is happy…In the meeting, he is more excited about technical issues, not on detailed codes. The project leader is very sensitive to the process. You have to provide him documents and version control, updating and giving him feedbacks regularly…The test team leader is very strict, and very critical, on every line of code, like "picking bones out of egg". Everything needs to be perfect for him. [Peng, SerTech, China]

Peng pointed out that in addition to being aware of the cross-cultural differences at a higher level (i.e. societal level), it is also important to understand and pay attention to nuances in practice, such as understanding different work cultures and styles of different systems development professionals. He mentioned that, as a project manager himself, he had the responsibility to make sure that members in his co-located team were also aware of these nuances and were prepared for handling the potential conflicts.

Among the thirteen participants I interviewed at SerTech, the U.S., seven of them worked in the area of IT research and development (R&D). Some projects they were involved in included internal SerTech employees from both research and production areas. Several of these researchers suggested that usually at the beginning of such a joint project, it was difficult to set an agreed-upon project scope and plan because of the cultural differences between research and production. In particular, the researchers were interested in an open-ended exploration while the practitioners preferred a structured investigation. While the researchers intended to achieve both

business impacts and scientific impacts, the practitioners preferred to focus only on the business impacts.

Eric (SerTech, the U.S.) had recently worked on a research project that involved research staff from America and Europe and IT service delivery professionals from India and Europe. The remote team members in the project had no prior history of working with each other. At the beginning of the project, the team primarily relied on virtual communications to discuss the project objectives and develop a project plan. However, there was a divide within the team with the research staff on the one side and the practitioners on the other side. These two sides had task related divergence with respect to project goals, approaches, deliverables, measurements, and schedules. The team had a lot of difficulties in resolving the disagreements. That led to various relationship issues such as mistrust and relationship conflict that impacted team cohesiveness. Eric mentioned that after several months of little progress, they decided to have a face-to-face meeting. The core team members of the project met face-to-face for a week. During the face-to-face meeting, not only did they work on discussing the differences and resolving the conflicts, but they also developed personal bonding and improved relationships. At the end of this meeting, they successfully developed a project plan that had incremental, short-term deliverables and a set of semi-structured goals that aimed at building a long-term capacity and were open for exploration. The personal bonding they developed in the face-to-face meeting also facilitated virtual communications afterwards.

> Based on my working experience in the research domain for past two and half years, I think the cultural differences between research and [production] are really wide, [such as] different objectives, incentive structures and work styles. In some cases, these differences are more notable and profound than cross-cultural differences between the U.S. and other countries. We have tensions because of different views about what our goals and approached should be… Research is less

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structured. Our colleagues on the production side want to have concrete deliverables, objective measurements, and defined milestones. So there are naturally some tensions. These are two very different cultures… One way we resolved that was to go from virtual teleconference to meet face-to-face. In this particular project, that was exactly what we did, bringing the core team members together for a week long working session, where we got to know each other at personal level, and we talked about differences in our expectations and tried to resolve these. [Eric, SerTech, the U.S.]

5.4 Chapter Summary

Regarding how cultural factors affect globally distributed information technology work, the findings of this research show that cultural influences at the societal level, organizational level, regional level, and professional level can affect the process of globally distributed information technology work.

At the societal level, the national cultural differences in the value system, hierarchical structure, relationship orientation, perception of time, and perception of social obligation has influences on values, norms, and behaviors of global virtual team members. In turn, these differences affected the process of globally distributed information technology work, such as face-to-face interaction, virtual communication, project coordination, and relationships. Furthermore, it was found that other socio-cultural factors also had an influence. These factors include time-zone differences, infrastructure, education, and competitive environment.

At the organizational level, it was found that global virtual team members were influenced by the culture of the company that they worked for. The participants from ComTech articulated three features of ComTech's organizational culture. And the participants from SerTech highlighted three aspects of SerTech's organizational culture. Some aspects of organizational culture were beneficial for globally distributed information technology work

while some aspects might have a negative impact. In addition, leadership and employee's background were found to have mediating effects on how global virtual team members perceived and adopted the organizational culture.

At the regional level, it was found that the diversity of India's regional culture was perceived as a valuable asset by Indian IT professionals that facilitated their cross-cultural collaborations with global virtual team members. It was also found that the outward-oriented urban culture of Shanghai had positive influences on Chinese IT professional in this study. At the professional level, the findings of this study indicated that members of a project team might have different work styles as a result of differences in their professional cultures. These differences could affect the progress of global IT projects.

This research identified multiple cultural factors at different levels that played roles in globally distributed information technology work. The research findings suggested that the influences of cultural factors were dynamic and were intertwined with other socio-cultural factors to have an impact on global IT collaborations. These findings substantiate the situating culture theory because they indicate the importance and strength of viewing culture as a locally based phenomenon (Weisinger and Trauth, 2002, 2003), and interpretatively exploring the relationship between the local cultural context and the subject under investigation (i.e. in this study the subject under investigation is the globally distributed information technology work).

Chapter 6: Identity and Cultural Negotiation Strategy

This chapter presents the research findings about the ways in which global virtual team members constructed their identities and negotiate the cultural differences that they experienced in globally distributed information technology work. In this study, identity is defined as a person's sense of self, in another word, how we think about ourselves (Gudykunst and Kim, 2003). Social identity is a part of one's identity resulting from a sense of belonging to certain social groups, such as nations, ethnic groups, and organizations (Gudykunst and Kim, 2003; Levina and Kane, 2009). Influenced by the complex socio-cultural contexts of global IT work, the ways in which global IT professionals construct their identities are dynamic. The findings show that informants of this research mainly drew on four sources to construct their identities in negotiating cultural differences. These four sources are national identity, organizational identity, individual identity, and power identity.

6.1 Country Profiles of the Participants

As the IT industry becomes increasingly global, so does the IT workforce. Among the 44 interviewees participated in this research, ten interviewees worked in a country that was different from their original nationality. In particular, eight out of sixteen interviewees (50%) whom I interviewed in the U.S. were born and educated in other countries, mainly in India and China. Table 6.1 shows the country of work and the country of origin of these 44 participants.

When I discuss the findings related to national identity in this chapter, the term "national identity" refers to the identity associated with the participants' country of origin. Among the ten

participants who had a mixed country profile, all of them were born and educated in their country of origin. Some of them moved to another country after age of 20 to pursue advanced graduate degrees and then settled to work there. Some of them moved to another country because of good work opportunities or job demands. These ten participants primarily drew on the influences of their country of origin when they discussed how they interpreted and managed the cultural differences at the national level. At the same time, they acknowledged the effects of their individual experiences in their current country of work.

Table 6.1:   Country Profiles of the Participants: Country of Work & Country of Origin

Country of Work	Country of Origin			
	U.S.	India	China	Others[6]
U.S. (16)	8	*3*	*4*	*1 (Europe)*
India (16)	0	15	0	*1 (Europe)*
China (12)	0	0	11	*1 (East Asia)*
Sub-totals	8	18	15	3
Totals	44			

In addition, there are several participants who worked in the same country of their origin, but had extended experiences in a foreign country. For example, Jing from SerTech was born and educated in China. She went to North America to attend graduate school and worked in there for several years before she returned to China and started working for SerTech. Rohit from SerTech had similar experiences. He was born and educated in India, received a Ph.D. degree in the U.S., worked in the U.S., and returned to work in India. Table 6.2 shows the country of work

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[6] The use of large region instead of specific country here is to ensure the confidentiality of the participants' identity.

and the country of extended experiences of the participants. Those participants who had different countries of work and origin are also included in this table because they had extended experiences in another country. This table shows that, other than those ten participants with mixed country profiles (i.e. different country of work and country of origin), there are six other participants who had extended cultural experiences in another country.

Table 6.2: **Country Profiles of the Participants: Country of Work & Country of Extended Experiences**

Country of Work	Country of Extended Experience (Including the Country of Origin)			
	U.S.	India	China	Others
U.S. (16)	—	3	4	1 (Europe)
India (16)	*3*	—	0	1 (Europe)
China (12)	*1*	0	—	1 (East Asia) *1 (North America)* *1 (Europe)*

As the IT workforce becomes increasingly global, it is important to examine how global virtual team members are affected by a variety of cultural influences, such as their countries of work and origin and countries in which they had extended experiences.

6.2 National Identity

National identity refers to one's sense of belonging to a particular country or societal culture. During the process of articulating how cultural factors affect globally distributed information technology work, all the research participants drew on their country of origin to define the national identity and seek relevant cultural influences. On the one hand, they exploited

the influences of national cultures in their interactions with other global virtual team members and acknowledged the behavioral differences in communication, coordination, and other work styles. On the other hand, they highlighted some unique characteristics of their national cultures that can be leveraged, in order to bridge, adapt, or integrate cultural differences, and develop a common ground. Figure 6.1 shows that while all the participants affirmed their national identity by acknowledging the cultural differences; about half of the participants further identified unique characteristics within their cultures that empowered them to manage cross-cultural or multi-cultural interactions in their work.
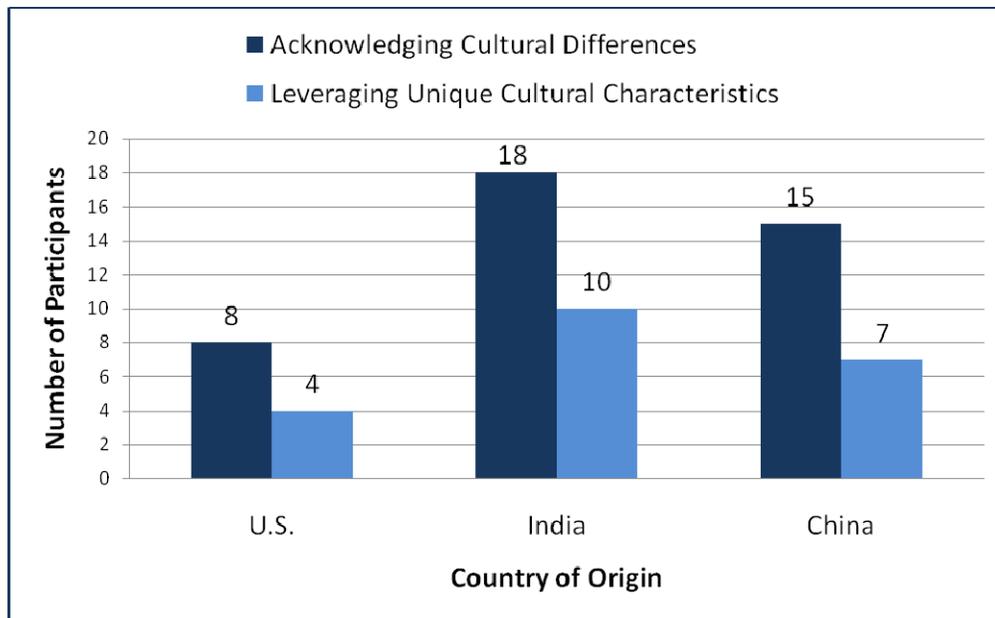

Figure 6.1:   National Identity

6.2.1 Acknowledging Cultural Differences

In this research, all the participants (from China, India, and the U.S. by country of origin) acknowledged the influences of national culture on their values and behaviors. Such acknowledgements sometimes were manifested in their descriptions and articulations of behavioral differences among global virtual team members. For example, Jack (from the U.S.) suggested that he was used to an open and direct communication style, influenced by his American backgrounds. Sometimes he felt frustrated when he gave talks in Asian countries and no one in the audience raised any questions. During one project in which he worked with several colleagues in India, his Indian colleagues were upset about some work arrangements but he was unaware of it until another colleague called his attention to it.

> The misunderstanding was just about small things… It might help that [Matt][7] being there and had some Western perspectives. I remembered him calling up and saying that the other guys were upset about something. So he contacted me and wanted to let me know… I was surprised they felt that they could not come to me about that… I think us, American are much more open about that, sometimes, probably too much though. [Jack, SerTech, the U.S.]

Sometimes the participants explicitly expressed how their identities were shaped by their country of origin. For example, Sunil was a senior program architect working at SerTech in the U.S. He and his family have lived in the U.S. for more than twenty years. He stressed that his Indian heritage was deeply ingrained as a part of his identity.

> I have spent half of my life in India. I have spent about half here. They are both significant pieces. I believe in the cultural values and family values, which my

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[7] Matt is a pseudo name. He was from Europe and worked on the same project with Jack. He was stationed in India at that time.

parents, my society, and my country give to me. I respect that. While I have been here for long, I still practice my worship. [Sunil, SerTech, the U.S.]

Xia was a director working for ComTech, China. She got a Ph.D. degree in the U.S. and had worked in the U.S. in both the academic and the industrial fields. While she emphasized that she learned many valuable lessons from these experiences, she asserted that:

Being a Chinese, that is my cultural identity. It doesn't matter how long I have stayed in the U.S. I am never going to lose that and I don't want to lose that. There are a lot of things about Chinese culture that I am proud of. I think we just need to work on some of the gaps that we have. Studying and working in the U.S., it did open up my mind, such as some different ways of thinking and doing things. I learned that in the U.S. To me, I am still a Chinese. There is something in me that am never going to change. But you can learn the best from different cultures or nations. For example, I have certain ways of delivering message. It is direct, but it is still kind of protecting people's feelings. I think that is a benefit of my mixed backgrounds. [Xia, ComTech, China]

Affirming the national cultural identity and acknowledging the cultural differences help to build a foundation for global virtual team members to articulate the differences that are brought about by different national cultures. The development of such a foundation is essential to fostering the awareness of cultural diversity, in which one's own culture is experienced as one of many different worldviews (Bennett, 1986; Lusting and Koester, 2003). It is based on the awareness of cultural variations that leads to openness to cultural diversity, acceptance of and respect for cultural differences (Earley and Mosakowski, 2004a; Shokef and Erez, 2006).

6.2.2 Leveraging Unique Socio-Cultural Characteristics

Acknowledging cultural differences is one manifestation of IT professionals reinforcing their national identities. Another important manifestation is that IT professionals also actively

exploited some unique characteristics of their cultures, which they felt enabled them to be open, inclusive, or to adapt to other cultures.

What American IT professionals highlighted was that America is a country like a melting-pot. They suggested that Americans, including themselves, are immigrants or descendants of immigrants from all over the world. These immigrants have brought their diverse cultural heritages into America. They believed that, as a result, openness was a unique characteristic of American culture and that also was the attitude and strategy that they held when they interacted with colleagues and clients from different countries. Jack, an American IT professional working at SerTech, commented:

> We are very open because we are a nation of immigrants, and many of them are recent. [Jack, SerTech, the U.S.]

Indian IT professionals commonly emphasized that the fact of India being a very diverse country helped to prepare them to interact with different cultures in the world. India is a multi-ethnic, multicultural, and multilingual society. As previously discussed in Chapters 4 and 5, in India, different regions have different cultural heritages that have a great impact on the people living there (Das, 2002; Panda and Gupta, 2004; Sinha, 2004). Some Indian IT professionals pointed out that, in their everyday living, they interacted with people from different local cultural backgrounds. These experiences transcended to the workplace and empowered them to be open, flexible, and adaptive to different foreign cultures. For example, Arul, an Indian developer working at SerTech, asserted that:

> Within India itself, people look different, speak differently, and eat differently. We also have different value systems… We have to make adjustment all the time

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when we do business in India. This comes across. We are very open. We have the
ability to adapt. Our own backgrounds in India grant that. [Arul, SerTech, India]

Furthermore, several Indian participants talked about the historical influences of British
colonization in India, which impacted the political and educational systems of India and induced
Western cultural influences into Indian society as well. They suggested that, compared to other
Asian countries such as China, India had advantages of doing business with English speaking
countries and with countries influenced by Western value systems. However, such advantages
could turn into disadvantages when they interacted with customers from some non-English
speaking, Eastern countries such as Japan, where China would have more advantages.

There is a good mix of cultures in Indian society. I think we are pretty much
blended with respect to the Western world and the Eastern world. But I would
admit that we are still not so comfortable with some Eastern, non-English
speaking countries. [Shilpa, SerTech, India]

With respect to China, Chinese IT professionals stressed the influences of Confucian
philosophy on Chinese society. In particular, they highlighted that the cultural values of
respecting others, accepting differences, and a desire for harmony laid the foundation for them to
work with global virtual team members. The Confucian philosophy emphasizes a mutual respect
by saying "never impose on others what you would not choose for yourself". Chun, a Chinese
developer, claimed that:

We are a respectful society. We will not pick up on others just because there are
some differences, be it cultural or other differences. [Chun, SerTech, China]

Scholars point out that the "harmony" in Confucian philosophy is not equal to "homogeneity" or "sameness" (Kirkbride, et al., 1991; Ames, 1998; Leung, et al., 2002; Hooker, 2003; Tjosvold, et al., 2005). Leung et al. (2002) argue that harmony in Confucianism is not about avoiding confrontations and arriving at a uniform view. Instead, in Confucius philosophy, to reach harmony as a whole is to reconcile the differences and make the most of the strengths of each part, in order to pursue mutual benefits under cooperative goals (Ames, 1998; Leung, et al., 2002; Tjosvold, et al., 2005). Several Chinese participants of this study suggested they were open and direct with work related concerns, but they would be relatively contained towards relationship related issues. This indicates that they would adopt a collaborative style to manage task conflicts and an accommodation or compromise style to manage relationship conflicts (Montoya-Weiss et al., 2001; Griffith et al., 2003; Gudykunst and Kim, 2003; Paul et al., 2004; Hinds and Mortensen, 2005). For example, Hong, a Chinese IT professional, described her approaches to different types of conflicts.

> If it is related to work or if I have concerns about the work schedule and the project, I will be open and direct. But if you ask me whether I have any opinions about other issues, I probably will hold my thoughts and opinions. [Hong, SerTech, China]

Another unique socio-cultural characteristic highlighted by both Chinese and Indian participants is that they have plenty of talented, young IT professionals who are eager to learn. They believed that such human capital is the biggest asset or advantage for China and India to compete in global IT market in the future. Several Indian IT professionals (for example, Karthik) commented that knowledge and education are highly valued in Indian society and as a result there are a large number of engineer graduates with solid technical skill training available each

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year in India. Several participants in China (for example, Chun) argued that it is important for Chinese IT professionals to utilize the opportunities of global IT offshore outsourcing to learn new techniques, accumulate knowledge, and gain more experience, which can facilitate the development of the Chinese software industry and increase China's competitiveness in global IT market.

> What unique here is the abundance of talents… There is a huge amount of talents. They have solid skill education such as doing multiply by hand without using a calculator. Knowledge is considered as a gift. [Our] respect knowledge is culturally engrained. [Karthik, SerTech, India]

> We are smart. But we are in the developing stage. We need to gradually accumulate our knowledge and build up our competency in the learning process. [Chun, SerTech, China]

6.3 Organizational Identity

Organizational identity refers to one's sense of belongingness to an organization (Puusa and Tolvanen, 2006). Among six participants from ComTech, two participants articulated their sense of belonging to ComTech and how ComTech's organizational culture impacted their global virtual work. Among the 38 participants from SerTech, twenty participants acknowledged the influences of SerTech's organizational culture on their interactions and collaborations with the global virtual team members.

6.3.1 ComTech

Two of ComTech's participants (out of six) openly discussed the impact of ComTech's organizational cultural on their global IT work, Ashwin and Xia.

Ashwin was a program manager who worked at ComTech, India. He was born in and grew up in India. He received a graduate degree in the U.S. and then returned to India to work for ComTech. He suggested that the corporate culture of ComTech had the most impact on him, with comparison to other cultural influences including the Indian and American societal cultures. He mentioned that ComTech as a global company was all about change and prompt adaptation to changes; as a result, he learned a lot of valuable lessons.

> I think out of all the three [Indian societal culture, American societal culture, and organizational culture], the corporate culture has the most impacts on me…… The culture of [ComTech] has a lot of bearings on how I do things and how I would react to cultural differences. One of the key things in [ComTech] is change. You need to quickly adapt to changes. We keep changing on a daily basis. So [ComTech's] culture is about change. It is change driven. The flip side is that some people cannot handle the pressure of [ComTech]. The good thing is that the things you could learn and the opportunity you may have at [ComTech]. Things I have learned from [ComTech] in one year, I may need to spend a couple of more years to learn those in some other companies. [Ashwin, ComTech, India]

In the case of Ashwin, his strong identification with ComTech might be attributed to that he started working for ComTech right after he got a graduate degree. Therefore, ComTech was the first and only company that he had worked for. In addition, he was promoted and appointed to a manager position very quickly at young age.

Xia was a director who worked at ComTech, China. She is of Chinese nationality, got a Ph.D. degree in the U.S., and had work experiences in the U.S. She had worked at ComTech for more than a year when the interview was conducted. She mentioned that she was still learning about the culture of ComTech. She thought the openness of ComTech culture had positive impacts on cross-cultural communication because it fostered an open environment for expressing differences.

I am still learning it myself. ComTech is a very open company, very direct, not much hidden agendas. The organizational culture encourages speak-up and raising different opinions. The communication style is very open. [Xia, ComTech, China]

In the case of Xia, her identification with ComTech might be attributed to her position in the company and her working experience. Xia held a high level management position in ComTech, China. Even though she had only worked for ComTech for more than a year when I interviewed her, Xia had a very diverse working experience including entrepreneur companies, small and middle sized companies, as well as large multinational companies. During the interview, she compared ComTech with other companies that she had previously worked with and spoke highly about the value of openness in the organizational culture of ComTech.

6.3.2 SerTech

The participants from SerTech spoke highly about the global and diverse aspects of SerTech. They indicated that the global and diverse aspects of SerTech provided to them a wide variety of learning opportunities. At SerTech, they had opportunities to interact with colleagues and customers from different countries and ethnic backgrounds. It was through these learning opportunities that they gained the experiences and developed the skills to manage the cultural differences they encountered in their global IT work. They emphasized that these learning opportunities were not only beneficial to their work, but also helped their personal career development.

Sania stated that she had worked for an Indian company and another western based multinational company before she joined SerTech. She compared her experiences with these

three companies, and pointed out that she appreciated her SerTech experiences more than the others because SerTech truly valued diversity.

> Once I came to [SerTech], the [SerTech] culture definitely influences me a lot. [SerTech] has this focus on diversity, creating diversity workforce, and how to deal with diversity. And all the management training is excellent. They create opportunities of working with people from so many different parts of the world. [Sania, SerTech, India]

Ankur had worked for SerTech for ten years. He mentioned that during those ten years, he was assigned to work in United Kingdom, Germany, and America for various periods of time. His most recent job responsibility was mainly to work with colleagues and customers in the U.S. Ankur pointed out that he learned a great deal through these assignments and projects, understanding and becoming more aware of what cultural differences might exist and how to handle the differences. He stressed that, more importantly, these experiences helped him develop the attitude and strategy of being open, sensitive, and adaptive to differences.

