Cultural Intelligence and the Global Information Technology Workforce

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INTRODUCTION

Globalization, spearheaded by advances in information and network technologies, has dramatically changed the way businesses conduct their operations. Such technologies compress time and space. They intensify worldwide social relations and link workers in distant localities, making local concerns global and global concerns local (Zacharakis 1996). As a result, the world we live in now feels smaller and "flatter" (Friedman 2005).

Within the context of IT, the phenomenon of offshoring has propelled IT professionals to work in global IT work teams to deliver seamless global IT services to organizations (Ang and Inkpen 2008). Global IT work teams blur national and organizational boundaries for customers and IT professionals (Ford, Connelly, and Meister 2003). To be effective, IT professionals need new and unique capabilities to work effectively with clients, users, vendors, and other IT professionals from different cultures.

To date, IT research on culture has focused mainly on the effects of culture on IT management, use, adoption, and diffusion (Gallivan and Srite 2005; Leidner and Kayworth 2006). The emphasis of existing research is comparative in nature. Research focuses on discovering differences in the management, use, adoption, and diffusion of IT across different cultures. In contrast, little or no work has examined the capabilities IT professionals need to function effectively in this culturally diverse environment.

This is so even in the broader management literature, where research to date continues to focus on comparative cross-cultural studies, with little emphasis placed on intercultural capabilities (Earley and Ang 2003; Gelfand, Erez, and Aycan 2007). The current state of cross-cultural research in management and IT leaves an important gap in our understanding of what IT professionals need to function effectively in this global economy.

To address this gap, we introduce and propose that cultural intelligence (CQ) is an important individual capability that IT professionals need to effectively overcome these cross-cultural challenges. In the next section, we describe global trends in IT work that show the realities IT professionals must grapple with. We then discuss the concept of culture and CQ, and present a conceptual framework of how CQ contributes to IT professionals' effectiveness in this global context. We conclude with implications for future research and practice.

THE GLOBAL INFORMATION TECHNOLOGY WORKFORCE

IT work gravitates toward where IT workers are located. Severe shortages of IT labor have driven companies to search for IT professionals across the globe (Young, Marriott, and Huntley 2008). To meet this shortfall of IT professionals, U.S.-based IT software and service firms have increasingly turned to India (Young et al. 2008). Currently, U.S.-based IT software and service firms hold their largest pool of foreign IT professionals in India. Accordingly, India is the premier and de facto location for offshoring activities (National Association of Software and Service Companies and McKinsey & Company 2005). By 2006, India had captured two-thirds of the market share in IT development, maintenance, and support (Tholons 2006). The remaining third of the market share is shared by Canada, as a second-preferred offshoring location after India; Ireland, as the third-preferred offshoring location; and followed by a list of emerging locations, including China, Vietnam, Philippines, and Brazil (Tholons 2006). In 2005, India exported more than US$15 billion in IT and US$7 billion in business process outsourcing services, compared with China's US$800 million and US$345 million in that same year (Tholons 2006). Recent estimates suggest that India's IT and business process exports is expected to reach US$47.3 billion in 2009 (National Association of Software and Service Companies 2009) while China's IT exports are estimated to reach US$7.6 billion (Innovest Group 2009).

However, offshoring to India comes with costs. The imbalance of global demand and local supply of IT professionals in India has led to increasing operation costs and excessive strain on Indian offshoring firms (Deloitte Touche Tohmatsu 2007; Tholons 2006). For

example, IT turnover rates are reported to be as high as 20 percent to 25 percent in some Indian offshoring firms (Marriott and Matlus 2007; Marriott et al. 2007). It is estimated that salaries of Indian IT professionals are growing at a rate of 14.5 percent annually (Iyengar, Marriot, Longwood, Huntley, and Hallawell 2007). India is also several time zones away from major U.S and European clients, and this can be a potential impediment to the efficient delivery of IT products and services (neoIT 2006).

In response, major U.S and European clients are seeking nearshore locations to align the delivery of IT products and services with their primary time zones and to leverage on similar language, culture, and business, economic, legal and political environments (Marriott 2007). For example, Central and Eastern European countries such as Hungary, Poland, Slovakia, and Russia are emerging as attractive nearshore locations for the Western European offshoring market, while Canada, Mexico, and Brazil are attractive nearshore locations for the North American offshoring market (Table 61.1).

Offshoring and nearshoring of IT products and services have given rise to a relatively new IT strategy: the global delivery model (GDM). The global delivery model aims to provide seamless development and delivery of products and services to clients by combining the expertise of geographically dispersed IT professionals (Marriott and Matlus 2007).

The global delivery model is implemented by establishing centers of excellence around the globe to take advantage of recognized expertise of IT professionals in particular locations (Tholons 2006). Global IT organizations such as HP, SAP, and Microsoft build and maintain centers of excellence across the globe in locations where there is a pool of particular expertise. Table 61.2 lists a sample of IT companies with a selected list of their dispersed centers of excellence and IT research and development (R&D) locations worldwide. For example, Hewlett-Packard established a center of excellence in Singapore to take advantage of the growing pool of graphic arts professionals in that country. Similarly, SAP expanded their R&D laboratories in Brazil and Bulgaria to tap on a large pool of programming expertise in those countries. More recently, Microsoft announced that it would build three new research centers in Europe to focus on search technologies (Minto 2008). According to the announcement, Microsoft is establishing these new centers of excellence in response to the dominance of regional search engines that have emerged as local leaders. These local search engines have a greater market share than Google in Russia and the Czech Republic, partly due to the localization of their search engines. In essence, IT products and services are now delivered through a geographically dispersed and culturally diverse team consisting of the IT firm's engagement team, IT professionals from the firm's center of excellence, clients, vendors and other relevant stakeholders.