> [SerTech] is a good example of truly globalized companies. I have been with [SerTech] for ten years… [SerTech] has a history of valuing diversity. Diversity has been a focus of [SerTech] a longtime, [such as] gender diversity and culture diversity. We look like our customers. If we as a company don't look like customers, the customers will not hire us. [Ankur, SerTech, India]

Hong worked for SerTech, China. This was her first job after graduating from college. She mentioned that she had friends working for other multinational companies or state-owned Chinese companies, and they talked about their working experiences often. Hong indicated that working for SerTech provided her with many different learning opportunities.

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As a new college graduate, [SerTech] culture affects me a lot. I think it is better to work for a global company like [SerTech]. You will learn a lot through work, such as work styles, professionalism, and how to deal with differences. Unlike some state-run Chinese companies, you may have limited opportunity and exposure. Their culture and style is very different. [Hong, SerTech, China]

With respect to diversity, several female IT professionals specifically talked about SerTech's efforts to increase women's participation in the company, and how such efforts helped their career development. As a result, they had a strong sense of belonging to the company. For example, Tabu suggested that SerTech had put a lot of emphasis on developing and retaining women employees, such as options for employees to work at home or work part time.

I got to learn a lot here. [SerTech] encourages and provides a lot of opportunities for women to work. There are a lot of policies to support women employees. We have programs to recruit, develop, and retain women… Sometime ladies tend to stay back because family is more important to them. If you have children and if you don't have a support system at home, then it is impossible to work. [SerTech] is trying very hard. We have mobile office option so you can work at home. Or you may have the option for to work halftime… There are a lot of women involvements. [SerTech] is really taking a lot of steps forward. [Tabu, SerTech, India]

It was found that in SerTech, there was a larger percentage of participants in India articulating and expressing their sense of belonging to the company than those of participants in the U.S. and China. Figure 6.2 illustrates the percentages of SerTech participants who enacted their organizational identity in the U.S., India, and China. Six out thirteen participants (46.2%) from SerTech, the U.S., recognized the important influences of the organizational culture on their work. In India, eleven out of fifteen SerTech participants (73.3%) expressed their sense of belonging to the company. While in China, four out of ten SerTech participants (40%) acknowledged similar affiliations.

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SerTech has invested a significant amount of money and resources in developing and expanding their development and delivery capacity in India. Currently, India is SerTech's largest development and services delivery base outside the U.S. They do not only support SerTech's customers worldwide, recently they also won several large outsourcing contracts from large Indian companies. During the interviews, many SerTech IT professionals in India shared a strong sense of pride that they were at the central stage of SerTech development plan and that their work greatly contributed to capacity development and growth of the company. At the same time, the company also constantly acknowledged the important roles of SerTech, India. These factors helped to strengthen the employee's identification and affiliation with the company.
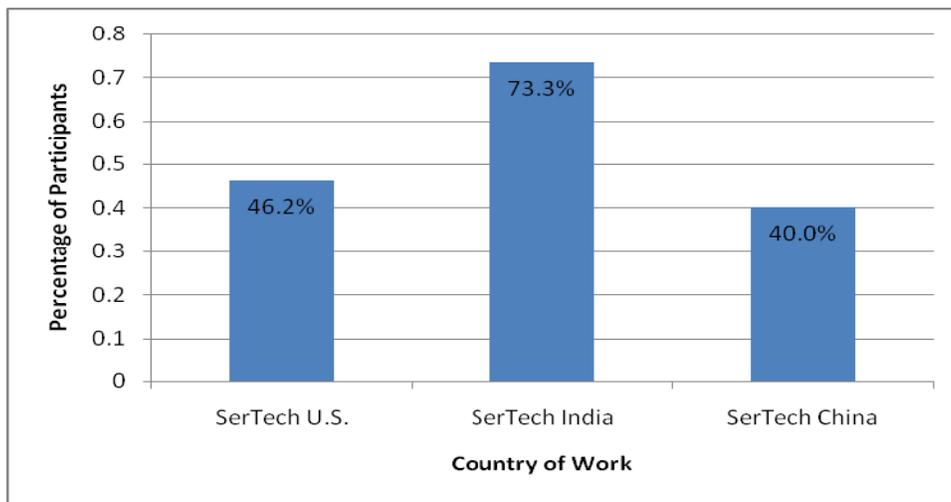

Figure 6.2:   Comparison of Organizational Identity Among SerTech's Employees

6.4 Individual Identity

Individual identity in this study refers to the participants drawing on their personal experiences as sources that facilitate them in managing cross-cultural differences at work. One

major source of personal experience was studying or working in another country for an extended period of time. Among the sixteen IT professionals I interviewed in the U.S., eight participants were born in and grew up in another country, including three from India, four from China, and one from Europe (see Table 6.1). Among the sixteen IT professionals I interviewed in India, three participants had studied or/and worked in the U.S. for an extended period of time (see Table 6.2). Among the twelve IT professionals I interviewed in China, three participants had studied or/and worked in another country for an extended period of time (see Table 6.2).

All of these participants suggested that through their personal cross-cultural experiences, they developed appreciations for different cultures. Moreover, they learned the importance of being open and respectful when dealing with cross-cultural differences. Some of these participants pointed out that their understanding of two different cultures enabled them to bridge the cross-cultural differences between their collocated team members and the remote team members.

Jian worked for SerTech, the U.S. He was from China originally. During the interview, Jian spoke about his experience when he first came to America as a student. At the beginning, he had a lot of difficulties with language, which was a barrier to his communicating with others. In the classroom, he was surprised to see how open his American classmates were, because coming from a traditional Chinese background he was taught that being outspoken was disrespectful. Gradually he realized that encouraging different opinions and exploring different ideas was a good way of learning. Jian indicated that his approach to managing cross-cultural differences was a combination of these two influences, being respectful which he learned from his Chinese cultural background and being open which he learned from his American cultural experience.

Jian also talked about being able to utilize his cross-cultural experience and bilingual skills to resolve the differences between his collocated American team members and remote Chinese team member in some globally distributed IT projects. On the one hand, he explained to his collocated American team members why sometimes their Chinese colleagues were not responsive and outspoken. As a result, the American team members could be more considerate and patient about communication problems. On the other hand, he worked on building a trust relationship with the remote Chinese team members and encouraged them to openly express different ideas and concerns.

Chun worked for SerTech, China. She spent several years studying in Europe. Chun suggested that, influenced by her Chinese cultural background, she was always respectful of differences. However, she might not have been as open-minded if she had not had the opportunity to study abroad and interact with people from different European countries.

> When dealing with cross-cultural differences, I think my biggest asset is my cultural experiences in [Europe]. I had opportunities to meet with a lot of different people, Italian, English, French, German, etc. It made me more open and more tolerant. If I had not had such diverse experiences, I might be more short-sighted and narrow-minded. [Chun, SerTech, China]

Another source of individual experiences that were employed by the participants to construct their individual identity was family influence. Keith worked for SerTech, the U.S. His was a first generation of American family from Europe. Keith indicated that his parents taught him to be respectful of differences. He also talked about that while growing up in a neighborhood of Chicago, he had a lot of friends who came from different ethnic backgrounds. It was through those personal experiences that he learned about differences in multiple cultures.

I attribute to majority of that to growing up in Chicago, a very multicultural city. Growing up I had a lot of friends from many different countries. My experiences with different cultures taught me how to be respectful… My parents have also taught me to be very respectful. I am the first generation of [European]-American. It has a strong influence on me and how I interact with people. [Keith, SerTech, China]

Some IT professionals indicated that they were personally motivated to proactively explore and develop an understanding of different cultures. Ted was from Europe. At the beginning, he worked for SerTech, Europe. Then he moved to America, and also worked at SerTech. He was working at SerTech, India when I interviewed him. Ted mentioned that experiencing and learning about different cultures was exciting and rewarding for him.

I am motivated by being international. I think it is exciting. The world is our playground, to see and experience different cultures. That's what is driving me, went from Europe to America and from America to here. It is fascinating to observe different cultures and find out how things work differently in different cultures. It is quiet rewarding when you can break the code and start to understand the local culture. [Ted, SerTech, India]

6.5 Power Identity

The findings of this research indicate that some global IT professional drew on power relationships to construct their identity when handling cross-cultural differences. The dynamic of power is embedded in IT offshore outsourcing and globally distributed information technology work. The dyads of outsourcer-outsourcee, customer-service provider, and headquarter-subsidiary all entail certain degree of power dynamics. When there is a difference or conflict between the two parties of a power relationship, the party with less power usually complies with the party with more power. Figure 6.3 shows that one American IT professional (6.25%), eight

Indian IT professionals (50%), and three Chinese IT professionals (25%) acknowledged the influence of power relationships on their interactions with global virtual team members.
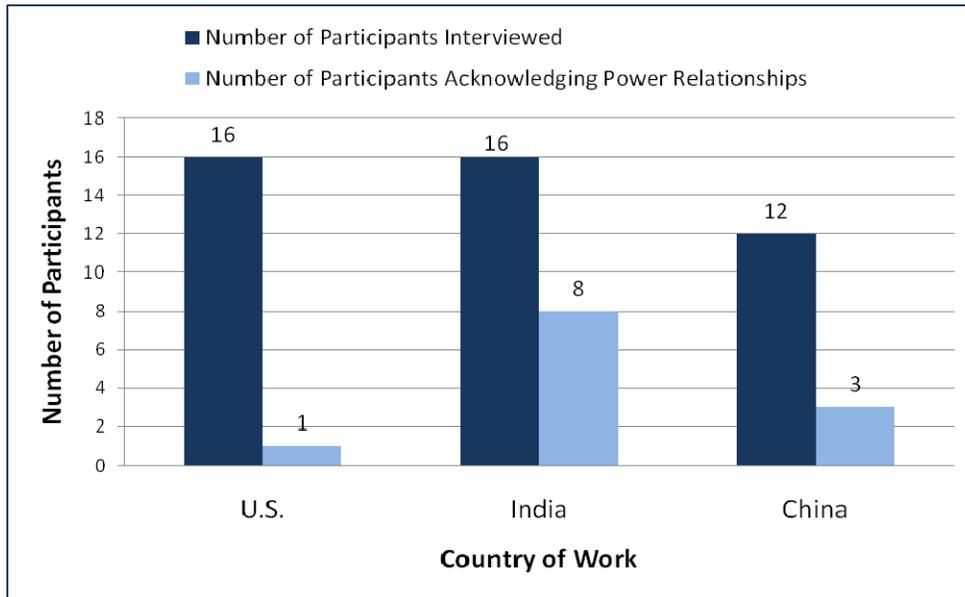
Figure 6.3:   Number of Participants Drawing on Power Identity

It was found that the participants mainly drew on three power identities. The first was the power relationship between the core team (i.e. onshore team) and its support teams (i.e. offshore teams). A core team is a part of a large project team that is in charge of or works closely with customers (onshore with customers), developing architecture and specifications, delegating the development work to the supporting teams and coordinating their development activities, integrating different system components, and delivering the finished products or services to customers. A support team is usually only in charge of part of the development work such coding or testing the codes. The participants suggested the teams in India and China usually played a

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supporting role in the globally distributed information technology projects to assist the core team in the U.S. or Europe. The core team was in the leadership role holding the resources and knowledge about the entire project. When such a power relationship came into play, the support team was the one that adapted to and complied with the core team.

> Those guys sitting in the U.S. are closer to the customers. Instead of equal relationship, you tend to have an uneven relationship. We are lacking ownership here. [Nazar, SerTech, India]

> The core team is our internal customer. They pay us. They cover our expense. They are the one holding the upper hand, relatively speaking. If we have conflicts, we are the side that needs to compromise. [Hong, SerTech, China]

Susan was a program director working at SerTech, the U.S. She managed a project team that was distributed across the U.S., Brazil, and India. Susan acknowledged that occasionally an "us" vs. "them" type of separation existed between the onshore team in the U.S. and offshore teams in Brazil and India. She suggested that one strategy her team implemented was to disseminate newsletters to the entire team, on which they put team members' pictures and shared the success stories by acknowledging all the contributing team members.

The second type was the power relationship between the outsourcer and its outsourcee. Some participants pointed out that a company's move to outsourcing usually was accompanied with people losing their jobs in that company. When they worked with employees in the client company to transfer knowledge, they might encounter reluctance. Sania (SerTech, India) suggested that as the outsourcee party of this power relationship, they needed to be extra sensitive to differences and conflicts.

Unfortunately the knowledge transfer usually means taking away someone's job from there. People lose their jobs because of outsourcing. It is a sensitive situation. We need to educate our employees to be extra sensitive. [Sania, SerTech, India]

The participants indicated that the power relationship between the outsourcer and outsourcee could lean towards either way. Sometimes the outsourcer had more power while sometimes the outsourcee had more power. Shilpa (SerTech, India) pointed out sometimes the client company was skeptical about outsourcing and did not trust people in India and China to do the job. The client company sometimes positioned itself in a superior role and demanded that the teams in India and China followed its orders. She suggested that it usually happened when the client had no prior experience in outsourcing work. As a result, the service delivering teams in India and China had to be more flexible and make compromises. Sania also suggested that usually the client company would readjust its position during the process when they received quality products or satisfactory services and developed a trust relationship with the vendor.

As soon as Indian or China is into the picture, or as soon as the word outsourcing is into the picture, some kind of superiority comes into the play: "I am the boss. You are the vendor. I tell what to do…" Most of the time, we do see that attitude from people who haven't dealt with outsourcing vendors before. They start with the attitude of superiority and want to call all the shots… However, once they see good results from us, they will change… So we need to anticipate some level of skepticism from the people who are doing it for the first time. We need to be more patient and flexible. [Shilpa, SerTech, India]

On the other hand, some participants argued that the outsourcee or the vender had more power over the client. Raj (SerTech, India) indicated that in some cases, the client companies chose to outsource because they did not have the expertise or necessary skills internally for the project, or they had to reduce costs. For these companies, outsourcing might be their best option.

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In those situations, the outsourcee or the vendor would have more power, and the client had to comply with the vendor.

> Sometimes they also have to adapt to us because we are cheap and we do a good job. Why with all the differences and challenges, people still come to India – to take the benefit of low cost delivery center, high quality job, and the availability of people. They need to learn how to work with us and adapt to us as well. [Raj, SerTech, India]

The third type was the power relationship between the customer and the service provider. Design and delivering IT services for customers is a major category of globally distributed information technology work, which is customer-centric and emphasizes customer satisfaction (Rust and Miu, 2006). The participants indicated that within this power relationship, the customer was the party with more power and they, as the service provider, had to satisfy the customer's needs.

> Customer cannot be expected to change or adapt your style. Customer is the king. So we need to take an extra step and adapt to them. [Sachin, SerTech, India]

> Why we talk to people in the U.S. in the midnight, not the other way around? It is because they are the customer. We have to adjust according to them, adapt to them. [Chun, SerTech, China]

Scholars point out that power dynamics are embedded in an outsourced relationship, resulting from different access to resources, such as economic, intellectual, social, and symbolic resources (Allen et al., 2002; Carlile, 2004; Nicholson et al., 2006; Levina and Vaast, 2008). According to Levina and Vaast (2008, p. 309), economic resources include money, time, and access to technology; intellectual resources include professional expertise, skill, knowledge, and

ownership of information; social resources refer to interpersonal or social networks of agents; and symbolic resources refer to other resources that agents can draw on such as social status and authority.

The three power dynamics identified in this study can be attributed to the uneven access to or share of available resources. The power relationship between the core team (or the onshore team) and its support teams emerges as the core team has more access to technology and monetary resources, has the ownership of project information and special knowledge and expertise (i.e. system analysis, architecture design, and system integration), and holds more social resources (i.e. close relationship with onshore customers) and symbolic resources (i.e. higher status and more authority). The power relationship between outsourcers (clients) and outsourcees (vendors) emerges because on the one hand the outsourcer has the ownership of domain knowledge (intellectual resources) and holds more economic capital and symbolic resources; on the other hand, the outsourcee has the professional expertise and skills (intellectual resources) and access to technology at a lower cost (economic resources). The power relationship between customers and service providers emerges as customers hold more symbolic resources.

The following quotes from Nada (SerTech, India), Raj (SerTech, India) and Hong (SerTech, China) illustrate the differential access to intellectual resources and symbolic resources between the onshore teams and offshore teams.

> To a large extent, most of the technical competence such as the architect piece and the solution piece is done onsite… The sophisticated skills are resident in those countries such as the U.S… They are taking a small piece and give it to India. We don't know how it influences other components. We don't have the visibility of the entire project. [Nada, SerTech, India]

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Our team is only one part of a big project… We only have limited knowledge of the whole project. We only know the part that is directly related to us. We don't know much about the design and development aspects. The team in US, they are collocated. They have more frequent weekly meetings. They have a clear picture about the project… They have all the information. However, we don't have clear ideas about the project. [Hong, SerTech, China]

If we want to show a global [SerTech], we need show that in actions various people coming to the same table, not just Americans selling and somebody else delivering. [Raj, SerTech, India]

The experience of working together on a global IT project as it relates to a power relationship can become an obstacle to effective collaborations and knowledge sharing between clients and venders, or between onshore teams and offshore teams (Levina and Vaast, 2008; Moteiro et al., 2007). Power dynamics may further widen the existing geographical, temporal, and cultural distances among globally distributed team members. Instead of attempting to integrate different perspectives into a synergy, global virtual team members who draw on power relationships might adopt a one-sided, compromising strategy when they negotiate and manage cultural differences.

6.6 Chapter Summary

This chapter addressed the ways in which global virtual team members construct their identity to negotiate cultural differences they experienced in their global IT work. Table 6.3 provides a summary of what sources were drawn on by global virtual team members to construct their identity when negotiating cultural differences, the manifestations (or the contents) of those identifications, and how they may impact cross-cultural negotiation and management.

This study identified four major sources that were employed by global IT professionals to construct their identity in globally distributed information technology work. These sources were national identity, organizational identity, individual identity, and power identity. This research finding corroborates both the social identity theory and the theory of situating culture. First, it confirms that during the process of globally distributed information technology work, global virtual team members actively enacted different influences to construct their identities. Second, it reinforces that cultural influences on globally distributed information technology work are complex. Third, it demonstrates that the relationships between the influences of the socio-cultural contexts and the agency of individuals are dynamic.

The findings of this research extended social identity theory by shedding light on in particular *how* global IT professionals constructed their identities when challenged by cultural differences in their work. When the participants articulated their national identity, not only did they acknowledge the differences in their national cultural backgrounds, but also they signified some unique characteristics in their national cultural backgrounds that facilitated the management of cross-cultural differences. Organizational identity was another major source utilized by the participants to construct their identity, which had positive influences on their cross-cultural IT work. The participants also placed values on their personal experiences and indicated that their prior cross-cultural experiences were beneficial to global IT work. Furthermore, the participants acknowledged the existence of power relationships in their global IT work.

Table 6.3:   Identity and Cross-Cultural Negotiation

Sources	Manifestations of Identity	Impact on Negotiating and Managing Cultural Differences
National Identity	• Acknowledging cultural differences	• Developing the awareness of cultural diversity • Building a foundation to articulate and negotiate cultural differences

	• Leveraging unique cultural characteristics
	  o America: consisting of people with diverse ethnic backgrounds
	  o India: a multi-ethnic, multicultural, and multilingual country
	  o China: Confucian philosophy valuing respecting others, accepting differences, and a desire for harmony
	  o China and India: full of young talents that are eager to learn
		• Being open to cultural differences
		• Being flexible and adaptive to cultural differences
		• Being respectful to cultural differences
		• Viewing cultural negotiation and management as a learning process

Organizational Identity	• ComTech
	  o Valuing change
	  o Valuing openness
		• Emphasizing adapting to differences and changes
		• Fostering an open environment

	• SerTech
	  o A truly global company
	  o Valuing diversity
		• Cultivating diversity as leaning opportunities for understanding and managing cultural differences
		• Enculturing the value of diversity
		• Strengthening organizational identification

Individual Identity	• Personal cross-cultural experiences as valuable assets • Individual driven and motivated to explore cultural differences	• Developing an understanding of cultural differences • Developing a strategy of being open to differences • Helping to bridge cultural differences
Power Identity	• Core team (onshore team) vs. Support team (offshore team) • Outsourcer vs. Outsourcee • Customer vs. Service Provider	• May widen the cultural differences • The party with less power compromising to party with more power

Chapter 7: Organizational Cross-cultural Management

The focus of this chapter is to discuss some managerial mechanisms implemented by the companies and how those mechanisms facilitated global virtual team members managing cross-cultural differences that they faced in the globally distributed information technology work. The findings reveal four themes that were relevant to organizational cross-cultural management: cross-cultural training, project managers, cultural liaisons, and the use of global delivery model.

7.1 Cross-Cultural Training

Earley and Ang (2003) develop the concept of cultural intelligence (CQ) and define it as an individual's capability to function and manage effectively in culturally diverse settings (Ang and Inkpen, 2008). They suggest that cultural intelligence has three major components, including cognitive CQ, behavior CQ, and motivational CQ (Earley and Ang, 2003). Cross-cultural training is a major managerial mechanism to prepare employees for global assignments and cross-cultural interactions (Fowler and Blohm, 2003; Fowler, 2006; Parkinson and Morley, 2006). In order to develop the three components of cultural intelligence, a well designed cross-cultural training program needs to achieve three main learning objectives (Fatehi, 2007; Gudykunst et al., 1996; Maletzky, 2007; Messner, 2008; Parkinson and Morley, 2006). The first objective targets the cognitive area and aims at developing an understanding or awareness of cultural differences and the particularities of other cultures such as values, norms, rituals, and behaviors. The second objective targets the affective area and aims at developing the attitude, motivation and competence towards proactively learning about and managing cultural

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differences. The third objective targets the behavioral area and aims at developing the ability and skills to manage the cross-cultural differences.

Cross-cultural training can be classified into four categories depending on whether the content of training is cultural specific or cultural general, and whether the training approach is didactic or experiential (Maletzky, 2007). Cross-cultural training can also utilize a variety of techniques such as lectures, case studies, critical incidents, simulations, and role playing, and different technologies such as videos and computer programs (Parkinson and Morley, 2006). Furthermore, cross-cultural training programs can be delivered in face-to-face settings or through the web.