The global delivery model, utilizing globally dispersed IT expertise, requires IT professionals to collaborate and communicate with a culturally diverse team to be successful (Koh, Ang, and Straub 2004; Levina and Vaast 2008). IT professionals also have to work with culturally diverse stakeholders such as users, clients, and vendors. For example, a study of IT R&D engineers working in globally distributed software development teams found that R&D engineers spent up to 50 percent of their time on ad hoc collaboration and communication activities (Cherry and Robillard 2004). About 57 percent of this ad hoc collaboration and communication was spent on exchanging information, so that team members shared a common understanding on various project issues. R&D engineers reported spending an additional 32 percent of their collaboration and communication activities on conflict and problem resolution. Only 8 percent of their collaborative and communication activities were actually spent on co-development of the software. The remaining 3 percent was spent on planning and coordinating meetings and working sessions.

The time and effort expended in communication and collaboration has important implications on the effectiveness of globally dispersed IT teams. Drawing from the extant management and cross-cultural literature, there is evidence that the cultural diversity of teams influences the time required and effort expanded in communication and collaboration, which, in turn, results in differences in team performance (Staples and Zhao 2006; Thomas 1999). Staples and Zhao (2006) found that culturally heterogeneous teams experienced more conflict than culturally homogeneous teams, because culturally heterogeneous teams required more effort in communicating and collaborating toward performing a group task. Similarly, Thomas (1999) found that culturally homogeneous teams had higher performance than culturally heterogeneous teams on group tasks, because culturally homogeneous teams sought and obtained more process-related feedback on group performance than culturally heterogeneous teams.

In sum, the global delivery model is in contrast to the wave of internationalization that occurred in previous decades. In the internationalization strategy, multinational IT corporations setup offshore facilities to market and distribute products and services. Most, if not all, of the expertise for production, marketing, and sales came from the multinational corporations' home countries, with managers typically sent from their home countries to live for an extended period of time in the offshore location. On the contrary, the global delivery model of IT capitalizes on information and network technologies to establish geographically distributed centers of excellence to develop and service clients. In doing so, the IT workforce is often located in several different cities, and collaborates and interacts as virtual teams. This new work environment produced by the global delivery model requires today's global IT workforce to acquire new competencies beyond the traditional cross-cultural training.

In the following sections, we propose the concept of cultural intelligence as the new cultural competency required by IT professionals to be effective in the global work environment. Accordingly, in the next section, we first define and clarify the concept of culture, and provide a brief overview of the different cultural frameworks. We then define cultural intelligence, and explain how it provides the capabilities IT professionals require to work effectively within this global delivery model.

Table 61.1: Quantity and Quality of the Global IT Workforce

	Estimated Number of IT Professionals	Quality of IT Labor
Americas		
Argentina	No available figures. Estimated 14,000 professionals required by 2010.	Spanish is the official language with 13 percent of populations possessing a good knowledge of English. Salary figures unavailable. Salaries are rising, but lower compared with countries in Latin America. As of 2006, cost advantage of about 80 percent when compared with U.S. locations, and 30 percent to 50 percent when compared with locations such as Mexico and Costa Rica. Argentina has a Western European culture.
Brazil	Estimated at more than 200,000 IT professionals. Approximately 23,000 new IT graduates enter the industry each year.	Portuguese is the official language with English as a foreign language. Center of excellence for ERP support and maintenance. As of 2006, estimated average annual salary about US$16,000, lowest salary rates among nearshore providers in the Americas. The culture is influenced by the U.S. US$230 million in IT exports in 2005.
Canada	Estimated at about 589,272.	Two official languages—English and French. Center of excellence for IT development, back office services, and research and development. As of 2006, estimated annual IT salary about US$43,841, significantly higher than locations in Latin America and Asia/Pacific. Considered one of the world's most multilingual societies. Twelve-and-a-half percent of global IT services market share in 2005. US$8.6 billion in IT exports in 2005.
Chile	No available figures. Almost 90 percent of IT companies have fewer than 50 employees. The 40 foreign IT companies employ more than 9,000 workers in total.	Thirty-three percent of college graduates are proficient in spoken English, but only 8 percent of graduates in technical fields have this level of proficiency. As of 2006, salaries are 15 percent lower than in Brazil and 30 percent lower than in Mexico. Social security costs are also low, which results in reduced overall labor costs. Chile is a country with a Western culture, strongly influenced by Spanish colonial rule and other European influences.
Costa Rica	No available figures. About 100 domestic software companies serving the local and international markets.	English is a second language. As of 2006, average annual IT salary is estimated about US$21,083, with entry-level IT outsourcing salaries roughly 75 percent lower than in the U.S. Center of excellence for shared services. High cultural fit with the U.S. due to location and economic ties.
Mexico	Estimated at about 390,000. Estimated 60,000 graduates annually from technical schools and IT university programs.	Shortage of English language competency as Spanish is the main language. IT labor known for excellent technical skills. Center for excellence for custom development and customer support. As of 2006, about 44 IT organizations with ISO and CMMI accreditations. As of 2006, estimated annual IT salary about US$22,484; slightly more expensive than India and China, but lower than many Eastern European locations. Culture is strongly influenced by the U.S. US$120 million in IT exports in 2005.

Table 61.1: (*continued*)

	Estimated Number of IT Professionals	Quality of IT Labor
Uruguay	No available figures.	Spanish is the official language, with English as the second business language. As of 2006, salaries are about 15 percent higher than in India—but increasing salary levels in the country may pose a long-term threat. Cultural compatibility with other Latin American countries.
Asia/Pacific		
Australia	Estimated at about 274,132.	Almost 80 percent of population is English speaking. As of 2006, estimated annual IT salary about US$73,000, expected to increase at 4 percent to 5 percent a year. IT labor costs high compared with India, China, Malaysia, and Vietnam. Marginally more expensive than Singapore, Hong Kong, and New Zealand. Less expensive compared with U.S. and U.K. Australia has a historically Anglo-Saxon culture.
China	Estimated at about 200,000. Estimated 500,000 IT and technology graduates annually.	Currently lacks IT professionals with English at a business level. Center of excellence for embedded software. As of 2006, estimated annual IT salary about US$10,095. Low cultural compatibility with English-speaking markets, but higher compatibility with Japanese and Korean markets. Two-and-a-half percent of global IT services market share in 2005. US$7.6 billion in IT exports in 2008.
India	Estimated at 2,230,000 IT professionals.	Strong foundation in English, the de facto business language. As of 2006, estimated annual IT salary about US$9,891 with annual increases at 14.5 percent. As of 2006, attrition levels have risen substantially recently, with average rates reaching 20 to 25 percent. Center of excellence for IT development, back office services, and research and development. Good cultural compatibility with English-speaking countries, but a challenge with the non-English-speaking world. Sixty-three percent of global IT services market share in 2005. Estimated US$47.3 billion in IT exports in 2009.
Malaysia	Estimated at about 365,000.	English second most spoken language after Bahasa Malaysia. Shortage of technologies, process, and middle management skills. As of 2006, estimated annual salary about US$21,823; about 70 percent cheaper compared with the U.S. and Canada, but more expensive than India and the Philippines. High degree of cultural fit with English-speaking nations due to historical links with Britain. US$140 million in IT exports in 2005.
New Zealand	Estimated at about 23,000. About 24,000 IT graduates annually.	Predominantly English-speaking. High degree of project management skills. Lower or equivalent labor cost structure compared with Australia, Ireland, United Kingdom, and the U.S., but more expensive compared with other Asia/Pacific locations. High degree of cultural fit with Asia, Europe, South Africa, and U.S. as highly reliant on migrant labor from Asia/Pacific, India, and South Africa.
Pakistan	Estimated at about 110,000. About 100 call centers employing over 4,000 employees.	English is widely used in major organizations. Relatively low literacy rates resulting in IT professionals with relatively less experience and expertise. As of 2006, lower salaries than offshore locations in the Asia/Pacific region, about 30 percent lower than those in India. May require relatively more investments in training. Comparatively less cultural compatibility with Europe and U.S.

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Table 61.1: (*continued*)

	Estimated Number of IT Professionals	Quality of IT Labor
Philippines	Estimated at about 400,000.	Third-largest English-speaking nation in the world. Extremely low need to neutralize accents. As of 2006, estimated annual IT salary about US$12,522. Center of excellence for customer support. High degree of cultural compatibility with Europe and the U.S. due to historic links. US$5.2 billion in IT exports in 2008.
Singapore	Estimated at about 119,700. Estimated annual IT labor growth rate of 7.5 percent.	English is widely spoken. Not considered a low-cost outsourcing destination. As of 2006, estimated average annual salary about US$41,512 but expected to rise. Salary differentials of 45 percent with the U.S. compared with differential of at least 75 percent for other countries in Asia/Pacific. Center of excellence for regional data center and HQ. High cultural fit with English-speaking markets due to historical links with Europe and the U.S., and within seven hours by air from all major Asia/Pacific capitals.
Sri Lanka	Estimated at about 35,000.	Predominant language is Sinhalese with less than 1 percent of population speaking English. As of 2006, 43 percent of IT professionals possess a degree or higher qualification in IT. IT attrition rates approximately at 13 percent in 2006. Culturally compatible with Europe due to Indian, British, and Dutch historical links.
Vietnam	Estimated at about 25,000.	Approximately 86 percent of population speaks Vietnamese although English is a mandatory second language. As of 2006, estimated average annual IT salary about US$6,130. IT salaries are the lowest in the Asia/Pacific region, including offshore destinations—40 percent lower than in India and China, and more than 80 percent lower than in Singapore. Long association with China resulting in strong Confucian emphasis.
Europe, Middle East, and Africa		
Czech Republic	Estimated 360 IT companies employing 7,500 IT professionals. Estimated 3,110 IT graduates a year.	Official language is Czech, but Russian, German, and English are preferred as a second or third language. As of 2007, estimated annual IT salary ranges from US$29,970 to US$60,680. IT salaries are higher than those in India. Strong cultural compatibility with its neighbors in Europe. US$296 million in IT exports in 2007.
Hungary	Estimated 300 IT companies employing 9,000 IT professionals. Estimated 10,000 IT graduates annually.	Hungarian is the primary language, only limited English spoken. As of 2007, estimated annual IT salary ranges from US$32,370 to US$65,520. Center of excellence in European back office services. Good cultural compatibility with European countries. US$380 million in IT exports in 2007.
Ireland	Estimated at about 90,000. 140 multinational IT companies employing 13,000 people.	English is the official language and widely spoken. As of 2006, estimated average annual IT salary about US$57,100. Cultural compatibility with UK. Seven-and-a-half percent of global IT services market share in 2005. US$2.5 billion in IT exports in 2005.

Table 61.1: (*continued*)

	Estimated Number of IT Professionals	Quality of IT Labor
Israel	No available figures.	Hebrew and Arabic are official languages but English is a mandatory language taught in schools. Center of excellence for IT development. As of 2006, estimated average annual IT salary about US$32,600, which is higher than in countries such as Hungary, Poland, Russia, and Slovakia. Israel is a multilingual and culturally diverse country due to over 1.1 million migrants.
Poland	Estimated 400 IT companies employing 7,800 IT professionals.	Official language is Polish, but most educated Poles speak one or more foreign languages—English, German, and Russian. Center of excellence in European back office services. As of 2007, estimated annual salary ranges from US$32,800 to US$66,000. Well-connected with major European and U.S. cultural and economic centers. US$310 million in IT exports in 2007.
Romania	Estimated 600 IT companies employing 12,500 IT professionals. Estimated 8,000 IT graduates per year.	Romanian is the official language but English widely spoken as a fairly large number of the population is multilingual in English and French. As of 2007, estimated annual IT salary ranges from US$30,020 to US$62,320. Center of excellence for custom development. High cultural fit with Europe due to historical links with Europe. US$416 million in IT exports in 2007.
Russia	Estimated at about 244,500.	Moderate English language skills despite being a mandatory foreign language. As of 2006, estimated average annual IT salary about US$21,000, with salaries for programmers growing by at least 25 percent per year. Shortage of IT managers. Center of excellence for engineering services and custom development. Relatively high cultural fit with major markets due to proximity to Asia/Pacific and major European economies. Three percent of global IT services market share in 2005. US$660 million in IT exports in 2005.
Slovakia	Estimated 170 IT companies employing 2,500 IT professionals.	English and German are second-languages. As of 2007, estimated annual IT salary ranges from US$26,240 to US$52,160. Strong cultural compatibility with Hungary and Czech Republic. US$80 million in IT exports in 2007.
South Africa	Estimated at about 80,000.	English is the business language and the primary language of government, business, and commerce. As of 2006, estimated annual IT salary about US$36,696; significantly higher at all experience levels than Europe, the Middle East, and Africa, but still about 55 percent lower than UK and the U.S. Shortage of employees with advanced IT skills. Strong cultural compatibility with U.S. and Europe. US$253 million in IT exports in 2005.
Spain	Estimated at about 1.52 million.	Wide range of European languages spoken, including English and French. As of 2006, estimated average annual IT salary about US$32,500. IT companies in process of gaining ISO and CMMI accreditation. Large foreign population facilitates cultural compatibility.