7.1.1 Cross-Cultural Training at ComTech

The participants from ComTech pointed out that they did not receive any formal cross-cultural training even though cross-cultural training programs were available for those floor agents who provided virtual technical support to global customers. Among six participants from ComTech, three of them did not have comprehensive cross-cultural experiences before they were involved in global IT collaborations across different countries. These participants believed that it was important and would be very beneficial to have cross-cultural training prior to their assignments.

> We have training programs for agents that are very specific and formalized. We don't necessarily have robust training programs for the non-agent populations. None is there any cultural training for that matter. Nobody sit me down and say that you are going to deal with India, and this is what you should know or do. I sort learned that in a hard way. So there is definitely an opportunity for improvement. [Linda, ComTech, the U.S.]

Ashwin was a manager working at a ComTech's customer service center in India that mainly provided technical support to American customers. He mentioned that a newly hired floor agent would first go through a two-week orientation program, which included technical training, communication skills training, and cross-cultural training. The initial cross-cultural training was didactic and focused on the cognitive perspective by teaching agents what to expect when interacting with customers. They also provided agents with some developed scripts based on different scenarios so that the agents learned how to react to different situations. Ashwin suggested the initial training was by no means comprehensive. In addition to this two-week orientation program, the floor agents also received on-the-job coaching on an on-going basis. The coaches observed how agents interacted with customers, took actual incidents as training examples, and provided specific feedback to agents about how to improve their technical and non-technical skills. Therefore, the on-the-job training was experiential and addressed both the cognitive perspective and behavioral perspective. Furthermore, it as a common practice that the agents got together and talked about major and up-to-date news about what was happening in America before the shift.

7.1.2 Cross-Cultural Training at SerTech

SerTech had a global e-learning portal that consisted of more than 3000 web-based courses and training programs in order to provide a wide range of learning options to SerTech's employees worldwide. The multicultural training program called "the Color of SerTech" was co-developed by SerTech and a leading consultancy in global management development. This is a web-based training program. According to documentation, the design of "the Color of SerTech" was guided by two primary objectives: to improve individual manager's effectiveness in a

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globally diverse and complex environment; and to enhance SerTech's effectiveness as a diverse, global enterprise.

This multicultural training program has three characteristics. First, it is cultural-general training program. Instead of focusing on any country specific profile, it adopts a comprehensive model of culture by highlighting ten dimensions of potential cultural differences to provide a framework for exploring cultural differences and orientations. Second, the multicultural training program has both didactic and experiential components and utilizes different training techniques. According to the participants' descriptions and company's documentation, "the Color of SerTech" consists of four phases. In phase 1, the trainee begins the process by accessing the reviewing the online training materials, including the cultural orientation model, and establishing a personal cultural profile. In phase 2, the trainee uses the online multicultural simulator to examine and experience some real-world scenarios. In phase 3, the trainee attends an online, two-day learning lab that is moderated by facilitators. Drawing on the diverse human capital of SerTech, each training lab is organized to ensure that the participants are coming from multiple cultural backgrounds. Each attendee is required to bring a real-life problem or incident to the session and to discuss it with fellow participants who come from different cultural backgrounds, in order to get different perspectives. During the two-day event, the groups will be frequently changed in order to provide each participant an opportunity to examine multiple real-life issues, experience different cultural settings, and explore alternative ways to resolve those issues. Phase 4 is devoted to on-the-job learning. During phase 4, if a manager needs additional help when facing a new challenge, he or she can seek insights from facilitators via the online resources.

Third, this multicultural training program targets all three aspects of cultural intelligence, cognitive, motivational, and behavioral.

"The Color of SerTech" is a cultural general training program intended for improving managerial skills and developing multicultural leadership. It is not mandatory for managers at all levels and it is not available for non-managerial employees. Neither is it a pre-requisite for offshore team members working on the global IT projects. In addition to "the Color of SerTech", cultural specific training programs are also available. Those cultural-specific training programs are on-demand based and are specially developed according to the needs of large, long-term, global development and delivery projects.

While "the Color of SerTech" appeared to be a valuable resource for cross-cultural management, the research findings suggested that not all the participants of this study received the training and some of them were not even aware of its availability. Figure 7.1 shows the number of SerTech's participants who were aware of or had completed the cross-cultural training program in the U.S., India, and China. Among the thirteen IT professionals I interviewed at SerTech, U.S., nine people knew about the program and only one person received the training. Among the fifteen IT professionals I interviewed at SerTech, India, thirteen participants knew about the program and eight participants went through the training. Among the ten IT professionals I interviewed at SerTech, China, only two people were aware of the multicultural training program, and only one of them, Peng, took the training.

One reason that some participants were not aware of the multicultural training program might be that the program mainly targeted middle management. Another reason might be that some participants has just been hired at SerTech and had not had the chance to discover the

abundant learning resources SerTech had. Moreover, the SerTech site I visited in China was newly developed and the majority of IT professionals I interviewed was at junior positions and had only been with the company for one or two years. These might be reasons that quite a few of the participants in China did not know about the program.

Not many participants actually took the multi-cultural training program even though they were aware of it because the training was provided based on demand. The participants suggested that the training program was perceived as more important and needed by offshore teams that had a lot of direct interaction with external customers. The onshore teams in the U.S. and the offshore teams in China and India that did not directly interact with external customers usually would not receive the cross-cultural training.
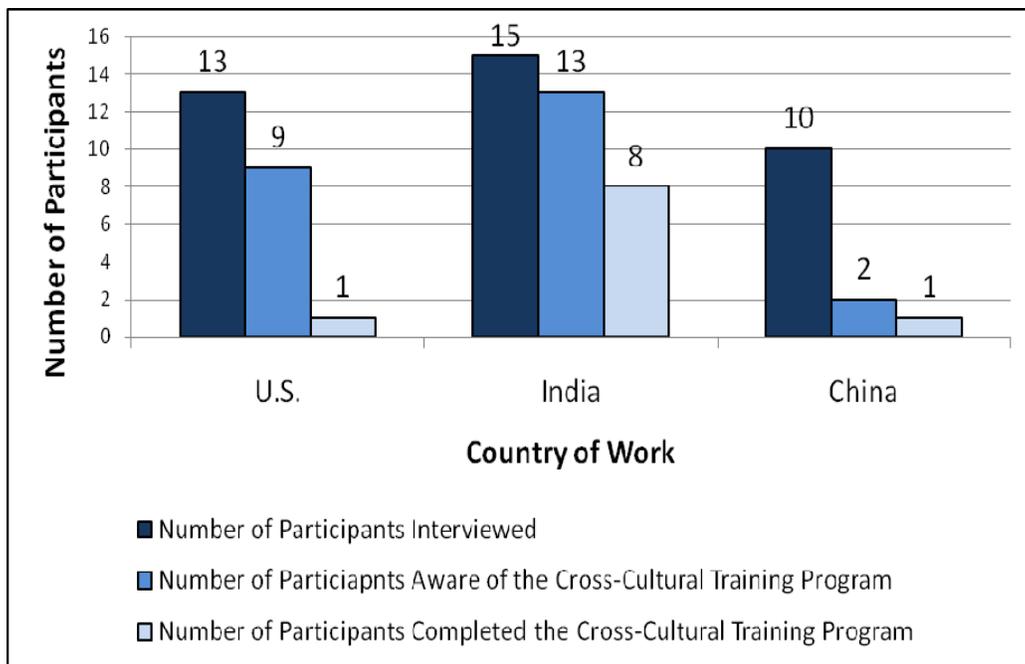

Figure 7.1:   Cross-Cultural Training at SerTech

On the one hand, the participants who took the training commented that the program was very informative and useful in terms of increasing the awareness (know-what) and providing general guidance (know-how). On the other hand, they also stressed the importance of on-the-job learning to experience the dynamics and nuances of cultural differences, and to gain and practice problem solving skills in real work settings.

It was suggested by the participants that SerTech could improve the cross-cultural training from the following perspectives. First, the company should make the program extensively available to non-managerial employees. Even though "the Color of SerTech" is an important part of company's intellectual capital, its advantages might not be fully exploited if such an intellectual capital is not closely connected to the company's human capital.

> Unfortunately it is only targeted at the manager level. It needs to go down. We should include this as a part of the orientation or introductory program. [Shilpa, SerTech, India]

Second, the company should make cross-cultural training a mandatory requirement for both onshore teams and offshore teams, and should provide training prior to a project (Treinen and Miller-Frost, 2006). Scholars have pointed out that cross-cultural training for global IT work should a be a two-way learning process because all sides of the partnership need to understand the existing differences, modify their work behaviors, and work together to turn the differences into a synergy (Krishna et al., 2004; Huang and Trauth, 2006). Tabu (SerTech, India) described an incident that happened during a global service development and delivery project that involved the customer team, the onshore team, and the offshore team in India. The onshore team worked with the customer onsite on developing the IT services. The offshore team worked in India to

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deliver the IT services virtually to the customer. None of the parties had cross-cultural training before the project. Half a year into the project, an audit team conducted an evaluation to assess the performance and service quality. They found that communication was the number one factor affecting customer satisfaction, and many communication issues existed because of cultural differences. It was only at that stage that cross-cultural training was provided to the teams. Therefore, it is also important to provide necessary cross-cultural training before a project starts.

> They should not wait for complaints and then start doing the training. They should make it mandatory. That will help to reduce a lot of problems. [Tabu, SerTech, India]

Third, it is important for management to systematically monitor the work process, identify the emerging issues related to cultural differences, and to provide on-the-job training (Foster, 2000; Krishna et al., 2004). Susan (SerTech, the U.S.) argued that cross-cultural management is part of "people" management. Many times, the managers might be caught up in managing the process and overlooked the need to manage people and ensure a smooth relationship among distributed team members. In cross-cultural training and learning practices, the company should allow global IT professionals to have opportunities to continuously reflect on their cultural experiences in the course of accomplishing working processes and encourage them to take such reflections as learning opportunities (Huang and Trauth, 2006).

> The cross-cultural training program is useful. However, the training should not be one-time event. What we should do is to touch base after six months or so: discuss how we are doing, what we have experienced, and what the difficulties are; share what actions you took that have helped you; share your experiences and thoughts with the team; take a moment to look back; focus on "people" issues to keep the relationships smooth. [Susan, SerTech, the U.S.]

7.2 The Role of Project Manager

Project manager plays an important role in managing cultural differences, developing and maintaining a collaborative work relationship among distributed members, and ensuring the overall success of the globally distributed information technology work (Carmel and Tjia, 2005; Cummings, 2007; Sahay et al., 2003; Weisband, 2007). Unlike collated information technology work, a number of discontinuities or boundaries may exist in globally distributed information technology work, such as geographical distance, temporal distance, cultural distance, customer/service provider, onshore team/offshore team, etc. (Schultze and Orlikowski, 2001; Watson-Manheim et al., 2002; Espinosa et al., 2003). Therefore, a project manager is one of the important boundary spanners that straddle across boundaries and mediate the differences resulting from various boundary conditions (Cummings, 2007; Levina and Vaast, 2008; Nicholson and Sahay, 2004).

Studies have shown that it is important for project managers to possess both technical (i.e. hard) skills and people (i.e. soft) skills to effectively manage globally distributed information technology projects (Kirsch, 2000, 2004; Langer et al., 2008). While technical skills consist of domain expertise as well as project management skills such as planning, monitoring, and risk management, people skills are mainly concerned with working with people, and developing and managing relationships between the customer and the project team, as well as among distributed team units (Beck et al., 2008; Kirsch, 2000; Langer et al., 2008). A study conducted by Langer et al. (2008) reveals that the soft skills of project managers have more significant impacts than the hard skills on improving the project performance and client

satisfaction. Ang and Inkpen (2008) argue that cultural intelligence is a key managerial capability that enables project success in a culturally diverse work environment.

The participants of this research highlighted the important role of project manager. Raj (SerTech, India) talked about how people management was a very important component of project management and people management in global IT work was about effectively working with people from different cultural backgrounds.

> This is a big problem for the IT business in India. It is important to be able to work with [people from] various cultures. People management or team management is a very important component of project management. It is called the HR subject area for project management – how we understand the differences and bring the synergy to the team. [Raj, SerTech, India]

Eric (SerTech, the U.S.) pointed out that, with respect to managing cultural differences, a project manager needs to be sensitive to the problems caused by cultural differences and exerts leadership to solve the problems.

> Project managers are responsible for leading the project. They need to be aware, know what cause the problems, and call that out, be mismatch of work styles or incentive structures. They need to work through it. If it gets to a certain point that we are not making progress, they need to do something dramatic, like planning a face-to-face meeting. The role of leadership is very important. [Eric, SerTech, the U.S.]

Karthik (SerTech, India) suggested that a skilled project manager should be able to manage conflict instead of avoiding conflict and turn conflict into a synergy.

> Conflict is good. Conflict is not bad because it produces different values. A talented manager has to take care of channeling this conflict into a synergy so that what the customer gets is the best. [Karthik, SerTech, India]

Below are the accounts of two project managers that illustrate the ways in which project managers addressed and handled cross-cultural challenges in the work process and further demonstrate the important role of manager.

Peng was a project manager who worked at SerTech, China. He had worked on a system development project that involved an American team and a Chinese team working together. At the first teleconference, Peng recognized that his Chinese team members had hard time following their American colleagues because they spoke very fast and mixed slangs into their speech. He communicated this issue with the project manager in America right away. Peng also closely monitored the teleconference processes. He would interrupt and ask the remote team members to repeat points if he noticed that his team members were confused. To further address the language challenges faced by some Chinese team members, Peng drafted meeting minutes after each teleconference and distributed them to all the collocated and distant team members to confirm understanding and avoid potential miscommunication and misinterpretation. He also encouraged his team members to take time to participate in language training programs to improve their English skills. During work interactions, Peng discerned some different work styles of the American team members and instructed his team members to make some adjustments. While the project was on-going, Peng found out about the multicultural training program that SerTech had on its e-learning portal. After taking the training himself, he recommended and asked some Chinese team leaders working on the project to take the training in order to better prepare themselves for cross-cultural collaboration. Peng mentioned that the project outcome was successful, and he also learned some managerial techniques that he could apply to managing other global IT projects.

Susan (SerTech, the U.S.) led a project to develop IT applications and provide application services to a customer company in the U.S. The project team was made up of a core team in the U.S. and two support teams, one in Brazil and one in India. Susan recognized the differences in communication and work styles of some Indian colleagues (i.e. not saying no to request and not raising concerns). To encourage the Indian team members to be more outspoken, Sudan worked on establishing trust relationships among distributed team members by taking face-to-face interaction opportunities to build social ties when the remote teams visited the U.S. To coordinate synchronous virtual interactions, they rotated the teleconference schedules so that the schedules would be convenient for different sites at different times. Moreover, Susan recognized the negative impacts of the power dynamics between the core team and remote teams, which might damage relationships. To address that issue, one practice they implemented was to publish and distribute e-newsletters to the entire project team, which might contain news, updates, discussions, and announcements of milestone accomplishments and success stories. When accomplishments were announced, the names of all the contributing team members were listed, sometimes with their pictures attached. This practice facilitated information sharing (intellectual resources) and increased the social status of the remote teams (symbolic resources), hence, helped to mediate the power relationships between the core team and the support teams (Levina and Vaast, 2008).

Given the important role of project manager, several Chinese and Indian IT professionals suggested that it was critical to discover and develop local talents for middle management positions in China and India. Some studies have shown that there is a shortage of management talent in China and India (ACM Report, 2006; Farrell and Grant, 2005; Farrell et al., 2005; Li

and Gao, 2003). Farrell et al. (2005) suggest that the management talent may come from three major sources: hiring managers with industrial experiences and relevant skills; hiring returning talents who have worked or studied abroad; and training and promoting managers from entry-level positions. Regarding the first two resources, the resource pool is limited and the competition to hire those talents is very high. Regarding the company developing its own management team, it faces two challenges. First, there are skills gaps among graduates at entry-level positions. In India, the higher education system is a mix of private institutions and state owned universities, among which the educational quality varies widely (ACM Report, 2006). In China, the traditional educational system is biased towards theory while overlooking practical training (Farrell and Grant, 2005). Second, it is time consuming and cost to develop management talent internally (Farrell et al., 2005). Several Chinese and Indian IT professionals pointed out that with the high growth rate of IT offshore outsourcing demands, the company sometimes had to speed up the training and promotion process, and as a result, the level of management team was not even.

> I think the management level is too uneven… We are growing too fast. Managers get promoted very quickly. How can you assure that they have the capability in such a short time? This is why it is uneven. [Chun, SerTech, China]

> Because of the high growth rate of IT industry in India, the maturity of management team has suffered. You need a lot of time to train a person to be a leader. The maturity suffers because everyone has an exponential career…You will find it very common all across the IT industry in India. It is not good for the long run. [Raj, SerTech, India]

7.3 The Role of Cultural Liaison

A cultural liaison refers to a person who has knowledge and experience with two or more cultures to serve as a mediating role that bridges cultural differences and resolve conflicts and miscommunications resulting from cultural differences in globally distributed information technology work (Carmel and Agarwal, 2001). Similarly to the important role of a qualified project manager, a skilled cultural liaison is also a boundary spanner that mediates the cultural differences across national boundaries (Cummings, 2007; Levina and Kane, 2009; Levina and Vaast, 2008; Nicholson and Sahay, 2004). A set of published case studies has demonstrated the value of appointing cultural liaisons in global IT projects and recommended it as an important strategy for successful distributed information technology projects (Carmel and Tjia, 2005; Herbsleb and Grinter, 1999; Nicholson and Sahay, 2004; Lings et al., 2006; Sangwan et al., 2006; Sahay et al., 2003). Mahnke et al. (2008) argue that cultural liaisons as major offshore intermediaries should be capable of a unique set of competencies that are idiosyncratic to sourcing knowledge intensive services, such as foreseeing and managing differences in work behaviors and communication styles caused by disparities in cultures. Levina and Kane (2009) point out that for a cultural liaison to become an effective boundary spanner in practice, this person need to develop both an inclination and ability to legitimately participating in both cultural groups being spanned.

The participants of this study also acknowledged the importance of the cultural liaison by providing me with a number of incidents in which cultural liaisons facilitated to resolve conflicts, mediated the cultural differences, and helped to increase mutual understanding across sites. For an example, Linda (ComTech, the U.S.) mentioned that a culturally experienced Indian

colleague was the liaison in her project team. This Indian colleague was a member of the Indian team. During the project, the American team and the Indian team had disagreements about various issues and mistrust occurred in their work relationship. Linda came up with some new solutions but she had concerns that the Indian team might disregard those ideas because of the conflicts. She contacted the Indian colleague and asked for his advice. The Indian colleague suggested that some team members in India might be sensitive to receiving suggestions from the American side. He could talk to the team members in India and bring some of those solutions to their attention first. This suggestion worked and the entire team worked together to modify and finalize the solutions. This is an example of cultural liaison helping to resolve conflict.

In another example, Hui (SerTech, the U.S) was a project manager and a cultural liaison as well. She was born in and grew up in China, studied in the U.S., and currently worked in the U.S. She was managing a development project that was distributed across the U.S and China. During the project, some American team members thought that the Chinese team members were not technically competent because they were silent during conference discussions. On the one hand, Hui explained to the team members in the U.S. that the Chinese team members had language difficulties and were not accustomed to challenging people directly. On the other hand, she encouraged the Chinese team members to be more assertive and forthcoming and made sure that such behaviors got praised and rewarded. In the project, the Chinese team was responsible for developing some systems components designed by the American team. The Chinese team did not have to interact with the customer. Hui found out that the Chinese team did not have a good understanding about the overall project and how the pieces they developed fit into the whole system. The Chinese team lacked the motivation to come up with new ideas. Therefore, she

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asked the Chinese team to participant in some virtual conferences with the customers so that they had a better understanding about the design solutions and assumed more ownership of the project. This is an example of how the dual role of cultural liaison and manager helped to bridge the cultural differences, develop a mutual understanding, and mediate the power dynamics.

The role of cultural liaison can be appointed formally or assumed informally, such as experienced staff and culturally aware managers. Usually a formally appointed cultural liaison also takes on a manager role and managing cultural differences is part of their job responsibilities (Carmel and Agarwal, 2001; Krishna et al., 2004). But not every project has a formally appointed cultural liaison. Frank (SerTech, the U.S.) mentioned that he ran into some challenging issues once working with a team in China. There was no one in the team that had experiences with both cultures. He turned to some Chinese colleagues from his personal social network and asked for help. Frank pointed that he was able to get some help but it was limited because his colleagues did not have time to provide constant support. The company could solve this problem by creating a pool of cultural liaisons as informal source. Herbsleb and Grinter (1999) suggested that one approach is to arrange for some team member to visit other sites, and give them the explicit assignment of learning the culture and establishing social relationships. After they return, they can be a source of cultural liaison and help with cross-cultural or cross-site issues. Another approach is that the company can tap into its diverse workforce at different local sites, identifying those employees with cross-cultural backgrounds or cross-cultural experiences. To do so, the company can encourage the employees to include their multicultural experiences as part of their expertise portfolio so that they can be known by others as informal sources of cultural liaison. Incentives and rewards can be provided to encourage these activities.

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7.4 The Global Delivery Model

It is suggested that the global delivery model has increased its popularity as a sourcing strategy for providing IT services (Ang and Inkpen, 2008; Carmel and Tjia, 2005; Chakrabarty, 2006; Nilekani, 2008). The majority of SerTech's IT services work and some of ComTech's development work is based on the global delivery model. A global delivery model refers to the use of a combination of onshore team and a network of distributed offshore delivery centers to provide low cost IT services to customers (Carmel and Tjia, 2005; Chakrabarty, 2006; Nilekani, 2008).