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Table 61.1: (*continued*)

	Estimated Number of IT Professionals	Quality of IT Labor
Turkey	No available figures.	Proficiency in multiple languages including English, German, French, and Dutch. Turkish software companies charge about 10 times less than their U.S. or Western European counterparts. Preferential taxation policies have greatly reduced the cost of software development. High cultural compatibility with European nations.
Ukraine	Estimated 800 IT companies employing 14,000 IT professionals. Expected to grow by 25 percent per year till 2010. Estimated 30,000 IT graduates per year.	English is spoken widely. As of 2007, estimated average annual IT salary ranges from US$25,920 to US$49,600. Considered among the lowest-cost destinations for outsourcing in Europe. High cultural compatibility with European nations, for example, Russia, Poland, and Germany. US$544 million in IT exports in 2007.

Sources: AT Kearney (2007); Britton and McGonegal (2007); Deloitte Touche Tohmatsu (2007); Innovest Group (2009); Lenard and Britton (2006); Marriott (2007); National Association of Software and Service Companies (2009); National Association of Software and Service Companies and McKinsey & Company (2005); neoIT (2005); neoIT (2006); Tholons (2006) and Ukrainian Hi-Tech Initiative (2008).

Table 61.2: Top IT Software and Services Companies[a] and Some Centers of Excellence

Organization	Some Location of IT Centers	Center of Excellence in
Accenture	India (Bangalore, Chennai, Gurgaon)	Life Sciences Management Consulting
Adobe Systems	India (Bangalore)	R&D
Apple	India (Bangalore)	R&D
Google	India (Bangalore) Japan (Tokyo) Switzerland (Zurich)	R&D
Hewlett-Packard	France (Grenoble) Singapore Taiwan United Kingdom (Bristol)	Internet Protocol TV (IPTV) IT security Information management, Graphics arts RFID Web services and systems
IBM	China (Beijing) Canada (Montreal) France (Nice-La Gaude) Germany (Boeblingen) Holland (Amsterdam) India (Bangalore) Japan (Yamato) Vietnam (Hanoi)	Banking Biostatistics Product Life Cycle Management Water Management
Microsoft	China (Beijing) India (Bangalore) Israel Slovenia United Kingdom (London) France (Paris)	e-Government Enterprise Application Services R&D Software testing Search technology
Oracle	China (Beijing, Shangai, Shenzhen,) India (Gurgaon) Singapore	e-Governance Porting, testing, and migration services R&D

Table 61.2: (*continued*)

Organization	Some Location of IT Centers	Center of Excellence in
SAP	Brazil (Sao Paolo) Bulgaria (Sofia) Canada (Montreal) China (Shanghai) Francew (Sophia Antipolis) India (Bangalore, Mumbai) Israel (Tel Aviv) Japan (Tokyo) United States (Palo Alto)	R&D

[a]In terms of revenue.
Sources: BusinessWeek 2008. The Info Tech 100. Accessed on May 26, 2008. Available at: http://bwnt.businessweek.com/interactive_reports/it100_2008/?chan=magazine+channel_special+report; and press releases obtained from the respective companies' web sites.

CULTURE

The term "culture" has been variably defined. The most influential framework on culture is that proposed by Hofstede, who views culture as "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede 1980, pp. 25). His five cultural dimensions of individualism-collectivism, power distance, uncertainty avoidance, masculinity-femininity, and short-term versus long-term orientation (dimension subsequently added) have been used to study a diverse range of management issues (see recent review by Kirkman, Lowe, and Gibson 2006).

Alternative values-based frameworks also exist. According to Schwartz, there are seven dimensions of culture—conservatism, intellectual autonomy, affective autonomy, hierarchy, egalitarian commitment, mastery, and harmony (Schwartz 1994). Trompenaars proposed an alternative set of seven dimensions—universalism/particularism, collectivism/individualism, affective/neutral relationships, specificity/diffuseness, achievement/ascription, orientation toward time, and internal/external control (Trompenaars and Hampden-Turner 1994). In the most recent values-based cultural research program, the GLOBE project proposed a new framework comprising nine dimensions—performance orientation, assertiveness orientation, future orientation, humane orientation, institutional collectivism, family collectivism, gender egalitarianism, power distance, and uncertainty avoidance (Gupta and House 2004). Current proposals by Leung and associates focus on beliefs and social norms. They introduced the concept of social axioms or general beliefs that are context-free. They identified a set of five social axioms at the individual level—social cynicism, social complexity, reward for application, religiosity, and fate control. These five individual-level social axioms, in turn, mapped unto two country-level axioms—dynamic externality and societal cynicism (Bond et al. 2004; Leung et al. 2002; Leung and Bond 2004).

The common thread across these different frameworks is their focus on subjective culture. Subjective culture refers to the hidden psychological factors such as values, beliefs, norms, and assumptions, inherent in the frameworks discussed previously. However, there is also the objective culture (Leung and Ang 2008; Triandis 1972). Objective culture describes what we can see, and comprises artifacts such as economic, political and social institutions, social customs, the arts, language, and kinship relationships.

Culture research to-date has emphasized the subjective culture, to the exclusion of the objective culture. As succinctly pointed out by Gelfand and colleagues:

> Numerous scholars have bemoaned the fact that the extensive focus on values in cross-cultural research reflects a subjectivist bias, where culture is reduced to factors that exist inside the individual's head. The focus on cross-cultural differences in internal values has taken place in the absence of a concomitant focus on external influences on behaviors, such as cultural norms and constraints, social networks, and components of the larger social structure (i.e. what can be called a structuralist approach) (Gelfand, Nishii, and Raver 2006, p. 1225).

An overemphasis on subjective culture results in an incomplete view of culture's potential impacts. In the IT context, elements of the objective culture are equally important. For example, the maturity of the legal system is an important consideration when collaborating with IT firms from developing countries such as China, where contract law and intellectual property law are still far lagging behind the United States. This may affect team interactions and processes with regard to knowledge transfer and contract dispute resolution (Li and Scullion 2006; Shen 2005). Institutional differences governing labor can affect labor relations and individuals' attitudes toward work. Strong union influence has been shown to affect individuals' attitudes toward work centrality and training (Luo 2002; Parboteeah and Cullen 2003). Institutional differences in the formal education system and emphasis on ISO/CMMI can also affect the level of skills and knowledge members from different countries bring to the team.

We believe, therefore, that there is a need to understand both objective and subjective forms of culture.

As such, in this chapter, we conceptualize culture broadly to include both subjective and objective cultures.

THE THEORY OF CULTURAL INTELLIGENCE (CQ)

Understanding culture, cultural frameworks and their related components provide a useful starting point for one to stereotype cultures and sense-make intercultural interactions (Osland and Bird 2000). However, one's cultural orientation is influenced by the context (Leung et al. 2005). Characteristics of a particular situation may make certain cultural values more salient than others, and individuals often engage in cross-cultural code-switching accordingly (Hong et al. 2000; Molinsky 2007). Consequently, rather than relying on cultural stereotypes, one needs to be cognizant of the dynamics of culture in each intercultural encounter. We propose CQ as the critical capability that will help IT professionals avoid cultural stereotypes and interact effectively in such intercultural encounters.

CQ is a relatively new construct developed by Earley and Ang (2003). CQ is anchored on Sternberg and Detterman's multidimensional model of intelligence (Sternberg and Detterman 1986). Sternberg and Detterman proposed that intelligence is best conceptualized as an integrative framework of mental intelligence that comprises metacognitive and cognitive capabilities; motivational intelligence; and behavioral intelligence. Similarly, CQ is conceptualized as a multidimensional construct comprising four dimensions—metacognitive, cognitive, motivational, and behavioral CQ—with specific relevance to functioning in culturally diverse settings (Earley and Ang 2003).

Metacognitive CQ refers to an individual's cultural consciousness and awareness during intercultural interactions. Metacognitive CQ focuses on higher-order cognitive processes, and involves capabilities to plan, monitor, and revise mental models of cultural norms. Individuals high in metacognitive CQ are consciously aware of their own as well as others' cultural preferences and assumptions. They consciously plan for the intercultural interaction, reflect during the interaction, and adjust their mental models accordingly. Consequently, metacognitive CQ enables individuals to develop new heuristics and rules for social interaction in novel cultural environments.

Cognitive CQ refers to an individual's knowledge of the norms, practices, and conventions in different cultures. This has been the traditional focus of most cross-cultural training, educating individuals on the different behaviors and practices in different cultures (e.g., the importance of face and gifts in China). However, given the wide variety of cultures in the contemporary world, it can be a Herculean task to learn and acquire knowledge about the nuances of all the different cultures. Cognitive CQ, therefore, emphasizes the knowledge of cultural universals (such as the legal, political, economic, and social systems of different cultures) and basic frameworks of cultural values (e.g., Hofstede 1980). Individuals with high cognitive CQ are those who understand the similarities and differences across cultures.

Motivational CQ refers to an individual's capability to direct attention and energy toward learning about and functioning in intercultural situations. Individuals with high motivational CQ are high in intercultural self-efficacy and motivation. Individuals with high levels of confidence and interests in experiencing novel cultural settings will have a greater drive to engage in intercultural interactions. They are also more likely to persevere in the face of intercultural difficulties or setbacks.

Behavioral CQ refers to an individual's capability to exhibit appropriate verbal and nonverbal actions during intercultural interactions. Individuals high in behavioral CQ possess a wide and flexible repertoire of behaviors, and are able to exhibit appropriate behaviors based on the specifics of the situation. This includes verbal (e.g., choice of culturally appropriate words and tone) and nonverbal (e.g., gestures, facial expressions) behaviors, both of which are salient features of social interactions.

Given the newness of the CQ construct, empirical research on CQ has been relatively scarce though growing. Ang and associates have developed a twenty-item cultural intelligence scale (CQS)[1] to measure the four CQ dimensions (Ang et al. 2007). The CQS was validated using multiple samples from Singapore and the U.S. (total $N = 1{,}360$). Results showed a clear robust, four factor structure that held across samples, time, and countries. The factors exhibited good internal consistency and reliability, and moderate correlations between factors. Further, results from three substantive studies (total $N = 794$) demonstrated that the four dimensions of CQ are distinct from other intelligences (e.g., cognitive intelligence and emotional intelligence), cultural competencies (e.g., cross-cultural adaptability inventory), and individual characteristics (e.g., personality, Ang, Van Dyne, and Koh 2006). In sum, results to-date have shown promise of the CQ construct as a conceptually distinct and meaningful individual difference construct, as well as the CQS as a valid and reliable measure of CQ (for more details on the psychometric properties of the CQS, see Ang et al. 2007).