Figure 7.2:   An Example of the Global Delivery Model
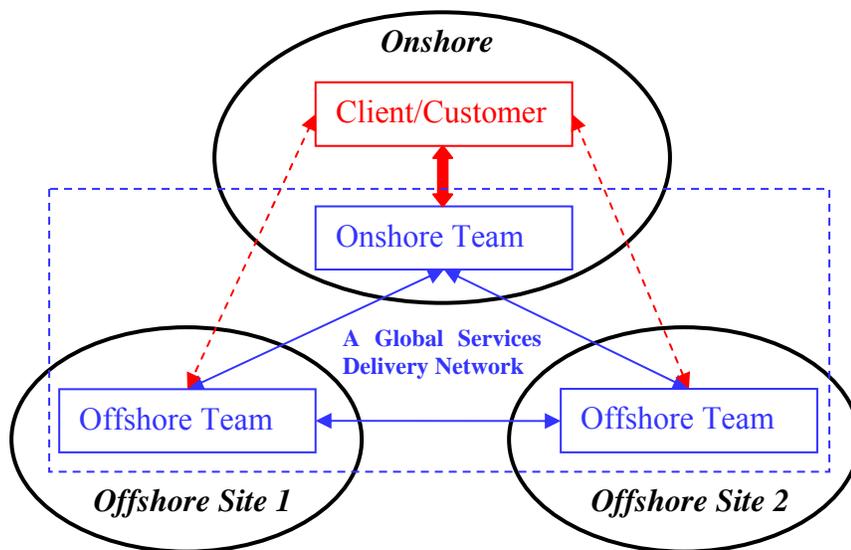
Figure 7.2 illustrates an example of the global delivery model. The entire services delivery team (or the global services delivery network) is made up of an onshore team that works closely with the customer onsite and several distributed offshore teams that work closely with the onshore team. The onshore team is in charge of the majority of client interactions, project

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planning, and coordination. The onshore team works side by side with the client on systems analysis, requirements identification, architecture, and other high level deigns. In some projects, the offshore teams may be included in the systems analysis and design. Then the systems development work is divided into logical components and assigned to several offshore delivery centers. The offshore teams work on detailed design, coding, testing, and integration, and hand the finished product components back to the onshore team. The onshore team works on system integration and acceptance testing, and delivers the system to the client by implementing and maintaining the services. Then the services delivery work will be handed to offshore delivery centers for long-term services maintenance.

The traditional onshore sourcing model ensures a tighter relationship with clients but might be costly, while the traditional offshore sourcing model is low cost but is usually perceived as risky by the client. The global delivery model enables a service provider to provide low cost, customer built, seamless IT services to its clients, based the premise that the service provider has an established global delivery network and an optimized delivery structure (Ang and Inkpen, 2008; Nilekani, 2008). In addition, the service provider can draw on the diverse skill resources from multiple global delivery centers.

It is suggested that another major benefit of the global delivery model is the reduced cultural distance between the client and the service provider (Chakrabarty, 2006; Nilekani, 2008). The majority of direct contact with clients is managed by the onshore team, which shares the same national cultural context with the clients. At the same time, the onshore team also shares the same organizational cultural context with the globally distributed offshore teams. The shared organizational culture can mediate some national cultural differences across different

sites. In the cases that the offshore teams interact with clients, the onshore team can also serve as a "liaison" to bridge some potential differences.

However, my research findings indicated that the global delivery model is by no means a "silver bullet" to manage cultural diversity challenges. The research findings presented in Chapter 5 suggest that national cultures had significant influences on the behaviors of global IT professionals, and in turn affect the communication, coordination, and relationship dynamics of globally distributed information technology work, even when the work relationship is within the organizational boundary. While organizational cultural values and norms could mediate some national cultural differences, such influences were affected by whether and how the local leaderships encultured those values. In both the cases of ComTech and SerTech, the practice of cross-cultural training was implemented but not emphasized, based on the assumption that cross-cultural training was not necessary for internal global collaborations. Furthermore, the research findings presented in Chapter 6 indicate that the uneven access to resources created power dynamics between the onshore team and the offshore teams, which could become a barrier to effective global collaborations. Therefore, the company should not ignore the importance of developing a cross-cultural management system to support the global delivery model.

7.5 Chapter Summary

Findings presented in this chapter suggest that ComTech and SerTech drew on four mechanisms to manage the challenges brought by cultural diversity: cross-cultural training, project manager, cultural liaison, and global delivery model.

Cross-cultural training could prepare employees for global IT work by helping them develop an awareness of cultural differences, an attitude and competence with respect to cross-

cultural management, and a set of skills to manage cultural diversity. Some characteristics of the cross-cultural programs of ComTech and SerTech were detailed. At ComTech, a cross-cultural training program was not available for non-agent personnel. At SerTech, two types of cross-cultural training program existed. These training programs were not mandatory or pre-requisites for global IT professionals. As a result, not many participants took the training and some of them were not even aware its availability.

It was found that a project manager could play an important role in managing cultural differences. Some detailed examples were given to illustrate how managers identified cross-cultural issues emerging from their project teams and how they solve the problems. While it was important to develop a qualified managerial team for globally distributed information technology work, China and India were facing some challenges in recruiting and developing management talent.

It was found that a cultural liaison could also play a mediating role to bridge the cultural differences and resolve conflicts. A couple of examples were presented to demonstrate how cultural liaisons resolved conflicts and managed cultural differences. Because some projects did not have formally appointed cultural liaisons, it was important to develop a resource pool of informal cultural liaisons.

Both SerTech and ComTech drew on the global delivery model to provide IT services to their clients. Based on the global delivery model, the onshore team handled the majority of direct contacts with the customer while the offshore teams had minimum or no direct interactions with the customer. This work arrangement reduced the cultural distance to certain degree. However, one issue about this work arrangement was that the companies overlooked the need of cross-

cultural training for the onshore and offshore teams. Another issue was the existence of power dynamics between the onshore team and offshore team. These issues required managerial attention.

Chapter 8: Discussion

Developing information systems and delivering information technology services across borders are becoming pervasive in the information technology industry. The globally distributed information technology work is facing a wide variety of challenges, including the challenges of cultural diversity. This research was motivated by the need to improve our understanding of how cultural factors affect the globally distributed information technology work and how to effectively manage cultural diversity in real settings.

Guided by the situating culture theory and the social identity theory, an interpretative case study was conducted to investigate the global information technology work that was distributed between or among China, India, and the U.S. This case study investigated two multinational information technology companies through interviews, observations, and documentation reviews. The results of this research revealed that the cultural influences on globally distributed information technology work are complex and dynamic. The initial research framework presented in Chapter 3 was modified to incorporate the key findings of this research. The refined research framework is shown in Figure 8.1.

This chapter provides a discussion of the major findings of this research, followed by a discussion of theoretical implications and practical recommendations.
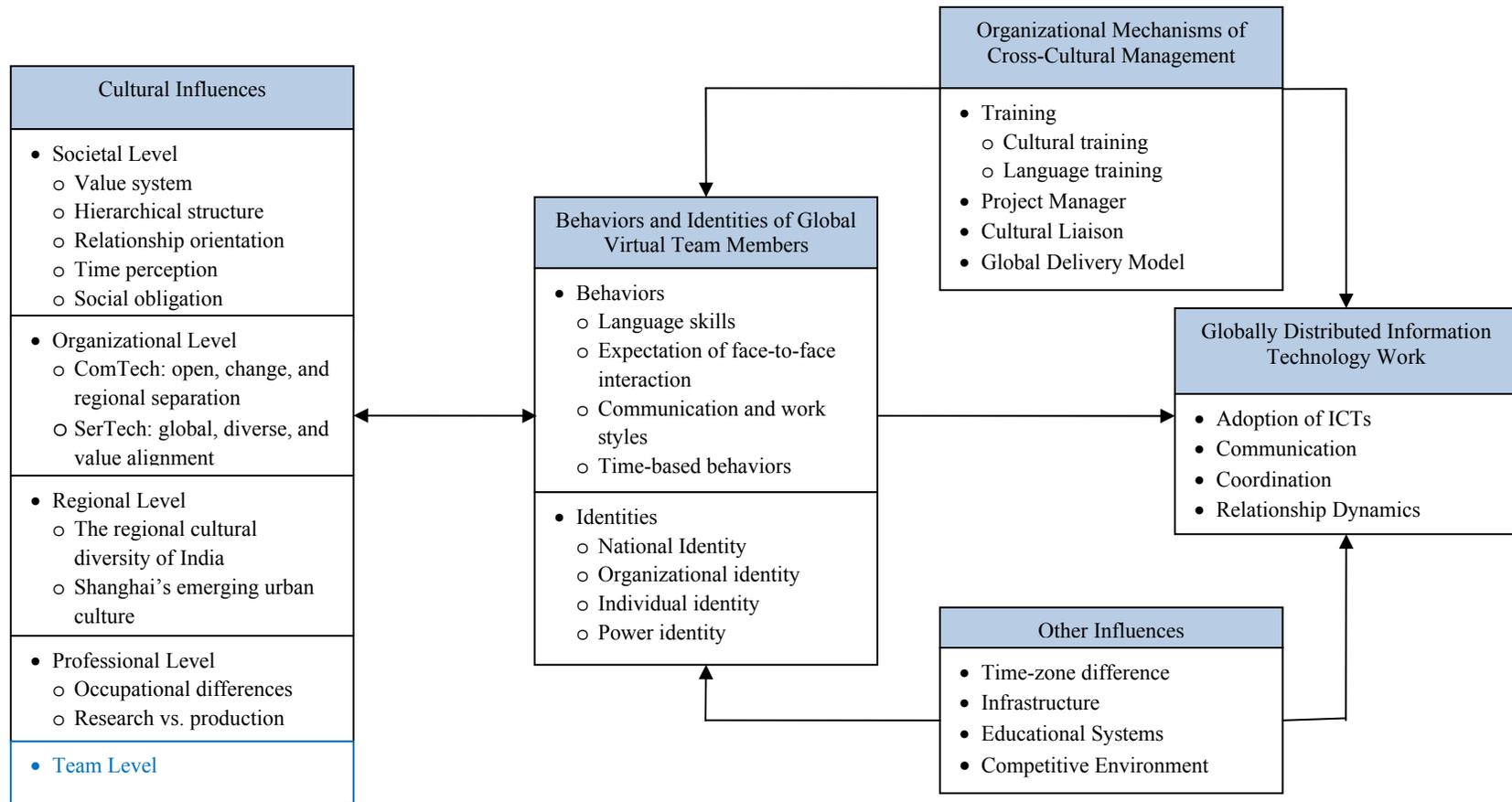
Figure 8.1:   Refined Research Framework[8]

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[8] In this figure, the team level of cultural influences is a construct specified in the initial research framework, but was not found evident in the findings of this research. Therefore, it is colored coded in blue in Figure 8.1.

8.1 Research Question 1

The first research question was to explore "how do cultural factors affect globally distributed information technology work?" A combination of cultural factors at the societal level, organizational level, regional level, and professional level was found to have impacts on globally distributed information technology work. These cultural influences could affect the work behaviors of global virtual team members, with respect to language skills, expectation of face-to-face interactions, communication and work styles, and time-based behaviors. As a result, the differences in employees' work behaviors could affect the adoption of ICTs, communication, coordination, and relationship perspectives of globally distributed information technology work. Evidence was found that other socio-cultural factors also had influences on global IT work, which included time-zone differences, infrastructure, educational systems, and the competitive environment. These findings substantiate the situating culture theory by providing evidence about the complex and dynamic nature of cultural influences (Weisinger and Trauth, 2002, 2003).

English language skill was found to be a key factor that affected communication in globally distributed information technology work (Carmel, 2003; ACM Report, 2006). First of all, an effective communication requires a shared cultural context. However, such a shared cultural context is lacking when the IT work is distributed across cultures. One incident included in the research findings showed a miscommunication about a deadline because the expression about time had different meanings in different local cultural contexts. Second, it was found that both Indian IT professionals and Chinese IT professionals were facing different challenges with respect to English language skills. However, China is more challenged than India by the lack of a

proficiently English-speaking IT workforce (Carmel, 2003; Minevich and Richter, 2005; OECD Report, 2006). Several cultural and historical factors were found to affect the English education in China and India. Third, when it comes to the question of how to improve the language skill of Chinese and Indian IT professionals, the research findings suggest two approaches. The long term approach lies in reforming the educational system to improve English education. IT companies, on the other hand, can invest in short term approaches by providing formal and informal English training to their local employees.

Globally distributed information technology work involves both virtual and face-to-face interactions. The ratio of virtual to face-to-face interactions varies depending on the need of different types of global IT collaborations. The participants I interviewed in this study were engaged in a variety of global IT work including: systems design and development (ComTech); process optimization and management of customer service centers (ComTech); systems research and development (SerTech); business solutions (SerTech); and information technology services (SerTech). The ratio of virtual to face-to-face interactions ranged from 70% to 30% to 100% virtual interaction. Nevertheless, the majority of the global IT work was virtual work, which relied on the support of information and communication technologies (ICTs). Email, instant messages (IM), team space, and different virtual conferencing tools were used by the participants in their virtual collaborations. The research findings showed that the adoption of ICTs in virtual work could be affected by time zone differences, organizational technological infrastructure, work relationships, project tasks and stages, and language skills and the personal preferences of global virtual team members. In particular, it was found that some Chinese IT professional preferred using asynchronous communications technologies (i.e. email) to communicate and

coordinate activities, which was affected by their language skills. However, sometimes the delay of email responses could cause coordination problems in the development process. Again, this calls for improving the language skills of IT professionals.

Face-to-face interaction was found to play an important role in globally distributed technology work because it provided an opportunity for developing a variety of awareness and building social ties in terms of trust and rapport between remote team members (Child, 2001; Oshri et al., 2005). This research identified three types of awareness that could be developed during face-to-face meetings, and facilitate global IT collaborations. "Knowing the person" is concerned with developing a stronger personal relationship with remote team members. "Knowing the expertise" refers to the understanding of who has what expertise and capacity in the remote site. "Knowing the context" is concerned with learning about the surrounding work environment of the remote team members. While the first two types of awareness have been suggested in prior studies (Child, 2001; Cramton, 2001; Kotlarsky and Oshri, 2005; Oshri et al., 2005; Herbsleb and Moitra, 2001), the importance of knowing the context has not been widely discussed. In this research, the importance of knowing the context was particularly raised by Chinese and Indian IT professionals. These participants pointed out that it was important for customers or onshore teams to visit the offshore sites. In a global delivery model (Figure 7.1), the offshore teams in China and India did not have much direct contact with the customer. If face-to-face meetings were arranged, in most cases the offshore teams traveled onsite to work with the onshore team for transferring knowledge. As a result, the offshore teams felt that their contribution was invisible, which led to a power relationship between the onshore team and offshore teams. A second important finding about face-to-face interaction is that the expectations

of face-to-face interaction are culturally different. Chinese and Indian IT professionals had a strong orientation toward building and maintaining relationships, thus had higher expectations of face-to-face interactions than did American IT professionals. These findings have important implications for practice. First it indicates that it is important to take advantage of limited face-to-face interactions. Second, it indicates that arranging face-to-face meetings in the offshore site can be a means to increase the visibility of the offshore team and mediate the power relationship.

Cultural factors at the societal level were found to have influence on the communication and work styles of global virtual team members. More specifically, American IT professionals are likely to be open and direct in communication, and be task focused during work processes; Chinese IT professionals have a tendency to not speak up and not take the initiative; Indian IT professionals have a tendency to not say no and not report bad news. These findings agree with the published literature (Brett et al., 2006; Carmel and Tjia, 2005; Hall and Hall, 1990; Hooker, 2003; Martinsons and Westwood, 1997; Nicholson and Sahay, 2001; Sinha, 2004; Zakaria et al., 2004). In addition, this research provided an in-depth analysis of cultural influences by identifying the influential cultural factors, the manifestations of behavioral differences, and the potential impacts on globally distributed information technology work. For example, evidence of the research suggested the tendency of not speaking up and not taking the initiative of some Chinese IT professionals. The research findings revealed that such behaviors might be attributed to language skills, the influence of a traditional teacher-centered educational model, and the influence of Confucian philosophy. It was found that not speaking up and not taking the initiative could affect information exchange between distributed members and might be misinterpreted as lacking of competence. The detailed analysis shows the analytical strength of applying the

situating culture theory and utilizing the interpretative epistemology. Furthermore, an in-depth understanding of the influential factors, the issues, and the impact can facilitate practitioners' development of functional solutions.

It was suggested that coordination was critical to the success of information technology projects, especially when they are globally distributed (Carmel, 1999; Herbsleb, 2007; Herbsleb and Mockus, 2003). The finding of this research suggested that cultural factors could affect the temporal coordination of globally distributed information technology work. The research finding confirmed the notion that temporal separation is not only about time zone differences, but rather a culturally bounded concept in globally distributed information technology work (Espinosa and Carmel, 2003; Sarker and Sahay, 2004; Saunders et al., 2004). Cultural differences in time perception, hierarchical structure, relationship orientation, and social obligation at the societal level were found to influence the time-based behaviors of global virtual team members. Some time-based behaviors added difficulties to the temporal coordination of globally distributed software development (i.e. resulting in schedule conflict and delay), while some could facilitate temporal coordination. Moreover, this research made a new contribution to literature by identifying four aspects of time-based behaviors as a result of cultural differences: language issues, time estimation and commitment, adherence to a schedule, and availability/unavailability for synchronous interaction.

Evidence was found to support that organizational culture played roles in shaping the values and behaviors of global virtual team members (Carmel, 2006; Kaiser and Hawk, 2004; Sangwan et al., 2006). Based on the narratives of the participants, the organizational culture of ComTech had three characteristics: open, change, and regional separation. The organizational

culture of SerTech also had three characteristics: global, diverse, and value alignment. It was found that organizational culture could have positive effects on globally distributed information technology work. For an example, the participants from SerTech's participants asserted that the company's global presence and capability of leveraging diversity provided them many opportunities to learn how to work with people of different cultures. The research finding also suggested that the ways in which organizational culture was perceived and adopted by employees were affected by the local leadership and employees' background. This has an implication for leadership development.

In addition to cultural influences at the societal level and organizational level, it was found that regional culture and professional culture also influenced the behaviors of global virtual team members, and in turn affected globally distributed information technology work. This research identified two emerging themes of regional culture. First, the diversity of India's regional culture was perceived as a valuable asset by Indian IT professionals to enable them engaged in cross-cultural global IT collaborations. This theme was also connected to how Indian IT professionals constructed their identities. Second, the outward-oriented urban culture of Shanghai had positive influences on Chinese IT professionals in this study. These emerging themes are in line with the situating cultural theory in that the theory views culture as situated and emergent. This research also suggested that the members of a project team might have different work styles as a result of differences in their professional cultures. One incident illustrated in the findings showed that a globally distributed R&D project was withheld as a result of cultural differences between the researchers and practitioners.

The identification of cultural influences from multiple levels confirms that culture is a multi-leveled construct in globally distributed information technology work (Gallivan and Srite, 2005; Huang and Trauth, 2006; Karahanna et al., 2005; Leidner and Kayworth, 2006; Straub et al., 2002). It also concurs with the call for taking an interpretative stance to investigate cultural influences (Myers and Tan, 2002; Sahay et al., 2003; Straub et al., 2002; Walsham, 2002; Weisinger and Trauth, 2002).

The influence of team culture was not evident in this research. On the one hand, this was constrained by the research design. In this research, the case unit was an organization, not a team. The participants of this study worked in the same organizations but not in the same project teams. When they responded to the interview questions, they usually drew on their experiences from two or more projects. On the other hand, the nature of many project teams is temporary. It is suggested that members in temporary teams may not have the time needed to establish social norms (Bell and Kozlowski, 2002; Saunders and Ahuja, 2006).

8.2 Research Question 2

The second research question was to examine "how do global virtual team members construct their identities and negotiate the cultural differences?" It was found that global virtual team members drew on four sources of influence to construct their identity, including national identity, organizational identity, individual identity, and power identity. This finding is in line with the situating culture theory and the social identity theory. On the one hand, it indicates that the socio-cultural context of globally distributed information technology work is complex. On the other hand, it demonstrates that global IT professionals are affected different influential factors, and construct their own identities in various ways.

The research finding suggested that the national identity of global IT professionals can have two components: acknowledging cultural differences and leveraging unique cultural characteristics. The first component can serve as a base for global virtual team members to articulate cultural differences and develop an understanding of their own culture and the culture of others. The second component can serve as a drive for global virtual team members to be open and inclusive to cultural differences. This research finding has important implications for both theory and practice. First, it indicates the agency of global virtual team members in that they actively exploited the unique characteristics of their cultures in composing their identities and negotiating cultural differences. Second, it highlights the value of cultural diversity, which can be utilized in organizational cross-cultural management.

Organizational identity was found to have a positive effect on negotiating cultural differences. A shared organizational identity provides a foundation for global virtual team member to negotiate cultural differences. Furthermore, when global IT professionals have a strong sense of belonging to an organization, they will be more acculturated by the organizational values and norms. The finding of this research also suggested a correlation between the organizational strategy and organizational identity. It was found that, at SerTech, a larger percentage of Indian participants expressed their organizational identity than did the American and Chinese participants. It could be attributed to the strategic move of SerTech to build SerTech, India as its largest offshore site. One indication of this finding is that IT companies can develop strategies to develop and strengthen the organizational identity of their global IT professionals.

It was found that global virtual team members also drew on their personal attributes as enabling sources to facilitate cross-cultural negotiation and management. These personal attributes could include a priori cross-cultural experiences such as studying and working abroad, ethnic background, life experience, and self-motivation. This finding again asserts the individual agency of global IT professionals. This finding also has implications for human resource management. It is important for the company to discover and value the cultural intelligence of employees.

Another important finding about identity is that global IT professionals, especially Indian and Chinese IT professionals, tend to draw on power identity when interacting with remote team members and clients. It is suggested that power dynamics are embedded in an outsourced relationship, as a result of uneven access to economic, intellectual, social, and symbolic resources (Allen et al., 2002; Carlile, 2004; Nicholson et al., 2006; Levina and Vaast, 2008). Three power dynamics were identified in this study, including core team/support team, outsourcer/outsourcee, and customer/service provider. Influenced by power identity, the party with less power complies and adapts to the party with more power during cross-cultural interaction and negotiation. Therefore, the enactment of power identity can have a negative influence on global IT collaboration. It is important for the company to be aware of the power relationships and take some action to mediate the negative effects.

The research findings on identity formations and cultural negotiation strategies of global IT professionals provide empirical evidence regarding how global virtual team members perceive themselves in relation to different social groups and how they enact these identities to negotiate culture differences. Several studies emphasize the importance of developing a third

culture (Adair et al., 2006), a global identity (Gelfand et al., 2007; Levina and Kane, 2009), or a shared team identity (Hakonen and Lipponen, 2007) within global virtual teams. The findings of this research indicate that leveraging the unique cultural characteristics, strengthening a shared organizational identity, and taking advantage of individual identity such as individual cross-cultural experience and motivation can serve as boundary spanning mechanisms and contribute to the emergence of a global identity. In addition, the research findings about power identities suggest that in addition to national cultural differences, power relationships can also become barriers to effective collaborations of globally distributed information technology work.

8.3 Research Question 3

The third research question was to investigate "How do organizations help global virtual team members to manage the cultural differences?" Based on the study of two companies, this research identified four managerial mechanisms that were employed by ComTech and SerTech for cross-cultural management. These research findings about managerial mechanisms had practical implications and informed the recommendations generated from this research.