CULTURAL INTELLIGENCE IN GLOBAL INFORMATION TECHNOLOGY COLLABORATIVE WORK

Our review earlier highlights the realities that confront IT professionals today. IT work has become global, following the diffusion of IT work across the world. Major IT companies are spreading their IT work across different continents. Consequently, collaboration across cultures has become a reality that IT workers must grapple with. All these suggest that it is critical that IT professionals be able to interact effectively with their counterparts from different cultures. In this section, we illustrate how CQ can facilitate more effective intercultural interactions in global IT teams.

For this purpose, we draw on the model of team competencies developed by Stevens and Campion (1994). Based on an extensive review of relevant team research

[1] For information on using the Cultural Intelligence Scale (CQS) for academic and other purposes, please visit culturalq.com, and send an e-mail to cquery@culturalq.com.

including organizational psychology, social psychology, sociotechnical theory, and industry engineering, Stevens and Campion identified five team competencies that an individual needs to function effectively in teams. These are: (1) conflict resolution, (2) collaborative problem solving, (3) communication, (4) goal setting and performance management, and (5) planning and task coordination.

Research has supported the importance of these team competencies for teamwork performance. Stevens and Campion (1999) developed a thirty-five-item situational judgment test to assess these team competencies, and showed that team competencies were significantly correlated with supervisor and peer ratings of job performance. Further studies also showed that team competencies were associated with greater individual effectiveness within the team as indexed by both peer and external raters (McClough and Rogelberg 2003), higher team performance, reduced strain (Leach et al. 2005), as well as higher contextual performance (Morgeson, Reidner, and Campion 2005).

According to Stevens and Campion (1994), these five team competencies are required, regardless of the nature of the task or the team. However, we contend here that, in global collaborative work, cultural differences make developing these competencies especially challenging. In the section below, we discuss the impact of culture on these team competencies, and the importance of CQ in refining these competencies in global teamwork.

Conflict Resolution

Conflict is often inevitable in teams, and cultural misunderstandings may in fact contribute to more disagreements and disputes. Detecting disagreements and conflicts can itself be challenging. For example, members with an individualistic and low power-distance orientation tend to be direct and forthright in voicing disagreements. In contrast, members with a collectivistic and high power-distance orientation are often reluctant to disagree openly with others, as this will make them lose face or "*mianzi*" (Earley 1997). Interpreting the meaning behind voice and silence is not always straightforward, as these behaviors can reflect very different underlying motivations (Van Dyne, Ang, and Botero 2003). Cultural sensitivity is needed to accurately understand these behaviors and to decipher potential underlying currents of disagreements that may not be obvious on the surface.

Culture also affects the way team members resolve conflict (Holt and DeVore 2005). Generally, individuals high in collectivism (typical in countries such as China) tend to avoid and withdraw during conflict resolution because of the high value they place on relationship and harmony. In contrast, those high in individualism (typical of countries such as the United States) tend to adopt a more confrontational style because of the high value they place on individual rights and achievement (Tinsley 1998, 2001). These preference differences add another level of complexity to intercultural conflict resolution.

In addition to cultural values, individual social axioms also affect the perceived effectiveness of different influence strategies. Fu and colleagues (2004) compared the perceived effectiveness of three influence strategies—persuasive, assertive, and relationship-based. Persuasive strategy focuses on rational persuasion using logical arguments and the merits of the case to influence others. Assertive strategy emphasizes the use of some form of coercion such as demands, threats, and upward pressure. Relationship-based strategy relies on forming a positive social relationship through practices such as gift-giving to influence others. Results showed strong support for two of the social axioms—cynicism and reward for application. Managers who endorse social cynicism hold a negative view of people. As such, they tend to believe that others are unlikely to change their behavior through logical persuasive strategy, and so perceive assertive and relationship-based influence strategies as more effective. Reward for application refers to beliefs that effort and the investment of one's resources will lead to positive outcomes. As such, managers who endorse reward for application believe that they can influence others through conscious effort and well-worded logical arguments, and so perceive persuasive influence strategies as more effective (Fu et al. 2004).

Collaborative Problem Solving

One benefit of global teams is that diverse members bring with them a wide range of perspectives. This, in turn, increases creativity and improves performance (Shachaf 2008). Creativity is especially critical in software teams. Software development is highly unstructured and thus requires collaborative problem solving. Systems analysis, in particular, requires cooperation and involvement of a wide range of stakeholders to ensure that requirements are clearly understood. These stakeholders typically include users and user management, as well as IT professionals from both the organization and external vendors.

Research has shown that culture affects creativity and problem solving. For example, individuals with high power distance are generally less comfortable with suggesting creative ideas (Levina and Vaast 2008). Further, members may have different perceptions about the importance and effectiveness of user involvement and participation. For example, members may have different expectations of who should be the one making decisions. Members with high power distance orientation (typical in countries such as China) usually expect decisions to be made not as a team, but by superiors in the organization. This is based on the belief that those higher in the hierarchy can be trusted to make the right decision, given their greater knowledge and experience. In contrast, members with low power-distance orientation (typical in countries such as the United States) are likely to prefer participative decision making, as they believe that everyone has equal rights and the potential to contribute to the decision (Sagie and Aycan 2003). This suggests that user involvement and participation may be more accepted by members with low power-distance orientation.

Differences in power-distance orientation can also affect the dynamics in team discussions. For example, computer-mediated communication tools are often used to facilitate meetings among team members who are physically located in different locations. However, for members who are high in power distance, not knowing

the identity of the person speaking may hamper discussions. Such members may fear that they inadvertently disagree or brush aside comments made by someone higher in the organization (Olson and Olson 2004). This is less likely to be an issue with members who are low in power distance because such an environment is more democratic and encourages participation and input from everyone.

In global software teams, knowledge is often dispersed. For example, process and technical knowledge often reside in different individuals. This makes sharing of knowledge among different parties critical. Collaborative problem solving requires parties to learn from each other, and yet knowledge transfer across cultures is difficult (Bhagat et al. 2002). In global teams, members often have a limited history of working together, and so lack a shared context. This makes it difficult for members to develop shared understanding and close ties, both of which are critical to knowledge transfer (Slaughter and Kirsch 2006). Cultural differences can further exacerbate the difficulties. For example, a study by Chow and colleagues found that collectivism influenced the openness of knowledge sharing between Chinese and U.S. subjects. In collectivistic societies such as China, members place considerable importance on relationships or *guanxi*, and make marked distinctions between in-group versus out-group members. As such, compared with individualistic societies like the United States, Chinese members are less willing to share with an out-group member (Chow, Deng, and Ho 2000).

Communication

Communication is a necessary component of any team. Communication is particularly important as it underpins the other processes such as collaborative problem solving, and planning and task coordination (Ellis et al. 2005). In global teams, members often differ in language, communication styles, and nonverbal behaviors. These differences can result in miscommunication, which can, in turn, affect trust, cohesion, and team identity (Shachaf 2008). Communication in global IT teams can, therefore, be a major challenge.

Language is one of the most widely experienced difficulties and causes of misunderstanding in intercultural teams (Holmstrom, Fitzgerald, Agerfalk, and Conchuir 2006). Even if team members speak a common language, local accents may still make it difficult to understand. Level of fluency often varies. Foreign language speakers tend to speak slower, and this may be wrongly interpreted as lack of attention, enthusiasm, and confidence (Huang and Trauth 2007; Rao, Earls, and Sanchez 2007). Differences in communication style (high versus low context) can also lead to misunderstandings. For example, Asian team members may consider their U.S. counterparts rude because U.S. team members tend to be more direct and confrontational (Rao, Earls, and Sanchez 2007).

Interpreting nonverbal cues can be equally challenging in intercultural communication. Nonverbal communication such as paralinguistics (vocal features such as loudness, pitch, rate, hesitation) varies by culture. For example, speaking softly is a way to show respect in some cultures, while speaking loudly is a sign of confidence in other cultures. This can in turn affect members' perception of others. A discourse analysis of speeches of global leaders, for example, found that a strong voice with ups and downs was associated with the perception of enthusiasm in Latin American cultures, whereas a monotonous tone was associated with the perception of respect and self-control in Asian cultures (Den Hartog and Verburg 1997).

Goal Setting and Performance Management

Culture can also affect goal setting in different ways. Attitudes toward and effectiveness of assigned versus participative goal setting vary by culture. Members high in power distance usually expect goals to be set by someone in authority, whereas members low in power distance expect to have an input into goals before they are motivated to work hard (Sue-Chan and Ong 2002). Uncertainty avoidance can affect how specific and detailed the goals are. Members with high uncertainty avoidance prefer goals that are spelled out clearly in detail. Individualism-collectivism orientation can affect members' attitudes toward individual versus group goals. For example, a study by Kirkman and Shapiro (2000) found that collectivism was positively related to receptivity to team-based rewards.

Culture also affects preferences and attitudes toward how rewards are allocated. Generally, rewards are allocated based on equity, equality, or need. The equity norm distributes rewards based on members' contribution, with job performance being the most common contribution basis used. In contrast, under the equality norm and need norm, instead of distributing rewards based on contribution, rewards are divided equally among all members or based on members' needs. Generally, members from individualistic societies prefer reward allocation based on equity, while those from collectivistic societies prefer the equality or need norm. Individualists prefer the equity norm because of their emphasis on independence, initiative, and achievement. As such, they view rewards as an incentive to effort, and this is consistent with the equity norm. The widespread acceptance of the pay for performance principle in the United States illustrates this. On the other hand, collectivists prefer reward allocation based on equality or need, because of their emphasis on maintaining harmony within the group (Chen, Meindl, and Hui 1998; Chen, Meindl, and Hunt 1997; Sama and Papamarcos 2000).

Performance management also varies by culture. Effective software teams often require a portfolio of controls (Choudhury and Sabherwal 2003; Kirsch 2004), but the effectiveness of different controls may be affected by culture. Reliance on formal controls and detailed measurement and monitoring may be viewed more positively by members with high masculinity orientation. On the other hand, clan or social controls are likely to be emphasized by members with a collectivistic and relationship orientation. However, reliance on clan or social controls can be challenging in global teams, where building of social ties and trust is more difficult due to the lack of common context and face-to-face interactions (Barkhi, Amirir, and James 2006; Edwards and Sridhar 2005). Differences in culture and language can also influence the formation

of in- and out-groups. A variety of activities may be required to build social ties at different stages of the team (Kotlarsky and Oshri 2005; Kotlarsky, Oshri, and Willcocks 2007).

Planning and Task Coordination

Project coordination is particularly critical in global software teams, given the unstructured, information-intensive nature of software development. Three types of coordination are required—technical coordination (managing technical dependencies among software parts), temporal coordination (managing time dependencies among software activities, such as meeting project schedules) and process coordination (managing dependencies in the development process, such as priority conflicts) (Espinosa et al. 2007).

Time orientations can have significant impact on the coordination process. Members from different cultures have different perceptions of time, and these "time visions" can affect project schedules and deadlines. Generally, individuals who view time as linear and objective are likely to place more emphasis on meeting tight deadlines and well-organized schedules, compared with those with cyclical time visions (Saunders, van Slyke, and Vogel 2004). For example, team members from India often do not share the same sense of urgency as their U.S. team members regarding project schedules and timelines. This may lead to temporal coordination difficulties. Process coordination can also be more challenging, when members place different emphasis on the need for adherence to established development processes and methodologies. Members with a polychronic view of time and low uncertainty avoidance orientation are likely to adopt a more flexible and lax attitude toward adherence to such methodologies and processes, and this can lead to conflicts and disagreements between the parties.

In addition, global teams are often situated in different locations, and the difference in time zones can make coordination more challenging. Coordination across time zones often requires members to make compromises about the typical workday. Members may need to stay very late at night or start extremely early in the morning in order to attend video-conference meetings (Treinen and Miller-Frost 2006). This has implications for members' personal and family time, and may not be received well by members from collectivistic and feminine cultures.