Both ComTech and SerTech had cross-cultural training programs. The cross-cultural training program of ComTech was designed for the floor agents of offshore customer service centers. The cross-cultural training program was not available for non-agent personnel. SerTech had two types of cross-cultural training programs. "The Color of SerTech" was a cultural general training program designed for middle management. SerTech also had training programs specially developed for offshore teams that worked on long-term global IT service delivery projects. Cross-cultural training was not mandatory or a pre-requisite for the global IT professionals of SerTech. Some participants were not even aware of the program's existence. The research

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findings indicated that cross-cultural training in both companies was not systematically implemented.

In both companies, it was found that project managers played an important role in cross-cultural management through proactively identifying cross-cultural challenges that emerged in the work process and drawing on different resources and methods to solve the problems. Therefore, it is important to develop leadership for global IT work. The research findings also indicate that China and India are facing challenges in recruiting and developing management talent. The cultural liaison was another common managerial mechanism utilized by ComTech and SerTech. Cultural liaisons serve to resolve conflicts and mediate cultural differences across sites. It is important for a company to tap into its diverse workforce at different local sites and develop a resource pool of cultural liaisons.

The global delivery model is a sourcing model utilized by both ComTech and SerTech to provide customers low-cost and efficient IT services. In a global delivery project, because the onshore team is responsible for the majority of direct customer contacts, it may help to reduce the cultural distance between the service provider and the client. However, the findings of this research suggest that cross-cultural differences can still impact the collaborations between offshore team and onshore team, even though they share the same organizational cultural context. In addition, this work arrangement can lead to a power relationship between the onshore team and offshore team. Therefore, cross-cultural management still plays an important role to ensure the success of global IT services development and delivery.

8.4 Theoretical Implications

This research offers a number of theoretical contributions. First of all, this research makes a contribution by combining the situating cultural theory and the social identity theory to investigate the influences of culture on globally distributed information technology work. Guided by this theoretical approach, the research findings not only reveal a combination of cultural factors at multiple levels that have impacts on globally distributed information technology work, but also illustrate the ways in which global virtual team members exert agency to construct their identities in global IT work. This research thus makes a contribution to theory by demonstrating a way of combining theories. While the situating cultural theory assumes the complexity of influences of the socio-cultural context and provides an analytical lens, the social identity theory provides a frame to explore how human agent draws on those influences of the socio-cultural context. Both theories do not have pre-defined dimensions, which provide flexibility for examining complex problem domains.

Another contribution to theory has been developed by demonstrating the analytical strength of the situating cultural theory. This theory provides guidance to examine culture as a localized phenomenon, in order to account for various ways in which cultural influences are relevant. To do so, the situating cultural theory calls for drawing on an interpretative epistemological stand to acquire knowledge. By positioning the cultural phenomenon into a local context, this theory also recognizes other influences of the socio-cultural context. First, evidence was found to support that, even though cultural influences at the societal level are manifested in various behavioral differences of global IT professionals, they are not the sole influential source. The research findings suggest that in additional cultural factors at the societal level, cultural

factors at the organizational level, regional level, and professional level are also relevant. This also supports the claim of culture being a multi-leveled construct in globally distributed information technology work (Gallivan and Srite, 2005; Huang and Trauth, 2006; Karahanna et al., 2005; Leidner and Kayworth, 2006; Straub et al., 2002). Second, evidence was found to support that, when multiple cultural factors together come into play, the influential strength of different cultural factors may vary depending on the situation at hand or the specific context. The research findings revealed a case where professional culture is the salient influential factor. Third, evidence was also found to support the need to account for other socio-cultural influences. The research findings show that time-zone difference, infrastructure, educational systems, and the competitive environment also play roles in affecting the globally distributed information technology work.

This research makes a contribution to the social identity theory by applying it in the specific domain of globally distributed information technology work. As a result, the research findings reveal multiple identities constructed by the global IT professionals. One interesting finding about identity is that global IT professionals sought to leverage the unique characteristics of their national identity when negotiating cultural differences. This finding signifies the positive influence of cultural diversity. The value of cultural diversity usually is overlooked because the majority of research focuses only on the challenges of cultural diversity. Another interesting finding about identity is the identification of three types of power identities. These power identities are unique in the global IT offshore outsourcing domain because they reflect the uneven access to resources as a result of the global offshore outsourcing structures.

This research makes a further contribution to theory by identifying and conceptualizing new themes that emerged from the study. Examples include three types of awareness that can be developed in face-to-face interactions, multiple aspects of time-based behaviors that are influenced by culture, and the effects of different availability/unavailability on temporal coordination. On the one hand, these findings provide empirical evidence and new insights into the discourse of cultural influences in globally distributed information technology work. On the other hand, the research constructs and themes derived from this study can serve as inputs for future theoretical development.

8.5 Recommendations for Practice

Based on the research findings, a set of recommendations was drawn to inform practice.

Support Systematic Cross-Cultural Training and Learning: It is important for global IT companies to develop and support a systematic cross-cultural training and learning. It was found in this research that cross-cultural training was perceived by both companies as only needed for offshore teams that had a lot of direct contact with customers. They overlooked the need for cross-cultural training of the onshore teams and other offshore teams that may not directly interact with customers. In line with other training and learning programs, cross-cultural training should be considered as part of company's intellectual capital that can create value for the business. The top-management needs to provide support for making cross-cultural training a mandatory and pre-requisite for their global IT professionals in general. Different types of training programs can be developed. The beginning training program can be designed as a cultural general program, focusing on promoting the awareness of cultural diversity and providing broad guidance for managing cross-cultural differences. Cultural-specific training

programs can be developed based on the company's business needs. It is also important to get employees' feedback about the training to ensure that the training content remains relevant and the training technique is effective. Since on-the-job learning is another major knowledge source for global IT professionals, there is a need to provide practitioners opportunities to reflect on and share their tacit knowledge that is learned in practice.

Emphasize Relationship Building: Developing a trust relationship among globally distributed team members can facilitate cross-cultural communication and collaborations. However, because the majority of work of globally distributed information technology development is conducted virtually, building a trust relationship is not an easy task. Face-to-face meetings, while may be limited, can provide opportunities for relationship building. However, sometimes these face-to-face meetings focus only on business matters and fail to work on relationship building. Therefore, there is a need to make relationship building an important part of the agendas in face-to-face meetings.

One of the important implications of this research is the power relationship that may exist between the onshore team and the offshore team. As a result of uneven access to project information and customer contacts, sometimes the offshore teams feel they are under or not valued. This power identity can hinder the relationship building. Findings of this research suggest three practices that may help to mediate the power relationship. The first practice is to develop a sense of shared success by acknowledging the contributions of offshore team members. The second practice is to increase the share of project information and updates, and involve the project managers of the offshore teams in some direct customer contacts. The third

practice is to arrange face-to-face meetings at offshore locations and invite the customer to join as well.

Strengthen the Organizational Identity and Value the Local Diversity: For multinational companies, a shared organizational culture can mediate some cross-cultural differences across different locations. However, to what extent the organizational culture can have an effect depends on the strength of employees' organizational identity. When global IT professionals have a strong sense of belonging with the organization, they will be more acculturated by the organizational values and norms. Therefore, it is important for managers to develop strategies to strengthen the organizational identities of local employees. At the same time, some unique characteristics of different local cultures should be leveraged and integrated with the organizational identity at different locations. The research findings suggest that converging values and attitudes exist in different local cultures. These converging values and attitudes are part of the national identities of global IT professionals and can become a valuable asset for the company. This indicates that valuing the local diversity and strengthening the organizational identity can be two complementary approaches for cross-cultural management.

Focus on Developing Local Leadership: In globally distributed information systems project, project managers play an important role in managing cultural differences, developing and maintaining collaborative work relationships among distributed members, relocating resources, and coordinating development tasks. This indicates that it is important for global IT companies have groups of project managers that have both technical skills and strong people skills at different locations. More importantly, cultural intelligence (Ang and Inkpen, 2008) should be an important part of people skills required for those project managers. Those

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employees with both strong project management skills and cross-cultural backgrounds or experiences would be valuable candidates because they can assume dual roles of project manager and cultural liaison.

The research findings indicate that global IT companies are facing challenges of recruiting, retaining, and developing local managers in China and India. The human resource pool is limited regarding management talent but the length of developing management talent is competing with the immediate and growing demands for filling in management positions. As a result, there is a need to speed up the development process without sacrificing standards. One way to address this problem is to send managerial candidates abroad to headquarters or other offshore locations for training or working for a period of time. Another approach is to utilize a mentoring program. A couple of participants of this study suggested the idea of e-cross-cultural mentoring, which is about establishing a mentoring relationship between a low-level manager and a senior manager in different location using online tools. Both of these approaches aim at developing cross-cultural management skills of project managers.

Cultivate a Multicultural Capital: For many global IT companies, their diverse workforce at different locations is their biggest asset. Many global IT professionals may have cross-cultural backgrounds or cross-cultural experiences. The research findings suggest the individual agency of global IT professionals drawing on their individual identity can be used for managing cross-cultural differences. Therefore it is important for company to cultivate this multicultural capital.

Chapter 9: Conclusion

This chapter concludes the research by discussing the research contribution, limitation, and future research direction.

9.1 Contributions of the Research

This research has contributed to several literature streams. First this research contributes to the literature on global information systems research by examining the cultural influences. By combining the situating cultural theory and the social identity theory in the study, this research answers the call for new theoretical approaches to studying the multi-leveled socio-cultural context. The analytical strength of this theoretical approach has been demonstrated by the identification of multiple cultural influences at societal level, organizational level, regional level, and professional level. Furthermore, the research findings also illustrate the ways in which global virtual team members exert agency to construct their identities in global IT work. In addition to national identity, organizational identity, and individual identity, three types of power identity are revealed, which reflects the embedded power structure of global sourcing arrangements. This research also answers calls for an in-depth understanding of cultural influences by showing *how* cultural factors affect the work behaviors of global virtual team members. The research findings suggest that cultural influences could affect the work behaviors of global virtual team members, with respect to language skills, expectation of face-to-face interaction, communication and work styles, and time-based behaviors. Furthermore, this research adds some insights with regards to global IT collaborations between China and the U.S., which is quite limited in the existing literature.

Second, this research contributes to the literature on virtual work and global virtual teams. It answers the call for more empirical research in real settings by conducting an interpretative case study of two multinational companies in real organizational settings, which provide rich insights regarding globally distributed information technology work. It also responds to the literature debate on the question of whether or not culture is an important influential factor that affects the teamwork processes. This research demonstrates that not only culture is indeed an important influential factor, but also the influences of culture are complex and dynamic.

Third this research contributes to the literature on cross-cultural management by examining the managerial practices in the specific context of global IT collaborations. This research examines the practice and effect of cross-cultural training, project manager, cultural liaison and the global IT service delivery model. Integrating the research findings about cultural influences on global IT work, the agency of global virtual team member in cross-cultural negotiation, and the organizational cross-cultural management, a set of recommendations is formulated to inform the practice of virtual work management, human resource management, cultural diversity management, cross-cultural training, and cross-cultural knowledge management.

9.2 Limitations of the Research

There are several limitations in this research. First and foremost, the findings of this research can be generalized to theory, but not to populations (Lee and Baskerville, 2003). It should be recognized that the study findings are based on two case companies in three locations.

Therefore, some of the cultural specific findings might be only relevant to the case context of this study.

Second, this study only examined the internal global IT collaborations within multinational IT companies, which only accounted for the service provider perspective. The dynamic of cultural influences would change if the client perspective was included. It would allow the differences in organizational cultures to be examined. In current research, the behavioral differences of global virtual team members largely resulted from national cultural influences.

Third, the participants of this study were engaged in various types of global information technology work. While this sampling strategy provided a general perspective of global IT collaborations, it limited the opportunity to uncover some work-specific factors. Similarly, because the participants did not work on the same project or in the same team, it limited the opportunity to observe the influence of team culture. In addition, this research was not a longitudinal study. Therefore, it was unable to provide a process view of cultural influences and cultural negotiations.

Forth, it should be noted that, on the one hand, the interview data collected in this research provide empirical accounts of the phenomenon from the participants' perspectives and facilitate the understanding of the meanings attributed to actions by the participants in real settings. On the other hand, a limitation of interview data is that interviewees may have their own emotional and political bias when responding to interview questions (Patton, 2002). As a result, some interview data may be distorted due to personal bias. Therefore, it is important to acknowledge such bias and employee data triangulation technique to integrate multiple source of

data, to take into account different perspectives, and hence, to reduce the personal bias of the participants.

9.3 Future Research Directions

Based on previous discussion of research limitations, several future research directions can be suggested. It would be interesting to study several multinational IT companies first to examine whether the findings of this research can be replicable. This future research should draw on the same theoretical approach, but not necessarily duplicate the same research settings. This will allow a chance to evaluate the generalizability of the research findings. In addition to examining whether the major research findings are replicable, it is also important to check whether those emerging constructs and themes are replicable, so that those replicable emerging themes can inform theoretical building in the future. In line with the same direction, it may also be interesting to study some foreign based multinational IT companies, especially those based in India and China. Such studies can provide new insights on the interplay between national culture and organizational culture. In addition, it may help to examine potential cultural bias in current research.

The second research direction is to investigate the cultural influences on the global IT collaborations between IT service providers and vendors. This case setting will provide an opportunity to examine a wide range of complexities, such as the differences in industrial culture, organizational culture, organizational structure, technological infrastructure, etc. It will be interesting to examine the nature of challenges in terms of communication, coordination, and relationship building, as a result of these complexities. Such a study can make a contribution to the situating culture theory by examining its analytical strength.

The third research direction is to conduct a study to examine how IT professionals with Indian and Chinese ethnic backgrounds construct their identities in globally distributed IT work. The findings of this research indicate that the identity construction of global IT professionals varies based upon their ethic cultural backgrounds and personal life experiences. A number of participants I interviewed in the U.S. were born in and grew up in China and India. And several participants I interviewed in China and India had extended learning or working experiences in the U.S. or other Western countries. Though these participants had similar ethnic cultural backgrounds, it seems that the way in which they drew on cultural influences and defined their identities were different. Therefore, it will be interesting to explore how IT professionals with Chinese and Indian ethnic cultural backgrounds who work at different locations construct their identities differently and how such differences may affect their values and behaviors in global IT work.

The forth research direction is to conduct an interpretative, longitudinal case study of a long-term, globally distributed information technology project from beginning to end. This research design can provide an opportunity to examine how global virtual members negotiate cultural differences in the process, whether the team members will change their identity in the process, whether the project team will be able to turn the differences into synergy, and possible enabling factors. Such a study can make a contribution to the social identity theory by examining the changes of identities during the negotiation process.

9.4 Conclusion

Globally distributed information technology work has become increasingly prevalent in recent years and is continuing to grow. The inherent cultural diversity in globally distributed

information technology work grants both challenges and opportunities. This calls for a thorough examination of cultural influences. Drawing on an interpretative case study, this research provided empirical insights on how cultural factors affect the globally distributed information technology work, and developed practical implications regarding how to manage the challenges of cultural diversity.

This research makes a contribution to theory, literature, and practice. First, the theoretical contribution of this research has been developed through integrating the situating culture theory and the social identity theory in the study. This research demonstrates the analytical strength of the situating cultural theory and it makes a contribution to situating cultural theory by applying it to the specific domain of globally distributed information technology work. Second, this research contributes to literature by generating an in-depth understanding of cultural influences on globally distributed information technology work. Furthermore, this research adds some insights with regards to global IT collaborations between China and the U.S., which is quite limited in the existing literature. Lastly, the research makes a contribution to practice by developing a set recommendations, which provide actionable knowledge for practitioners with respect to virtual work management, human resource management, cultural diversity management, cross-cultural training, and cross-cultural knowledge management.

References

ACM Report. (2006). *Globalization and Offshore of Software*. Aspray, W., Mayadas, F., and Vardi, M. Y. (Eds.). Retrieved on February 25, 2006, from: http://www.acm.org/globalizationreport/pdf/fullfinal.pdf

Adair, J. (1986). *Effective Teambuilding*. Aldershot: Gower.

Adair, W. L., Tinsley, C. H., and Taylor, M. (2006). Managing the Intercultural Interface: Third Cultures, Antecedents, and Consequences. In Chen, Y.-R. (Ed.), *Research on Managing Groups and Teams (Volume 9): National Culture and Groups*, pp. 205-232. New York: JAI Press.

Agar, M. H. (1986). *Speaking of Ethnography*. Newbury Park, CA: Sage Publications, Inc.

Agarwal, P. (2007). Higher education in India: growth, concerns, and change agenda. *Higher Education Quarterly, 61(2)*: 197-207.

Allen, D., Kern, T., and Mattison, D. (2002). Culture, power and politics in ICT outsourcing in higher education institutions. *European Journal of Information Systems, 11(2)*: 159-173.

Altbach, P. G. (1993). The dilemma of change in Indian higher education. *Higher Education, 26(1): 3-20*.

Ames, R. T. (1998). Eastern Asian Philosophy. In E. Craig, (Ed.), *Encyclopedia of Philosophy, Volume 3*, pp. 192-196. London, UK: Routledge.

Anawati, D. and Craig, A. (2006). Behavioral adaptation within cross-cultural virtual teams. *IEEE Transactions on Professional Communication, 49(1)*: 44-56.

Ang, S. and Inkpen, A. C. (2008). Cultural intelligence and offshore outsourcing success: A framework of firm-level intercultural capability. *Decision Sciences, 39(3)*: 337-358.

Apte, U. and Winniford, M. (1991). Global Outsourcing of Information Systems Functions Opportunities and Challenges. In M. Khosrowpour (Ed), *Managing Information Technology in a Global Society*, pp. 58-67. Harrisburg, PA: Idea Group Publishing.

Armstrong, D. J. and Cole, P. (2002). Managing distance and differences in geographically distributed work groups. In P. Hinds and S. Kiesler (Eds.), *Distributed Work*, pp. 167-186. Cambridge, MA: The MIT Press.

Arthur, N. (2001). Using critical incidents to investigate cross-cultural transitions. *International Journal of Intercultural Studies, 25*: 41-53.

Audy, J., Evaristo, R., and Watson-Manheim, M. B. (2004). Distributed Analysis: The Last Frontier? In *the Proceedings of the 37th Hawaii International Conference on System Sciences*, 2004.

Avison, D. E. and Myers, M. D. (1995). Information systems and anthropology: an anthropological perspective on IT and organizational culture. *Information Technology & People, 8(3)*: 43-56.

Baba, M. L., Gluesing, J., Rantner, H., and Wagner, K. H. (2004). The contexts of knowing: nature history of a globally distributed team. *Journal of Organizational Behavior, 25(5)*: 547-587.

Barrett, M, Jarvenpaa, S., Silva, L., and Walsham, G. (2003). ICTs, globalization and local diversity. *Communications of the AIS, 11*: 486-497.

Beck, R., Gregory, R., and Prifling, M. (2008). Cultural intelligence and project management interplay in IT offshore outsourcing projects. In the *Proceedings of the 29th International Conference on Information Systems, 2008*, Paper 44.

Bell, B. B. and Kozlowski, S. W. J. (2002). A typology of virtual teams. *Group & Organization Management, 27*: 14-49.

Benner, C. (2002). *Work in the New Economy: Flexible Labor Markets in Silicon Valley*. Malden, Massachusetts: Blackwell Publishers.

Bennett, M. J. (1986). A developmental approach to training for intercultural sensitivity. *International Journal* of *Intercultural Relations, 10(2)*: 179-195.

Bennett, M. J. (1993). Towards ethnorelativism: A developmental model of intercultural sensitivity. In R. M. Paige (Ed.), *Education for the Intercultural Experience*, pp. 21-71. Yarmouth, ME: Intercultural Press.

Benni, E., and Peng, A. (2008). China's opportunity in offshore services. *The McKinsey Quarterly*. Retrieved on May 28, 2008, from: http://www.mckinseyquarterly.com/Chinas_opportunity_in_offshore_services

Bernstein, R. J. (1983). Beyond *Objectivism and Relativism: Science, Hermeneutics, and Praxis*. Philadelphia: University of Pennsylvania Press.

Bing, J. W. (2004). Hofstede's consequences: the impact of his work on consulting and business practices. *Academy of Management Executive, 18(1)*: 80-87.

Borchers, G. (2003). The software engineering impacts of cultural factors on multi-cultural software development teams. In the *Proceedings of 25th International Conference on Software Engineering*, pp. 540-545.

Braa, K. and Vidgen, R. (2001). An Information Systems Research Framework for the Organizational Laboratory. In M. Kyng and L. Mathiassen (Eds.), *Computers and Design in Contex*t, pp. 381-400. Boston, Massachusetts: MIT Press.

Brannen, M. Y., Gómez, G., Peterson, M. F., Romani, L., Sagiv, L., and Wu, P-C. (2004). People in global organizations: Culture, personality, and social dynamics. In H. W. Lane, M. L. Maznevski, M. E. Mendenhall, and J. McNett (Eds.), *The Blackwell Handbook of Global Management: A Guide to Managing Complexity*, pp. 26-54: Malden, MA: Blackwell Publishing.

Brannen, M. Y. and Salk, J. E. (2000). Partnering Across Borders: Negotiating Organizational Culture in a German-Japan Joint Venture. *Human Relations, 53(4)*: 451-487

Brett, J., Behfar, K., and Kern, M. C. (2006). Managing multicultural teams. *Harvard Business Review, 84(11)*: 84-91.

Brislin, R. W., and Kim, E. S. (2003). Cultural diversity in people's understanding and uses of time. *Applied Psychology, 52(3)*: 363–382.

Burrell, G. and Morgan, G. (1979). *Sociological Paradigms and Organizational Analysis*. London, UK: Heinemann.

Carlile, P. R. (2004) Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science, 15(5)*: 555-568.

Carmel, E. (1999). Global *Software Teams: Collaborating Across Borders and Time Zones*. Upper Saddle River, NJ: Prentice Hall PTR.

Carmel, E. (2003). The new software exporting nations: success factors. *Electronic Journal of Information Systems in Developing Countries, 13(4)*: 1-12.

Carmel, E. and Agarwal, R. (2001). Tactical approaches for alleviating distance in global software development. *IEEE Software, 18(2)*: 22–29.

Carmel, E. and Tjia, P. (2005). *Offshore Information Technology: Sourcing and Outsourcing to a Global Workforce*. Cambridge, UK: Cambridge University Press.

Carrithers, M. (1992). *Why Human Have Cultures*. Oxford: Oxford University Press.

Carroll, J. M., Neale, D. C., Isenhour, P. L., Rosson, M. B., and McCrickard, D. S. (2003). Notification and awareness: Synchronizing task-oriented collaborative activity. *International Journal of Human-Computer Studies, 58*: 605-632.

Castells, M. (1996). *The rise of the network society*. Oxford, UK: Blackwell.

Chakrabarty, S. (2006). The journey to new lands: Utilizing the global IT workforce through offshore-insourcing. In P. Yoong and S. Huff (Eds.), *Managing IT Professionals in the Internet Age*, pp. 277-318. Hershey, PA: Idea Group Publishing.

Chakrabarty, S. K., Gandhi, P., and Kaka, N. (2006). The untapped market for offshore services. *The McKinsey Quarterly*. Retrieved on April 18, 2007, from: http://www.mckinseyquarterly.com/article_page.aspx?ar=1772&L2=1&L3=106&srid=17&gp=0

Chang, J. (2006). Globalization and English in Chinese higher education. *World English, 25(3-4)*: 513-525.

Cheney, G. R., Ruzzi, B. B., and Muralidharan, K. (2005). A profile of the Indian education system. Retrieved on October 10, 2007, from: http://www.skillscommission.org/pdf/Staff%20Papers/A%20Profile%20of%20the%20Indian%20Education%20System.pdf

Chesbrough, H. and Spohrer, J. (2006). A research manifesto for services sciences. *Communications of the ACM, 49(7)*: 35-40.

Chaudhury, A., Nam, K., and Rao, H. R. (1995). Management of information systems outsourcing: A bidding perspective. *Journal of Management Information Systems, 12(2)*: 131–159.

Child, J. (2001). Trust: the fundamental bond in global collaboration. *Organizational Dynamics, 29(4)*: 274-288.

Christiansen, H. M. (2007). Meeting the challenge of communication in offshore software development. In B. Meyer and M. Joseph (Eds.), *Lecture Notes in Computer Science: Software Engineering Approaches for Offshore and Outsourced Development*, pp. 19-26. Berlin: Springer-Verlag.

Constantine, L. L. (1995). *Comtantine on Peopleware*. Englcwood Cliffs, NJ: Pzentice Hall.

Corley, K. G. (2004). Defined by our strategy or our culture? Hierarchical differences in perceptions of organizational identity and change. *Human Relations, 57(9)*: 1145-1177.

Cramton, C. D. (2001). The Mutual Knowledge Problem and its Consequences for Dispersed Collaboration. *Organization Science, 12(3)*: 346-371.

Cramton, C. D. (2002). Attributions in distributed work groups. In P. Hinds and S. Kiesler (Eds.), *Distributed Work*, pp. 191-211. Cambridge, MA: The MIT Press.

Cramton, C. D. and Webber, S. S. (2005). Relationships among Geographic Dispersion, Team Processes, and Effectiveness in Software Development Work Teams. *Journal of Business Research, 58(6)*: 758-765.

Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches, 2nd Edition*. Thousand Oaks, CA: Sage Publications.

Cummings, J. (2007). Leading Groups from a Distance: How to Mitigate Consequences of Geographic Dispersion. In S. Weisband (Ed.), *Leadership at a Distance: Research in Technology-Supported Work*, pp. 33-50. New York: Lawrence Erlbaum Associates.

Cummings, J., Espinosa, J. A., and Pickering, C. (2007). Spatial and temporal boundaries in global teams: Distinguishing where you work from when you work. In K. Crowston, S. Sieber, and E. Wynn (Eds.), *Virtuality and Virtualization – the Proceedings of the International Federation of Information Processing Working Group 8.2 on Information Systems and Organizations and 9.5 on Virtuality and Society*, pp. 85-98, Portland, Oregon, USA, July 29-31, 2007. Boston: Springer.

Curtis, B., Krasner, H., and Iscoe, N. (1988). A Field Study of the Software Design Process for Large Systems. *Communications of the ACM, 31(11)*: 1268 – 1287.

Dafoulas, G. and Macaulay, L. (2001). Investigating cultural differences in virtual software teams. *The Electronic Journal on Information Systems in Developing Countries, 7(4)*: 1-14.

Damian, D. E. and Zowghi, D. (2003). An Insight into the Interplay between Culture, Conflict and Distance in globally Distributed Requirements Negotiations. In the *Proceedings of the 36th Hawaii International Conference on System Sciences*, Hawaii.

Das, G. (2002). *India Unbound: From Independence to the Global Information Age*. New Delhi: Penguin Books.

Day, J. (2007). Strangers on the train: The relationship of the IT department with the rest of the business. *Information Technology & People, 20(1)*: 6-31.

D'Costa, A. P. (2006). Introduction: Charting a New Developmental Trajectory? In D'Costa (Ed.), *The New* Economy *in Development: ICT Challenges and Opportunities*, pp. 1-13. New York: Palgrave Macmillan.

D'Costa, A. P. and Sridharan, E. (Eds.) (2004). *India in the Global Software Industry: Innovation, Firm Strategies and Development*. New York, NY: Palgrave Macmillan.

Deetz, S. (1996). Describing Differences in Approaches to Organization Science: Rethinking Burrell and Morgan and Their Legacy. *Organizational Science, 7(2)*: 191-207.

De Filippo, G., Hou, J., and Ip, C. (2005). Can China compete in IT services? *The McKinsey Quarterly*.

Den Hartog, D. N., Van Muijen, J. J., and Koopman, P. L. (1996). Linking transformational leadership and organizational culture. *Journal of Leadership and Organizational Studies, 3(4)*: 68-83.

Denning, P. J. and Dunham, R. (2001). The profession of IT: the core of the third-wave professional. *Communications of the ACM, 44(11)*: 21-125.

Denzin, N. K. (2001). *Interpretive Interactionism, 2nd Edition*. Thousand Oaks, CA: Sage Publications, Inc.

DeSanctis, G. and Poole, M. S. (1997). Transitions in Teamwork in New Organizational Forms. *Advances in Group Processes, 14*: 157-176.

Dibbern, J., Goles, T., Hirschheim, R., and Jayatilaka, B. (2004). Information Systems Outsourcing: A Survey and Analysis of the Literature. *The DATA BASE for Advances in Information Systems, 35(4)*: 6-102.

Dubé, L. and Paré, G. (2004). The multifaceted nature of virtual teams. In D. J. Pauleen (Ed.), *Virtual Teams: Projects, Protocols and Processes*, pp. 1-39. Hershey, PA: Idea Group Publishing.

Earley, P. C. and Ang, S. (2003). *Cultural Intelligence: Individual Interactions across Cultures*. Palo Alto, CA: Stanford University Press.

Earley, P. C. and Gibson, C. B. (2002). *Multinational Work Teams: A New Perspective*. Mahwah, New Jersey: Lawrence Erlbaum Associates Publishers.

Earley, P. C. and Mosakowski, E. (2000). Creating hybrid team cultures: an empirical test of transnational team functioning. *Academy of Management Journal, 43(1)*: 26–49.

Earley, P. C. and Mosakowski, E. (2004a). Cultural Intelligence. *Harvard Business Review, 82(10)*: 139-146.

Earley, P. C. and Mosakowski, E. (2004b). Toward culture intelligence: turning cultural differences into a workplace advantage. *Academy of Management Executive, 18(3)*: 151-157.

Economist. (2006). *Bengalooru-ed: The politics of English in India's IT capital*. The Economist print edition, November 9th, 2006.

Eischen, K. (2003). Andhra Pradesh: Lessons for Global Software Development. *IEEE Computer Society, June*: 31-37.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review, 14(4)*: 532–550.

Espinosa, J. A. and Carmel, E. (2003). The impact of time separation on coordination in global software teams: a conceptual foundation. *Journal of Software Process: Practice and Improvement, 8(4)*: 249-266.

Espinosa, J. A., Cummings, J. N., Wilson, J. M., and Pearce, B. M. (2003). Team boundaries issues across multiple global firms. *Journal of Management Information Systems, 19(4)*: 157-190.

Espinosa, J. A., Slaughter, S. A., Kraut, R. E., and Herbsleb, J. D. (2007). Team knowledge and coordination in geographically distributed software development. *Journal of Management Information Systems, 24(1)*: 135-169.

Farrell, D., Khanna, T., Sinha, J., and Woetzel, J. R. (2004). China and India: the race to growth. *The McKinsey Quarterly*. Retrieved on March 2, 2005, from http://www.mckinseyquarterly.com/article_print.aspx?L2=4&L3=115&ar=1487

Farrell, D. and Grant, A. J. (2005). China's looming talent shortage. *The McKinsey Quarterly*. Retrieved on October 22, 2005, from: http://www.mckinseyquarterly.com/article_page.aspx?ar=1685

Farrell, D, Kaka, K, and Stürze, S. (2005). Ensure India's Offsoring Future. *McKinsey Quarterly*, September, 2005.

Fatehi, K. (2007). *Managing Internationally: Succeeding in a Culturally Diverse World*. Thousand Oaks, CA: Sage Publications, Inc.

Flanagan, J. (1954). The critical incident technique. *Psychological Bulletin, 51(4)*: 327-358.

Foster, N. (2000). Expatriates and the impact of cross-cultural training. *Human Resource Management Journal, 10(3)*: 63-78.

Fowler, S. M. (2006). Training across cultures: what intercultural trainers bring to diversity training? *International Journal of Intercultural Relations, 30*: 401-411.

Fowler, S. M. and Blohm, J. M. (2003). An analysis of methods for intercultural training. In D. Landis, J. Bennett, and M. J. Bennett (Eds.), *Handbook of Intercultural Training*, pp. 37-84. Thousand Oaks, CA: Sage Publications, Inc.

Friedman, T. (2006). *The World is Flat*, 2nd Edition. Farrar, Straus and Giroux.

Froumin, I., Divakaran, S., Tan, H., and Savchenko, Y. (2007). Strengthening skills and education for innovation. In M. A. Dutz, (Ed.), *Unleashing India's Innovation: Towards Sustainable and Inclusive Growth*, pp. 129-146. Washington, D.C.: The World Bank.

Gallivan, M. and Srite, M. (2005). Information technology and culture: identifying fragmentary and holistic perspective of culture. *Information and Organization, 15*: 295-338.

Gamble, J. (2003). Shanghai *in Transition: Changing Perspectives and Social Contours of a Chinese Metropolis*. London, UK: Routledge.

Gardenswartz, L. and Rowe, A. (2002). *Diverse Teams at Work: Capitalizing on the Power of Diversity*. Alexandria, VA: Society for Human Resource Management.

Garg, R. K. and Ma, J. (2005). Benchmarking culture and performance in Chinese organizations. *Benchmarking, 12(3)*: 260-274.

Gasson, S. (2004). Rigor in ground theory research: an interpretive perspective on generating theory from qualitative field studies. In M. Whitman and A. Woszczynski (Eds.), *The Handbook of Information Systems Research*, pp. 79-102. Hershey, PA: Idea Group Publishing.

Gelfand, M. J., Erez, M., and Aycan, Z. (2007). Cross-Cultural Organizational Behavior. *Annual Review of Psychology, 58*: 479-514.

Gibbs, J. L. (2009). Culture as Kaleidoscope: Navigating Cultural Tensions in Global Collaboration. In the *Proceedings of IWIC'09, February 20–21, 2009, Palo Alto, California, USA*, pp. 89-98. New York: ACM Press.

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

Glaser, B. G. (1978*). Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Mill Valley, CA: The Sociology Press.

Glaser, B. G. (2001). *The Grounded Theory Perspective: Conceptualization Contrasted with Description*. Mill Valley, CA: Sociology Press.

Gluesing, J. C. and Gibson, C. B. (2004). Designing and forming global teams. In H.W. Lane, M.L. Maznevski, M.E. Mendenhall, and J. McNett (Eds.), *Handbook of Global Management: A Guide to Managing Complexity*, pp. 199-226. Malden, MA: Blackwell Publishing.

Golden-Biddle, K. and Locke, K. (1993). Appealing work: an investigation of how ethnographic texts convince. *Organization Science, 4*: 595-616.

Goles, T. and Hirschheim, R. (2000). The paradigm is dead, the paradigm is dead. . .long live the paradigm: the legacy of Burrell and Morgan. *Omega, 28*: 249-268.

Goodall, K. (2002). Managing to learn: from cross-cultural theory to management education practice. In M. Warner, and P. Joynt (Eds.), *Managing across cultures: issues and perspectives, 2nd Edition*, pp. 256-268. London: Thomson Learning.

Gopal, A., Mukhopadhyay, T., and Krishnan, M. S. (2002). The role of software process and communication in offshore software development. *Communications of the ACM, 45(4)*: 193-200.

Gorton, I. and Motwani, S. (1996). Issues in co-operative software engineering using globally distributed teams. *Information and Software Technology, 38*: 647-655.

Govindarajan, V. and Gupta, A. K. (2001). Building an effective global business team. *MIT Sloan Management Review, Summer*: 63-71.

Graham, J. L. and Lam, N. M. (2004). The Chinese Negotiation. In *Harvard Business Review on Doing Business in China*, pp. 31-55. Boston: Harvard Business School Publishing.

Griffith, T. L., Mannix, E. A., and Neale, M. A. (2003). Conflicts and virtual teams. In C. B. Gibson and S. G. Cohen (Eds.), *Virtual Teams That Work: Creating Conditions for Virtual Team Effectiveness*, pp. 335-352. San Francisco, CA: John Wiley & Sons, Inc.

Grinter, R., Herbsleb, J., and Perry, D. (1999). The geography of coordination: dealing with distance in R&D work. In the *Proceedings of the International ACM SIGGROUP Conference on Supporting Group Wok*, pp. 306-315. New York: ACM Press.

Grosse, C. U. (2002). Managing communication within virtual intercultural teams. *Business Communication Quarterly, 65(4)*: 22-38.

Gudykunst, W. B., and Guzley, R. M., and Hammer, M. R. (1996). Designing intercultural. In D. Landis and R. S. Bhagat (Eds.), *Handbook of Cross-Cultural Training, 2nd Edition*, pp. 61-80. Thousand Oaks, CA: Sage Publication, Inc.

Gudykunst, W. B. and Kim, Y. Y. (2003). *Communicating with Strangers, 4th Edition*. New York, NY: McGraw-Hill Companies, Inc.

Gupta, A. K. and Wang, H. (2009). *Getting China and India Right: Strategies for Leveraging the World's Fastest Growing Economies for Global Advantage*. San Francisco, CA: John Wiley and Sons.

Gurung, A. and Prater, E. (2006). Research Framework for the Impact of Cultural Differences on IT Outsourcing. *Journal for Global Information Technology Management, 9(1)*: 24-43.

Hakonen, M. and Lipponen, J. (2007). Antecedents and consequences of identification with virtual teams: Structural characteristics and justice concerns. *Journal of E-working, 1*: 137-153.

Hall, E. T. and Hall, M. R. (1990). *Understanding Cultural Differences*. Paris: Seuil.

Hall, E. T., and Hall, M. R. (2003). Key concepts: Underlying structure of culture. In D. C. Thomas (Ed.), *Readings and Cases in International Management: A Cross-cultural Perspective*, pp. 151-162. Thousand Oaks, CA: Sage Publications, Inc.

Hanisch, J., Thanasankit, T., and Corbitt, B. (2001). Understanding the cultural and social impacts on requirements engineering processes – Identifying some problems challenging virtual team integration with clients. In the *Proceedings of the 9th European Conference on Information Systems*, pp. 11-22, Bled, Slovenia, June 27-29, 2001.

Harrison, G., McKinnon, J., Wu, A., and Chow, C. (2000). Cultural Influences on Adaptation to Fluid Workgroups and Teams. *Journal of International Business Studies, 31(3)*: 489-505.

Hartenian, L. S. and Gudmundson, D. E. (2000). Cultural diversity in small business: Implications for firm performance. *Journal of Developmental Entrepreneurship, 5(3)*: 209-219.

Hatch, M. J. and Schultz, M. (2002). The dynamics of organizational identity. *Human Resources, 55(8)*: 989-1018.

Hawk, S. and Kaiser, K. M. (2004). Offshore software development: an alternative solution for information technology staffing. In M. Igbaria, and C. Shayo (Eds.), *Strategies for Managing IS/IT Personnel*, pp. 213-246. Hershey, PA: IDEA Group Publishing.

Heeks, R. and Nicholson, B. (2004). Software export success factors and strategies in "follower" nations. *Competition and Change, 8(3)*: 267-302.

Heng, M. S. H., Trauth, E. M., and Fischer, S. J. (1999). Organizational champions of IT innovation. *Accounting Management and Information Technologies, 9*: 193-222.

Herbsleb, J. D. (2007). Global software engineering: the future of socio-technical coordination. In the *Proceedings of International Conference on Software Engineering, 2007: Future of Software Engineering*, pp. 188-198. Washington, D.C.: IEEE.

Herbsleb, J. D. and Grinter, R. E. (1999). Splitting the Organization and Integrating the Code: Conway's Law Revisited. In the *Proceedings of the 21st International Conference on Software Engineering (ICSE'99)*, pp. 85-95. New York: ACM Press.

Herbsleb, J. D. and Moitra, D. (2001). Global software development. *IEEE Software, 18(2)*: 16-20.

Herbsleb, J. D. and Mockus, A. (2003). An empirical study of speed and communication in globally distributed software development. *IEEE Transactions on Software Engineering, 29(6)*: 481- 494.

Hinds, P. J. and Mortensen, M. (2002). Understanding antecedents to conflict in geographically distributed research and development teams. In the *Proceedings of 23rd International Conference on Information Systems*, pp. 415-424.

Hinds, P. J. and Mortensen, M. (2005). Understanding conflict in geographically distributed teams: the moderate effects of shared identity, shared context, and spontaneous communication. *Organization Science, 16(3)*: 290-307.

Hirschheim, R. (1992). Information Systems Epistemology: An Historical Perspective. In R. Galliers (Ed.), Information *Systems Research: Issues, Methods and Practical Guidelines*, pp. 28-60. Oxford: Blackwell Scientific Publications.

Hirschheim, R. and Dibbern, J. (2002). Information systems outsourcing in the new economy – An introduction. In R. Hirschheim, A., Heinzl, and J., Dibbern (Eds.), *Information Systems outsourcing: Enduring Themes, Emergent Patterns, and Future Directions*, pp. 3-23. Berlin, Germany: Springer-Verlag.

Hirschheim, R., Loebbecke, C., Newman, M., and Valor, J. (2005). Offshoring and its applications for the information systems disciplines. In the *Proceedings of 26th International Conference on Information Systems*, pp. 1003-1018.

Hoegl, M. and Proserpio, L. (2004). Team Member Proximity and Teamwork in Innovative Projects. *Research Policy, 33(8)*: 1153-1165.

Hofstede, G. (1984). *Culture's Consequences: International Differences in Work-Related Values*. Beverly Hills, CA: Sage.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations, 2ⁿᵈ Edition*. Thousand Oaks, CA: Sage Publications.

Holmes, P. and Hinchliffe, I. (1997). *Swedish: an essential grammar*. London, UK: Routledge.

Hooker, J. (2003). *Working Across Cultures*. Stanford, CA: Stanford University Press.

Howcroft, D. and Trauth, E. M. (Eds.) (2005). *Handbook of Critical Information Systems Research*. Cheltenham, UK: Edward Elgar Publishing.

Huang, H. (2006). Cross-cultural Influences, Communication, and Management: A Study of Global Information Systems Development Work. In *the Proceedings of 14ᵗʰ Annual Cross Cultural Research in Information Systems Conference*, December 10, Milwaukee, WI, USA.

Huang, H. (2007). Cultural Issues in Globally Distributed Information Systems Development: A Survey and Analysis. In *the Proceedings of the Americas Conference on Information Systems*, 2007, August 9-12, Keystone, CO.

Huang, H. and Trauth, E. M. (2006). Cultural Diversity Challenges: Managing Globally Distributed Knowledge Workers in Global Software Development. In P. Yoong and S. Huff (Eds.), *Managing IT Professionals in the Internet Age*, pp. 254-276. Hershey, PA: Idea Group Publishing.

Huang, H. and Trauth, E. M. (2007). Cultural Influences and Globally Distributed Information Systems Development Work: Experiences from Chinese IT Professionals. In *the Proceedings of SIGMIS-CPR'07*, April 19–21, 2007, Saint Louis, Missouri, USA, pp. 36-45. ACM Press: New York, NY.

Huang, H. and Trauth, E. M. (2008). Cultural Influences on Temporal Separation and Coordination in Globally Distributed Software Development. In the *Proceedings of the International Conference on Information Systems (ICIS)*, Paris, December 14-17, 2008, Paper 134.

Imsland, V. and Sahay, S. (2005). Negotiating knowledge: The case of a Russian–Norwegian software outsourcing project. *Scandinavian Journal of Information systems, 17(1)*: 101-130.

Jarvenpaa, S. and Leidner, D. (1999). Communication and trust in global virtual teams. *Organization Science, 10(6)*: 791-815.

Jayaram, N. (1993). The language question in higher education: trend and issues. *Higher Education, 26(1)*: 93-114.

Jehn, K. A. and Mannix, E. A. (2001). The dynamic nature of conflict: a longitudinal study of intragroup conflict and group performance. *Academy of Management Journal, 44*: 238-251.

Jiang, J. J., Klein, G., Hwang, H.-G., Huang, J., and Hung, S.-Y. (2004). An exploration of the relationship between software development process maturity and project performance. *Information & Management. 41(3)*: 279-288.

Kaiser, K. M. and Hawk, J. (2004). Evolution of offshore software development: From outsourcing to cosourcing. *MIS Quarterly Executive, 3(2)*: 69-81.

Kaminsky, J. (2006). Struggling to keep up Bangalore's infrastructure tries to meet needs of its technology industry. *San Francisco Chronicle*, May 7, 2006. Retrieved on March 7, 2007, from: http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2006/05/07/BUGUCIMCPT1.DTL

Kanawattanachai, P. and Yoo, Y. (2002). Dynamics nature of trust in virtual teams. *Journal of Strategic Information Systems, 11(3-4)*: 187-213.

Karahanna, E., Evaristo, J. R., and Srite, M. (2005). Levels of culture and individual behavior: An integrative perspective. *Journal of Global Information Management, 13(2)*: 1-20.

Kealey, D. J., Protheroe, D. R., MacDonald, D., and Vulpe, T. (2005). Re-examining the role of training in contributing to international project success: A literature review and an outline of a new model training program. *International Journal of Intercultural Relations, 29*: 289-316.

Keil, M., Im, G. P., and Mahring, M. (2007). Reporting bad news on software projects: the effects of culturally constituted views of face-saving. *Information Systems Journal, 17(1)*: 59-87.

Keil, M. and Robey, D. (2001). Blowing the whistle on troubled software projects. *Communications of the ACM, 44(4)*: 87-93.

Kellner, D. (2002). Theorizing globalization. *Sociological Theory, 20(3)*: 285-305.

Kern, T. and Willcocks, L. P. (2001). *The Relationship Advantage*. Chichester, UK: John Wiley & Sons Ltd.

Kern, T. and Willcocks, L. P. (2002). Exploring relationships in information technology outsourcing: The interaction approach. *European Journal of Information systems, 11*: 3-19.

Kirkbride, P. S., Tang, S. F. Y., and Westwood, R. I. (1991). Chinese Conflict Preferences and Negotiating Behaviour: Cultural and Psychological Influences. *Organization Studies, 12(3)*: 365-386.

Kirsch, L. J. (2000). Software Project Management: An Integrated Perspective for an Emerging Paradigm. In R. W. Zmud (Ed.), *Framing the Domains of IT Management: Projecting the Future through the Past*, pp. 285-304. Cincinnati, Ohio: Pinnaflex Educational Resources Inc.

Kirsch, L. J. (2004). Deploying common systems globally: The dynamics of control. *Information Systems Research, 15(4)*: 374-395.

Klein, H. K. and Myers, M. D. (1999). A set of principles for conducting and evaluating interpretive field Studies in information systems. *MIS Quarterly, 23(1)*: 67-94.

Kobayashi-Hillary, M. (2005). *Outsourcing to India: The Offshore Advantage*. New York: Springer.

Komi-Sirviö, S. and Tihinen, M. (2005). Lessons learned by participants of distributed software development. *Knowledge and Process Management, 12(2)*: 108-122.

Kotlarsky, J. and Oshri, I. (2005). Social ties, knowledge sharing and successful collaboration in globally distributed system development projects. *European Journal of Information Systems, 14(1)*: 37-48.

Kraut, R. E., Fussell, S. R., Brennan, S. E., and Siegel, J. (2002). Understanding effects of proximity on collaboration: Implications for technologies to support remote collaborative work. In P. Hinds and S. Kiesler (Eds.), *Distributed Work*, pp. 137-163. Cambridge, MA: The MIT Press.

Kraut, R. E. and Streeter, L. (1995). Coordination in software development. *Communications of the ACM, 38(3)*: 69–81.

Krishna, S., Sahay, S., and Walsham, G. (2004). Managing cross-cultural issues in global software development. *Communications of the ACM, 47(4)*: 62-66.

Kriz, A. and Fang, T. (2003). Unmasking the multiple faces of the People's Republic of China. *Journal of Doing Business across Borders, 2(2)*: 19-31.

Lacity, M. (2002). Global Information Technology Sourcing: More Than a Decade of Learning. *IEEE Computer, 35(8)*: 26-33.

Lacity, M. C. and Hirschheim, R. (1993). *Information Systems Outsourcing – Myths, Metaphors, and Realities*. New York, NY: John Wiley and Sons.

Lacity, M. C. and Hirschheim, R. (1995). *Beyond the Information Systems Outsourcing Bandwagon: The Insourcing Response*. New York, NY: John Wiley & Sons, Inc.

Lacity, M. and Willcocks, L. P. (2001). *Global Information Technology Outsourcing: Search for Business Advantage*. Chichester, UK: John Wiley & Sons Ltd.

Lander, M. C., Purvis, R. L., McCray, G. E., and Leigh, W. (2004). Trust-building mechanisms utilized in outsourced IS development projects: A case study. *Information and Management, 41(4)*: 509-528.

Langer, N., Slaughter, S. A., and Mukhopadhyay, T. (2008). Project managers' skills and project success in IT outsourcing. In the *Proceedings of the 29th International Conference on Information Systems, 2008*, Paper 147.

Laplante, P. A., Costello, T., Singh, P., Bindiganaville, S., and Landon, M. (2004). The who, what, why, where, and when of IT outsourcing. *IT Professional, 6(1)*: 19-23.

Lateef, A. (1997). Linking up with the global economy: A case study of the Bangalore software industry. International Institute for Labor Studies, Discussion Paper. Retrieved on March 17, 2006, from: http://www.ilo.org/public/english/bureau/inst/papers/1997/dp96/index.htm

Lee, A. (2004). Thinking about Social Theory and Philosophy for Information Systems. In L. Willcocks and J. Mingers (Eds.), *Social Theory and Philosophy for Information Systems*, pp. 1-26. Chichester, UK: John Wiley & Sons.

Lee, A. and Baskerville (2003). Generalizing generalizability in information systems research. *Information Systems Research, 14(3)*: 221-243.

Lee, D., Trauth, E., and Farwell, D. (1995). Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic/Industry Investigation. *MIS Quarterly, 19(3)*: 313-332.

Lee, G., DeLone, W., and Espinosa, J. A. (2006). Ambidextrous coping strategies in globally distributed software development projects. *Communications of the ACM, 49(10)*: 35-40.

Lee, J.-N., Huynh, M. Q., Kwok, R. C.-W., and Pi, S.-M. (2002). Current and future directions of IS outsourcing. In R. Hirschheim, A., Heinzl, and J., Dibbern (Eds.), *Information Systems*

Outsourcing: Enduring Themes, Emergent Patterns, and Future Directions, pp. 195-220. Berlin, Germany: Springer-Verlag.

Lee, J.-N., Huynh, M. Q., Kwok, R. C.-W., and Pi, S.-M. (2003). IT outsourcing evolution – Past, present, and future. *Communications of the ACM, 46(5)*: 84-89.

Leidner, D. E. and Kayworth, T. (2006). A review of culture in information systems research: towards a theory of information technology culture conflict. *MIS Quarterly, 30(2)*: 357-399.

Leung, K., Bhagat, R. S., Buchan, N. R., Erez, M., and Gibson, C. B. (2005). Culture and international business: Recent advances and their implications for future research. *Journal of International Business Studies, 36*: 357–378.

Leung, K., Koch, P. T., and Lu, L. (2002). A dualisic model of harmony and is implications for conflict management in Asia. *Asia Pacific Journal of Management, 19(2-3)*: 201–20.

Leung, T. K. P., Luk, S. T. K., Wong, Y.-h., and Davies, H. (1995). The benefits of "Guanxi": the value of relationships in developing the Chinese market. *Industrial Marketing Management, 24(3)*: 207-214.

Levina, N. and Kane, A. A. (2009). Immigrant Managers as Boundary Spanners on Offshored Software Development Projects: Partners or Bosses? In the *Proceedings of IWIC'09*, February 20–21, 2009, Palo Alto, California, USA, pp. 61-70. New York: ACM Press.

Levina, N. and Vaast, E. (2008). Innovating or doing as told? Status differences and overlapping boundaries in offshore collaboration. *MIS Quarterly, 32(2)*: 307-332.

Lewis, R. D. (2006). *When Culture Collide: Leading across Cultures, 3rd Edition*. Boston, MA: Nicholas Brealey Publishing.

Li, J. (2006). Policy and the space of English in China: from liberation to globalization. *US-China Foreign Language, 4(5)*: 24-28.

Li, M. and Gao, M. (2003). Strategies for developing China's software industries. *Information Technologies and International Development, 1(1)*: 61-73.

Liao, X. Q. (2000). How communicative language teaching became acceptable in secondary schools in China. *The Internet TESL Journal*, 6(10). Retrieved on March 17, 2007, from: http://iteslj.org/Articles/Liao-CLTinChina.html

Lin, L. (2002). English Education in Present-day China. *ABD, 33(2)*: 8-9.

Lincoln, Y. S. and Guba, E. G. (1985). *Organizational Theory and Inquiry: The Paradigm Revolution*. Beverly Hills, CA: Sage Publications, Inc.

Lings, B., Lundell, B., Agerfalk, P., and Fitzgerald, B. (2006). Ten strategies for successful distributed development. In B. Donnellan, T. Larsen, J. DeGross, and L. Levine (Eds.), *The transfer and diffusion of information technology for organizational resilience: IFIP TC8 WG 8.6 International Working Conference*, June 7-10, 2006, Galway, Ireland, pp. 94-112. New York: Springer-Verlag.

Long, N. (1996). Globalization and localization: new challenges to rural research. In L. M. Henrietta (Ed.), *The Future of Anthropological Knowledge*, pp. 37-59. London, UK: Routledge.

Lowe, S. (2003). Chinese Culture and Management Theory. In I. Alon (Ed.), *Chinese Culture, Organizational Behavior and International Business Management*, pp. 3-26. Westport, CT: Praeger.

Lustig, M. W. and Koester, J. (2003). *Intercultural Competence: Interpersonal Communication across Cultures, 4th Edition*. Boston, MA: Allyn and Bacon.

MaDonough, D., Kahn, K., and Barczak, G. (2001). An investigation of the use of global, virtual, and collocated new product development teams. *The Journal of Product Innovation Management, 18(2)*: 110-120.

Mahnke, V., Wareham, J., and Bjorn-Andersen, N. (2008). Offshore middlemen: transnational intermediation in technology sourcing. *Journal of Information Technology, 23(1)*: 18-30.

Maletzky, M. (2007). Intercultural collaboration in the ICT sector. In M. S. Raisinghani (Ed.), *Handbook of Research on Global Information Technology Management in the Digital Economy*, pp. 167-194. Hershey, PA: Idea Group.

Mann, C. L. (2004). What Global Sourcing Means for U.S. IT Workers and for the U.S. Economy. *Communications of the ACM, 47(7)*: 33-35.

Mannix, E. A., Griffith, T., and Neale, M. A. (2002). The phenomenology of conflict in distributed work teams. In P. Hinds and S. Kiesler (Eds.), *Distributed Work*, pp. 213-233. Cambridge, MA: The MIT Press.

Martin, J. N. and Nakayama, T. K. (2005). *Experiencing Intercultural Communication: An Introduction*. New York, NY: McGraw-Hill Companies, Inc.

Martin, L. L., Gilson, L. L., and Maynard, M. T. (2004). Virtual teams: what do we know and where do we go from here? *Journal of Management, 30(6)*: 805-835.

Martinsons, M. G. (2005). Transforming China. *Communications of the ACM, 48(4)*: 44-48.

Martinsons, M. G. and Hempel, P. (1995). Chinese management systems: historical and cross-cultural perspectives. *Journal of Management Systems, 7(1)*: 1-11.

Martinsons, M. G. and Westwood, R. I. (1997). Management information systems in the Chinese business culture: an explanatory study. *Information & Management, 32(5)*: 215-228.

Massey, A. P., Hung, Y.-T. C., Montoya-Weiss, M., and Ramesh, V. (2001). Cultural perceptions of task-technology fit. *Communications of the ACM, 44(12)*: 83-84.

Massey, A. P., Montoya-Weiss, M., and Hung, C. (2003). Because time matters: temporal coordination in global virtual project teams. *Journal of Management Information Systems, 19(4)*: 129-156.

Mason, J. (2002). *Qualitative Researching, 2nd Edition*. Thousand Oaks, CA: Sage.

Mathiassen, L. and Stage, J. (1990). Complexity and uncertainty in software design. In the *Proceedings of the 1990 IEEE Conference on Computer Systems and Software Engineering*, Los Alamitos, CA, 1990, pp. 482-489.

Maugain, O. (2003). Ph. D. Thesis: Managing Multicultural R&D Teams – An In-Depth Case Study of a Research Project at CERN. Retrieved on January 21, 2005, from: http://www.unisg.ch/www/edis.nsf/wwwDisplayIdentifier/2820/$FILE/dis2820.pdf

Maznevski, M. L. and Chudoba, K. M. (2001). Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science, 11(5)*: 473-492.

McGrath, J. E. (1990). Time matters in groups. In J. Galegher, R. Kraut, and C. Egido (Eds.), *Intellectual Teamwork: Social and Technological Foundations of Cooperative Work*, pp. 23-61. Hillsdale, NJ: Lawrence Erlbaum.

McGrath, J. E. (1991). Time, interaction, and performance (TIP): A theory of groups. *Small Group Research, 22(2)*: 147–174.

McKinney, V. R. and Whiteside, M. M. (2006). Maintaining distributed relationships. *Communications of the ACM, 49(3)*: 82-86.

McSweeney, B. (2002). Hofstede's model of national cultural differences and their consequences: A triumph of faith - a failure of analysis. *Human Relations, 55(1)*: 89-118.

Messner, W. (2008). *Working with India: The Softer Aspects of a Successful Collaboration with the Indian IT & BPO Industry*. New York: Springer-Verlag.

Minevich, M. and Richter, F.-J. (2005). Global outsourcing report. Retrieved on May 08, 2006, from: http://globalequations.com/Global%20Outsourcing%20Report.pdf

Miroshnik, V. (2002). Culture and international management: A review. *Journal of management development, 21(7/8)*: 521-544.

Monteiro, L. F., Arvidsson, N., Birkinshaw, J. (2008). Knowledge flows within multinational corporations: Explaining subsidiary isolation and its performance implications. *Organization Science, 19(1)*: 90-107.

Montoya-Weiss, M. M., Massey, A. P. and Song, M. (2001). Getting it together: temporal coordination and conflict management in global virtual teams. *Academy of Management Journal, 44(6)*: 1251-1262.

Moritsugu, K. (2006). Bangalore latest Indian city to dump English name. USA Today, October 26, 2006. Retrieved on December 1, 2006, from: http://www.usatoday.com/news/world/2006-10-25-bangalore_x.htm

Morrison, E. W. and Milliken, F. J. (2000). Organizational silence: a barrier to change and development in a pluralistic world. *Academy of Management Review, 25(4)*: 706-725.

Mydans, S. (2001). Nations in Asia give English their own Flavorful Quirks. New York Times, July 1, 2001. Retrieved on October 15, 2007, from: http://query.nytimes.com/gst/fullpage.html?res=9905E0DE1339F932A35754C0A9679C8B63

Myers, M. D. (1997). Qualitative Research in Information Systems. *MIS Quarterly, 21(2)*: 241-242.

Myers, M. D. (2004). Hermeneutics in Information Systems Research. In J. Mingers and L. P. Willcocks (Eds.), *Social Theory and Philosophy for Information Systems*, pp. 103-128. Chichester: John Wiley & Sons.

Myers, M. D. and Tan, F. B. (2002). Beyond models of national culture in information systems research. *Journal of Global Information Management, 10(1)*: 24-32.

NASSCOM (National Association of Software and Services Companies) (2006a). IT Talent To Fall Short By 5 Lakh By 2010. NASSCOM, June 12, 2006. Retrieved on October 15, 2007, from: http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=44574

NASSCOM (National Association of Software and Services Companies) (2006b). Polish your English speaking skills for jobs in IT industry. Retrieved on October 15, 2007, from: http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=44685

NASSCOM (National Association of Software and Services Companies) (2007a). Govt To Set Up Finishing Schools For Graduates. NASSCOM, March 15, 2007. Retrieved on October 15, 2007, from: http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=51133

NASSCOM (National Association of Software and Services Companies) (2007b). NASSCOM's Education Initiatives. NASSCOM, July 06, 2007. Retrieved on October 15, 2007, from: http://www.nasscom.in/Nasscom/templates/NormalPage.aspx?id=51761

Nicholson, B. and Sahay, S. (2001). Some political and cultural issues in the globalization of software development: case experience from Britain and India. *Information and Organization, 11(1)*: 25-43.

Nicholson, B. and Sahay, S. (2004). Embedded Knowledge and Offshore Software Development. *Information and Organization, 14(4)*: 329-365.

Nicholson, B., Jones, J., and Espenlaub, S. (2006). Management control of inter-Firm transactional relationships. *Management Accounting Research, 17(3)*: 238-258.

Niederman, F. and Beise, C. M. (1999). Defining the 'virtualness' of groups, teams, and meetings. In the *Proceedings of SIGCPR'99*, New Orleans, USA, pp. 14-18.

Nilekani, N. M. (2008). Sourcing without borders: Sourcing in a flatting world. In M. Kobayashi-Hillary (Ed.), *Building a Future with BRICs: The Next Decade for Offshoring*, pp. 117-132. New York: Springer-Verlag.

Oats, B. J. (2006). *Researching Information Systems and Computing*. London, UK: Sage Publication, Inc.

Ocker, R. J. (2005). Influences on creativity in asynchronous virtual teams: A qualitative analysis of experimental teams. *IEEE Transaction on Professional Communication, 48(1)*: 22-39.

Ocker, R. J., Huang, H., Purao, S., and Trauth, E. M. (2007). The tension between expectations of availability and the reality of availability in hybrid teams: A reflection by a hybrid team of academic practitioners. In K. Crowston, S. Sieber, and E. Wynn (Eds.), *Virtuality and Virtualization – the Proceedings of the International Federation of Information Processing Working Group 8.2 on Information Systems and Organizations and 9.5 on Virtuality and Society*, pp. 119-131. Portland, Oregon. Boston: Springer.

OECD Report. (2006). Is China the new center for offshoring of IT and ICT-enabled services? Retrieved on October 5, 2007, from: http://www.oecd.org/dataoecd/6/59/38327582.pdf

Ogbonna, E. and Harris, L. C. (2000). Leadership style, organizational culture and performance: empirical evidence from UK companies. *International Journal of Human Resource Management, 11(4)*: 766-788.

O'Leary, M. B. and Cummings, J. C. (2007). The special, temporal, and configurational characteristics of geographical dispersion in teams. *MIS Quarterly, 31(3)*: 433-452.

Olson, J. S. and Olson, G. M. (2003). Culture surprises in remote software development teams. *QUEUE, 1(9)*: 52-59.

Ong, A. (1987). *Sprits of Resistance and Capitalist Discipline: Factory Women in Malaysia*. Albany, NY: State University of New York Press.

Oshri, I., Kotlarsky, J., and Willcocks, L. (2005). Before, during, and after face-to-face meetings: the lifecycle of social ties in globally distributed teams. In the *Proceedings of 26th International Conference on Information Systems*, pp. 395-407.

Osland, J. S. and Bird, A. (2004). Beyond sophisticated stereotyping: cultural sensemaking in context. In S. M. Puffer (Ed.), *International Management: Insights from Friction and Practice*, pp. 56-66. Armonk, NY: M. E. Sharpe, Inc.

Orlikowski, W. J. (2002). Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science 13(3)*: 249–273.

Orlikowski, W. and Baroudi, J. (1991). Studying information technology in organizations: research approaches and assumptions. *Information Systems Research, 2(1)*: 1-28.

Palvia, P. C. (1995). A Dialectic View of Information Systems Outsourcing: Pros and Cons. *Information & Management, 29*: 265-275.

Panda, A. and Gupta, R. K. (2004). Mapping cultural diversity within India: a meta-analysis *of some recent studies. Global Business Review, 5(1)*: 27-49.

Parkinson, E. and Morley, M. J. (2006). Cross-cultural training. In H. Scullion and D. G. Collings (Eds.), *Global Staffing*, pp. 117-138. London, UK: Routledge.

Patil, A. S. and Riemer, M. J. (2004). English and communications skills curricula in engineering and technology course in the Indian State of Maharashtra: issues and recommendations. *Global Journal of Engineering Education, 8(2)*: 209-218.

Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage Publications, Inc.

Paul, S., Seetharaman, P., Samarah, I., and Mykytyn, P. Jr. (2004). Impact of heterogeneity and collective conflict management style on the performance of synchronous global virtual teams. *Information & Management, 41*: 303-321.

Pauleen, D. J. (2003). Lessons learned crossing boundaries in an ICT-supported distributed team. *Journal of Global Information Management, 11(4)*: 1-19.

Peppard, J. (2003).Managing IT as a portfolio of services. *European Management Journal, 21(4)*: 467–483.

Phillips, F. (2006). *Social Culture and High-Tech Economic Development: The Technopolis Columns*. New York: Palgrave Macmillan.

Pike, K. L. (1967). *Language in Relation to a Unified Theory of the Structure of Human Behavior, 2nd Edition*. The Hague: Mounton.

Powell, A., Piccoli, G., and Ives, B. (2004). Virtual teams: A review of current literature and directions for future research. *The DATA BASE for Advances in Information Systems, 35(1)*: 6-36.

Prati, L. M., McMillan-Capehart, A., and Karriker, J. H. (2009). Affecting organizational identity: A manager's influence. *Journal of Leadership and Organizational Studies, 15(4)*: 404-415.

Prikladnicki, R., Audy, J., and Evaristo, R. (2003). Global Software Development in Practice: Lessons Learned. *Software Process Improvement and Practice, 8(4)*: 267-281.

Puusa, A. and Tolvanen, U. (2006). Organizational identity and trust. *Electronic Journal of Business Ethics and Organization Studies, 11(2)*: 29-33.

Rai, A. and Sambamurthy, V. (2006). Editorial Notes-The Growth of Interest in Services Management: Opportunities for Information Systems Scholars. *Information systems Research, 17(4)*: 327-331.

Ramingwong, S. and Sajeev A. S. M. (2007). Offshore outsourcing: the risk of keeping mum. Communications *of the ACM, 50(8)*: 101-103.

Rao, M. T. (2004). Key issues for global IT sourcing: country and individual factors. *Information Systems Management, 21(3)*: 16-21.

Ravasi, D. and Schultz, M. (2006). Responding to organizational identity threats: Exploring the role of organizational culture. *Academy of Management Journal, 49(3)*: 433-458.

Rennecker, J. A. (2002). The Situated Nature of Virtual Teamwork: Understanding the Constitutive Role of "Place" In the Enactment of Virtual Work Configuration. Sprouts: Working Papers on Information Environments. *Systems and Organizations, 2, Summer*. Retrieved on June 24, 2006, from: http://weatherhead.cwru.edu/sprouts/2002/020308.pdf

Rosenberg, D. (2002). *Cloning Silicon Valley: The Next Generation High-Tech Hotspots*. London: Pearson Education.

Rottman, J. and Lacity, M. (2004). Twenty Practices for Offshore Sourcing. *MIS Quarterly Executive, 3(3)*: 117-130.

Rust, R. T. and Miu, C. (2006). What academic research tells us about service? *Communications of the ACM, 49(7)*: 49-54.

Sahay, S., Nicholson, B., and Krishna, S. (2003). *Global IT Outsourcing: Software Development across Borders*. Cambridge, UK: Cambridge University Press.

Sangwan, R., Bass, M., Mullick, N., Paulish., D. J., and Kazmeier, J. (2006). *Global Software Development Handbook*. Boca Raton, FL: Taylor & Francis Group.

Sarker, S. (2003). Knowledge transfer in virtual information systems development teams: an empirical examination of key enables. In the *Proceedings of the 36th Annual Hawaii International Conference on System Sciences*, pp. 119 – 128.

Sarker, S. and Sahay, S. (2004). Implications of space and time or distributed work: an interpretive study of US-Norwegian systems development teams. *European Journal of Information Systems, 13(1)*: 3-20.

Saunders, C. and Ahuja, M. K. (2006). Are all distributed teams the same? Differentiating between temporary and ongoing distributed teams. *Small Group Research, 37(6)*: 662-700.

Saunders, C., van Slyke, C., and Vogel, D. R. (2004). My time or yours? Managing time visions in global virtual teams. *Academy of Management Executive, 18(1)*: 19-31.

Saxenian, A. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, Massachusetts: Harvard University Press.

Saxenian, A. (2006). *The New Argonauts: Regional Advantage in a Global Economy*. Cambridge, MS: Harvard University Press.

Scheibe, K. P., Mennecke, B., and Zobel, C. W. (2006). Creating offshore-ready IT professional: a global perspective and strong collaborative skills are needed. *Journal of Labor Research, 27(3)*: 275-290.

Schein, E. H. (2004). *Organizational Culture and Leadership, 3rd Edition*. San Francisco, CA: John Wiley & Sons, Inc.

Schmidt, K. (2002). The problem with "awareness". *Computer Supported Cooperative Work, 11(3)*: 285-298.

Schuerkens, U. (2003). The sociological and anthropological study of globalization and localization. *Current Sociology, 51(3-4)*: 209-222.

Schultz, M. and Hatch, M. J. (1996). Living with multiple paradigms: The case of paradigm interplay in organizational culture studies. *The Academy of Management Review, 21(2)*: 529-557.

Schultze, U. (2000). A confessional account of an ethnography about knowledge work. *MIS Quarterly, 24(1)*: 3-41.

Schultze, U. (2001). Reflexive Ethnography in Information Systems Research. E. Trauth (Ed.), *Qualitative Research in IS: Issues and Trends*, pp. 78-103. Hershey, PA, USA: Idea Group Publishing.

Schultze, U. and Boland, R. J. Jr. (2000). Place, space, and knowledge work: A study of outsourced computer systems administrators. *Accounting, Management, and Information Technologies, 10*: 187-219.

Schultze, U. and Orlikowski, W. J. (2001). Metaphors of virtuality: Shaping an emergent reality. Information *and Organization, 11(1)*: 45-77.

Schwandt, T. A. (2001). *Dictionary of Qualitative Inquiry, 2nd Edition*. Thousand Oaks, CA: Sage Publications, Inc.

Scott, S. G. and Lane, V. R. (2000). A stakeholder approach to organizational identity. *Academy of Management Review, 25(1)*: 43-62.

Sengupta, S. (2006). Skill gap hurts technology boom in India. New York Times, October 17, 2006. Retrieved on October 5, 2007, from: http://www.nytimes.com/2006/10/17/world/asia/17india.html?ref=todayspaper

Sheehan, J. (2006). Understanding service sector innovation. *Communications of the ACM, 49(7)*: 42 – 47.

Shokef, E. and Erez, M. (2006). Shared meaning systems in multicultural teams. In Y.-R., Chen (Ed.), *Research on Managing Groups and Teams (Volume 9): National Culture and Groups*, pp. 325-352. Oxford, UK: Elsevier Science Press.

Sinha, J. B. P. (2004). *Multinationals in India: Managing the Interface of Cultures*. New Delhi: Sage Publications Inc.

Sinha, J. B. P. and Sinha, D. (1990). Role of social values in Indian organizations. *International Journal of Psychology, 25*: 705-714.

Sirmon, D. G. and Lane, P. J. (2004). A model of cultural differences and international alliance performance. *Journal of International Business Studies, 35*: 306-319.

Sivunen, A. (2006). Strengthening identification with the team in virtual teams: The leaders' perspective. *Group Decision and Negotiation, 15*: 345–366.

Smith, H. J. and Keil, M. (2003). The reluctance to report bad News on troubled software projects: a theoretical model. *Information Systems Journal, 13(1)*: 69-95.

Smith, M. A. and Kumar, R. L. (2004). A theory of application service provider (ASP) use from a client perspective. *Information & Management, 41*: 977-1002.

So, Y. L. and Walker, A. (2006). *Explaining Guanxi: The Chinese Business Network*. London, UK: Routledge.

Storti, C. (2007). *Speaking of India: Bridging the Communication Gap When Working With Indians*. Boston, MA: Intercultural Press.

Straub, D., Loch, K., Evaristo, R., Karahanna, E., and Strite, M. (2002). Towards a theory-based measurement of culture. *Journal of Global Information Management, 10(1)*: 13-23.

Strauss, A. L. and Corbin, J. M. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, 2nd Edition*. Thousand Oaks, CA: Sage Publications.

Sun, J. and Chen, X. (2007). When Local Meets Global: Residential Differentiation, Global Connections and Consumption in Shanghai. In F. Wu (Ed.), *China's Emerging Cities: The Making of New Urbanism*, pp. 284-302. London, UK: Routledge.

Tajfel, H. (1972). Experiments in a vacuum. In J. Israel and H. Tajfel (Eds.), *The Context of Social Psychology*, pp. 69-121. London. Academic Press.

Tajfel, H. (1974). Social identity and intergroup behaviour. *Social Science Information, 13*: 65-93.

Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology, 33*: 1-39.

Tajfel, H. & Turner, J. C. (1986). The social identity theory of inter-group behavior. In S. Worchel and L. W. Austin (Eds.), *Psychology of Intergroup Relations*, pp. 2-24. Chigago: Nelson-Hall.

Tan, B. C. Y., Smith, H. J., Keil, M. (2005). Reporting bad news about software projects: impact of organizational climate and information asymmetry in an individualistic and collectivistic culture. *IEEE Transaction on Engineering Management, 50(1)*: 64-77.

Tang, J. and Ward, A. (2003). *The Changing Face of Chinese Management*. London, UK: Routledge.

Ting-Toomey, S. (1988). Intercultural conflict styles: a face negotiation theory. In Y. Kim and W. Gudykunst (Eds.), *Theories in Intercultural Communication*, pp. 213-235. Newbury Park, CA: Sage.

Thissen, M. R., Page, J. M., Bharathi, M. C., and Austin, T. L. (2007). Communication tools for distributed software development teams. In the *Proceedings of the 2007 ACM SIGMIS CPR Conference*, pp. 28-35. New York: ACM Press.

Ting-Toomey, S. and Oetzel, J. (2001). *Managing Intercultural Conflict Effectively*. Thousand Oaks, CA: Sage.

Tjosvold, T., Poon, M., and Yu, Z.-Y. (2005). Team effectiveness in China: Cooperative conflict for relationship building. *Human Relations, 58(3)*: 341-367.

Trauth, E. M. (2000). *The Culture of an Information Economy: Influences and Impacts in the Republic of Ireland.* Dordrecht, Netherlands: Kluwer Academic Publishers.

Trauth, E. M. (2001). The Choice of Qualitative Methods in IS Research. In E. M. Trauth (Ed.), *Qualitative Research in IS: Issues and Trends*, pp. 1-19. Hershey, PA: Idea Group Publishing.

Trauth, E. M. (2002). Odd Girl Out: An Individual Differences Perspective on Women in the IT Profession. *Information Technology and People, 15(2)*: 98-118.

Trauth, E. M., Huang, H., Morgan, A., Quesenberry, J. and Yeo, B. (2006). Investigating diversity in the global IT workforce: an analytical framework. In F. Niederman and T. Ferratt (Eds.), *Human Resource Management of IT Professionals*, pp. 333-360. Hershey, PA: Information Age Publishing.

Trauth, E. M. and Jessup, L. (2000). Understanding Computer-Mediated Discussions: Positivist and Interpretive Analyses of Group Support System Use. *MIS Quarterly, 24(1)*: 43-79.

Trauth, E. M., Quesenberry, J., Huang, H., and McKnight, S. (2008a). Linking Economic Development and Workforce Diversity through Action Research. *In the Proceedings of ACM SIGMIS-CPR, 2008*, pp. 58-65. New York: ACM Press.

Trauth, E. M., Quesenberry, J., and Yeo, B. (2008b). Environmental influences on gender in the IT workforce. *ACM SIGMIS Database, 39(1)*: 8-32.

Trauth, E. M., Quesenberry, J., and Huang, H. (2008c). A Multicultural Analysis of Factors Influencing Career Choice for Women in the Information Technology Workforce. *Journal of Global Information Management, 16(4)*: 1-23.

Treinen, J. J. and Miller-Frost, S. L. (2006). Following the sun: case studies in global software development. *IBM systems Journal, 45(4)*: 773-783.

Trompenaars, F. and Hampden-Turner, C. (1998). *Riding the Waves of Culture: Understanding Cultural and Diversity in Global Business, 2nd Edition*. New York: McGraw-Hill.

Turner, Y. (2006). Chinese students in a UK Business school: hearing the student voice in reflective teaching and learning practice. *Higher Education Quarterly, 60(1)*: 27-51.

Turner, Y. and Acker, A. (2002). *Education in the New China: Shaping Ideas at Work*. Basingstoke: Ashgate.

Upadhya, C. (2006). The global Indian software labor force: IT professionals in Europe. Retrieved on October 17, 2007, from: www.idpad.org/docs/WP%202006-1%20Upadhaya.pdf

Van Knippenberg D. and Schippers M. C. (2007). Work group diversity. *The Annual Review of Psychology, 58*: 515-541.

Vinken, H., Soeters, J., and Ester, P. (2004). Cultures and dimensions: Classic perspectives and new opportunities in 'dimensionalist' cross-cultural studies. In H. Vinken, J. Soeters, and P. Ester (Eds.), *Comparing Cultures: Dimensions of Culture in a Comparative Perspective*, pp. 5-27. Netherlands: Brill.

Waldman, A. (2003). India's poor bet precious sums on private schools. New York Times, November 15, 2003. Retrieved on October 15, 2007, from: http://query.nytimes.com/gst/fullpage.html?res=9C00E5DD1338F936A25752C1A9659C8B63

Walsham, G. (1995a). The emergence of interpretivism in IS research. *Information Systems Research, 6(4)*: 376-394.

Walsham, G. (1995b). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems, 4*: 74-81.

Walsham, G. (2000). IT, Globalization and Cultural Diversity. In C. Avgerous and G. Walsham, (Eds.), *Information Technology in Context: Studies from perspective of developing countries*, pp. 291-303. Aldershot, UK: Shgate Publishing Ltd.

Walsham, G. (2001). *Making a World of Difference: IT in a Global Context*. Chichester, UK: John Wiley & Son Ltd.

Walsham, G. (2002). Cross-cultural software production and use: A structurational analysis. *MIS Quarterly, 26(4)*: 359-380.

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems, 15(3)*: 320-330.

Walsham, G. and Sahay, S. (1999). GIS for District-Level Administration in India: Problems and Opportunities. *MIS Quarterly, 23(1)*: 39-65.

Walz, D. B., Elm, J. J., and Curtis, B. (1993). Inside a software design team: knowledge acquisition, sharing and integration. *Communications of the ACM, 36(1)*: 63-77.

Watson-Manheim, M. B., Chudoba, K. M., and Crowston, K. (2002). "Discontinuities and consanguinities: a new way to understand virtual work. *Information, Technology & People, 15(3)*: 191-209.

Wei, K. (2007). Sharing knowledge in global virtual teams. In K. Crowston, S. Sieber, and E. Wynn (Eds.), *Virtuality and Virtualization – the Proceedings of the International Federation of Information Processing Working Group 8.2 on Information Systems and Organizations and 9.5 on Virtuality and Society*, July 29-31, 2007, Portland, Oregon, USA, pp. 251-265. Boston: Springer.

Weisband, S. (2002). Maintaining awareness in distributed team collaboration: Implications for leadership and performance. In P. Hinds and S. Kiesler (Eds.), *Distributed Work*, pp. 311-334. Cambridge, MA: The MIT Press.

Weisband, S. (2007). Research Challenges for Studying Leadership at a Distance. In S. Weisband (Eds.), *Leadership at a Distance: Research in Technology-Supported Work*, pp. 3-30. New York: Lawrence Erlbaum Associates.

Weisinger, J. Y. and Salipante, P. F. (2000). Cultural knowing as practicing: extending our conceptions of culture. *Journal of Management Inquiry, 9(4)*: 376-390.

Weisinger, J. Y., and Trauth, E. M. (2002). Situating culture in the global information sector. *Information Technology and People, 15(4)*: 306-320.

Weisinger, J. Y. and Trauth, E. M. (2003). The importance of situating culture in cross-cultural IT management. *IEEE Transactions on Engineering Management, 50(1)*: 26-30.

Winkler, J. K., Dibbern, J., and Heinzl, A. (2008). The impact of cultural differences in offshore outsourcing: Case study results from German–Indian application development projects. *Information Systems Frontier, 10(2)*: 243-258.

Wu, W. (2004). Cultural strategies in Shanghai: regenerating cosmopolitanism in an era of globalization. *Progress in Planning, 61(3)*: 159-180.

Xiao, L., Huang, H., and Umapathy, K. (2005). A Case Study: Information and Communication Technologies Adoption in Higher Education in China and India. In *the Proceedings of American Conference on Information Systems*, August 11-14, Omaha, Nebraska, USA, pp. 1277-1281.

Xiao, X., Zhao, C, and Zhang, S. Do we talk differently: coss culture study on conference call. In N. Aykin (Ed.), *Lecture Notes in Computer Science: Usability and Internationalization*, pp. 637-645. Berlin: Springer-Verlag.

Xiong, Z. B. (1982). Further Comments on English Education in China. *TESOL Quarterly, 16(2)*: 273-277.

Ye, Y., Nakakoji, K., and Yamamoto, Y. (2007). Reducing the cost of communication and coordination in distributed software development. In B. Meyer and M. Joseph (Eds.), *Lecture Notes in Computer Science: Software Engineering Approaches for Offshore and Outsourced Development*, pp. 152–169. Berlin: Springer-Verlag.

Yin, R.K. (2002). *Case Study Research: Design and Methods, 3rd Edition.* New York: Sage.

Yuan, M. and Vogel, D. (2006). Culture impacts on intergroup coordination in software development in China: a qualitative analysis. In the *Proceedings of the 39th Hawaii International Conference on Systems Sciences*, Volume 1, pp. 13C.

Zakaria, N., Amelinckx, A., and Wilemon, D. (2004). Working together apart? Building a knowledge-sharing culture for global virtual teams. *Creativity and Innovation Management, 13(1)*: 15-29.

Zhao, D. and Qian, F. (2008). Effect of Regional Culture in Regional Innovation System: A Case Comparison between Silicon Valley and Tsukuba. In the Proceedings of *International Conferences on Information Management, Innovation Management and Industrial Engineering, ICIII '08*, pp. 258-262. IEEE.

Zimmermann, A., Holman, D., and Sparrow, P. (2003). Unravelling adjustment mechanisms: adjustment of German expatriates to intercultural interactions, work, and living conditions in the People's Republic of China. *International Journal of Cross Cultural Management, 3(1)*: 45-66.

Zolin, R., Hinds, P. J., Fruchter, R., and Levitt, R. E. (2004). Interpersonal trust in cross-functional, geographically distributed work: A longitudinal study. *Information and Organization, 14*: 1-26.

Appendix A: Recruiting Document

Globally Distributed Information Technology Work
A Study of Cultural Influences, Communication, and Management:
by
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Globalization is one of the most significant trends of the 21st century, especially in the information technology (IT) industry sector. Globally distributed information systems development refers to software and information systems development practices that involve collaborations between two or more organizations, or between one organization and its subsidiaries, which are in different countries. Globally distributed information systems development work includes IT research and development, software development, production and implementation, information systems integration and management, project management, and IT consulting.

Cultural diversity is inherent in globally distributed information systems development work. Cross-cultural differences may be reflected in different perspectives, such as language, communication styles, different work schedules because of the time zone differences, perceptions of time, and conflict management styles. Cultural diversity can have both positive and negative effects on globally distributed information systems development work. Therefore, understanding how cross-cultural issues influence globally distributed information systems development work and how to effectively manage these issues are becoming very important, and hence are the primary objectives of this research.

This research aims to examine: 1) how global virtual team members interact with people from other countries in doing information systems development work; and 2) how management helps individual team members to manage cross-cultural differences.

This research will contribute to the in-depth understandings of how cross-cultural issues affect globally distributed information systems development work in different work environments. From a practical perspective, this research will help practitioners develop corresponding strategies for cultural diversity management, cross-cultural training, and cross-cultural knowledge management. Furthermore, cultural diversity issues are becoming increasingly prevalent and important in future IS/IT work practices and workplaces. This research will also provide some actionable knowledge with respect to how to understand and address cultural diversity issues.

I am a doctoral student in College of Information Sciences and Technology at the Pennsylvania State University. This research is my Ph.D. dissertation. I am looking for participants, who have cross-cultural work experiences, are currently working in a multinational IT company, and are located in the U.S., China, or India, to participate in an interview with me. I am requesting your permission and I will greatly appreciate your participation in my research. Strict confidentiality is guaranteed. Each participant will be assigned an alias and no one's real name will be used in any publications coming from this research. Your responses will be kept confidential and secure. If you have any questions, please contact me via email: hhuang@ist.psu.edu

Appendix B: Interview Guide

Background Information:
1. Can you give me a brief description of your job title and job responsibilities?
2. Did you have any prior cross-cultural experiences before you joined the company?
3. For how many years have you had cross-cultural work experiences?

Project Information
1. What cross-cultural, globally distributed projects have you worked on or are currently working on?
2. In these projects, who do (have) you collaborate (collaborated) with and what countries are (were) your collaborators in?
3. Approximately, how much of the work is (was) conducted in the face-to-face environment and how much of the work is (was) conducted in the virtual environment?
4. What types of communication technologies are (were) used for communication and coordination?

Critical Incidents: Think about some project currently on-going or recently completed that is cross-cultural.
1. Can you tell me a (some) particular example (case, incident) in which cultural differences affected some aspects of work during the project?
- What happened?
- In your opinion, what may cause the differences?
- How did it affect the project?
- How was it resolved?

Cross-cultural Management:
1. Have you attended any cross-cultural training programs or seminars before?
2. What did you learn from these programs that helped you to manage the cross-cultural differences encountered in your work?
3. What is your strategy for managing the cross-cultural differences?
4. What do you think organizations could do to better help the global virtual team members in cross-cultural management?

CURRICULUM VITAE FOR HAIYAN HUANG

EDUCATIONAL BACKGROUND

- **Ph. D. Information Sciences & Technology**, August 2009, the Pennsylvania State University
- **M.S. Ceramic Science and Engineering**, August 1999, Alfred University
- **B.S. Materials Science and Engineering**, July 1994, Central South University of Technology, China

SELECTED PUBLICATIONS

Refereed Journal Articles

1. Trauth, E. M., Quesenberry, J., and **Huang, H.** (2008). A Multicultural Analysis of Factors Influencing Career Choice for Women in the Information Technology Workforce. *Journal of Global Information Management, 16(4)*: 1-23.
2. Trauth, E. M., Johnson, N, Morgan, A., **Huang, H.**, and Quesenberry, J. (2007). Identity Development and Diversity Education: The Case of an Information Technology Course. *New Directions for Teaching and Learning, 111*: 81-87.
3. Sawyer, S. and **Huang, H.** (2007). Conceptualizing Information, Technology and People: Comparing Information Science and Information Systems Literatures. *Journal of the American Society for Information Science and Technology, 58(10)*: 1436-1447.
4. **Huang, H.**, Yeo, B., and Trauth, E. M. (2006). Exploring the Situated Context of Knowledge Management in E-Government Development. *International Journal of Advanced Media and Communication, 1(2)*: 148-160.

Refereed Book Chapters

1. Ocker, R., **Huang, H.**, Trauth, E. M., and Purao, S. (2007). The tension between expectations of availability and the reality of unavailability in hybrid teams. In K. Crowston, S. Sieber, and E. Wynn (Eds.), Virtuality and Virtualization, pp. 119-131. New York, NY: Springer.
2. Trauth, E. M., **Huang, H.**, Quesenberry, J., and Morgan, A. (2007). Leveraging Diversity in Information Systems and Technology Education in the Global Workplace. In G. Lowry and R. Turner (Eds.), *Information Systems and Technology Education: From the University to the Workplace*, pp. 27-41. Hershey, PA: Idea Group Publishing.
3. **Huang, H.** and Trauth, E. M. (2006). Cultural Diversity Challenges: Managing Globally Distributed Knowledge Workers in Global Software Development. In P. Yoong and S. Huff (Eds.), *Managing IT Professionals in the Internet Age*, pp. 254-276. Hershey, PA: Idea Group Publishing.
4. **Huang, H.** (2006). The Cross-Cultural Dimension of Gender and Information Technology. In E. M. Trauth (Ed.), *Encyclopedia of Gender and Information Technology*, pp. 147-153. Hershey, PA: Idea Group Publishing.
5. Trauth, E. M., **Huang, H.**, Morgan, A., Quesenberry, J., and Yeo, B. (2006). Investigating Diversity in the Global IT Workforce: An Analytical Framework. In F. Niederman and T. Ferratt (Eds.), *Human Resource Management of IT Professionals*, pp. 331-360. Greenwich, CT: Information Age Publishing.

Refereed Conference Papers

1. **Huang, H.**, Joshi, K. D., Kvasny, L., Mahar, J., and Trauth, E. M. (2009). Synthesizing IT Job Skills Identified in Academic Studies, Practitioner Publications and Job Ads. *SIGMIS-CPR'09,* May 28-30, 2009, Limerick, Ireland, pp. 121-127. ACM Press: New York, NY.
2. **Huang, H.** and Trauth, E. M. (2008). Cultural Influences on Temporal Separation and Coordination in Globally Distributed Software Development. *Proceedings of the International Conference on Information System*s, Paris, December 14-17, 2008, Paper 134.
3. Trauth, E. M., Quesenberry, J., **Huang, H.**, and McKnight, S. (2008). Linking Economic Development and Workforce Diversity through Action Research. In the Proceedings of *ACM SIGMIS-CPR'08,* April 3-5, 2008, Charlottesville, Virginia, USA, pp. 58-65. ACM Press: New York, NY.
4. **Huang, H.** and Trauth, E. (2007). Cultural Influences and Globally Distributed Information Systems Development Work: Experiences from Chinese IT Professionals. *SIGMIS-CPR'07,* April 19–21, 2007, Saint Louis, Missouri, USA, pp. 36-45. ACM Press: New York, NY.