Cultural Intelligence and Global Team Competencies

The previous discussion demonstrates the added challenges culture brings to global team interactions. To minimize such challenges, teams adopt various socialization strategies to enhance team cohesiveness, and team leaders/project managers often play a proactive role in setting the tone of and moderating interactions among team members. Though important, these practices are not sufficient to buffer team members from such intercultural challenges. Members cannot avoid the need to interact with one another on a one-to-one basis. Ultimately, therefore, the effectiveness of the team hinges on the ability of *every* member to overcome these challenges and interact effectively with one another. We propose that CQ is a critical capability that can help IT professionals overcome these challenges. Here, we discuss the role of each of the four CQ dimensions.

Cognitive CQ emphasizes the knowledge of cultural values and orientations, as well as cultural universals such as the legal, political, economic, and social systems of different cultures. Understanding other team members' cultural values and orientations enables IT professionals to better appreciate and understand team interactions. Our discussion in the previous sections provide numerous examples of how differences in cultural value orientations can lead to additional challenges in global team interactions. Similarly, much of the IS cross-cultural research has focused on and illustrated the importance of such cultural value orientations. However, knowing cultural values alone is insufficient. IT professionals must also understand the broader institutional and structural environment of different countries. For example, despite changes in recent years, there are still differences in the legal framework between China and the West, in terms of property rights law, contract law, company law, and arbitration procedure (Li and Scullion 2006; Luo 2002). Consequently, client and vendor members from different countries may place a different emphasis on the legal versus psychological contract in managing the outsourcing relationship (Koh, Ang, and Straub 2004). As another example, traveling to work in India often takes hours, and this can be extremely taxing for the local Indians. Cultural sensitivity is required when team members are asked to stay late and/or come in early due to time zone differences (Treinen and Miller-Frost 2006). By focusing not only on knowledge of specific cultures but also cultural universals and cultural similarities and differences, cognitive CQ helps IT professionals to develop more elaborate cultural schemas of the social interactions. IT professionals with high cognitive CQ are therefore able to better understand key issues and develop appropriate explanations for differences in behaviors. This helps them to better understand how to adapt their own behaviors according to the situation, and consequently, interact more effectively with people from a culturally different society.

Metacognitive CQ, the higher-order mental capability to think about personal thought processes and adjust mental models accordingly, plays an equally important role. Knowledge about the cultural values and cultural universals provides a useful starting point for IT professionals to interact with others. However, IT professionals must move beyond the simplistic view of equating culture to country/national groups, and recognize that each intercultural encounter is unique and must be interpreted in context (Osland and Bird 2000). Culture is a complex construct and exists at multiple levels. An individual's behavior is influenced by different cultures simultaneously—including the national culture, professional culture, organizational culture, and workgroup culture (Karahanna, Evaristo, and Srite 2005; Straub et al. 2002). The situation/context may make certain cultures more salient than others, and this can give rise to cultural paradoxes. For example, while project schedules and deadlines may not be typically adhered to in countries like India, which has a cyclic and elastic view of time, this

may not be the case if members are part of an organization with a strong organizational culture that emphasizes deadlines and schedules. Metacognitive CQ is thus critical, by enabling IT professionals to move beyond cultural stereotypes and know when and how to apply their cultural knowledge. Individuals with high metacognitive CQ are conscious of unique individual characteristics, such as diversity within culture and the influence of context on behavior. They know when to suspend judgment and to look for additional cues. Consequently, they develop a more accurate understanding of appropriate behaviors in different intercultural interactions. For example, IT professionals with high metacognitive CQ would be aware, vigilant, and mindful about the appropriate time to speak up during team meetings. They would observe interactions and the communication style of different team members (such as turn-taking), and would think about what constitutes appropriate behavior before speaking up. This awareness and checking enables IT professionals to dynamically adapt their behaviors during intercultural interactions.

Behavioral CQ, in turn, enables IT professionals to enact these appropriate behaviors. Cognitive and metacognitive CQ may lead an individual to recognize the need to adapt certain behaviors during the interaction, but yet be unable to enact such behaviors. For example, IT professionals from a high-context culture may find it hard to change to a more direct way of communication. Similarly, despite the best of intentions, one's body language may betray his discomfort even if he forces himself to behave in a culturally sensitive manner (for example, to accept a team member's offer of exotic food such as eel, a dish popular in Japan), and he may still end up offending the host. Thus, effective intercultural interactions require IT professionals to possess high behavioral CQ and be able to actually enact the desired behaviors. Effective communication requires competencies not just in the verbal language, but also nonverbal behaviors such as gestures and emotion display. IT professionals with high behavioral CQ possess a wide repertoire of verbal and nonverbal behaviors, and are able to adapt and display the appropriate behaviors accordingly. Such behavioral flexibility (Shaffer et al. 2006) improves self-presentation (Goffman 1959), and thus creates positive impressions and improves intercultural interactions (Gudykunst, Ting-Toomey, and Chua 1988).

Given the challenges involved working in global teams, motivational CQ is critical in providing the important drive for IT professionals to persist in intercultural interactions. IT professionals with high motivational CQ are likely to direct more energy toward learning and understanding these cultural differences. They are likely to persist and practice new behaviors even in the face of challenges. Persistence provides more opportunities to obtain feedback, and consequently, through practice, to improve performance.

In sum, we argue that all four dimensions of CQ are critical in helping IT professionals work more effectively in global IT teams. The four CQ dimensions are qualitatively different facets of the overall capability to function and manage effectively in culturally diverse settings (Earley and Ang 2003). Thus, the dimensions of CQ may or may not correlate with each other. Overall, CQ is best conceptualized as an aggregate multidimensional construct (Law, Wong, and Mobley 1998), with metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ being different capabilities that together form overall CQ (Ang and Van Dyne 2008).

CQ is a relatively new construct and more work is definitely required. However, initial evidence provides support for the importance of CQ in general. Our studies have shown that, over and above individual characteristics, CQ provided unique explanatory power in predicting different aspects of intercultural effectiveness (cultural judgment and decision making, cultural adaptation, and task performance). The results demonstrated a consistent pattern of relationships in which metacognitive CQ and cognitive CQ predicted cultural judgment and decision making; motivational CQ and behavioral CQ predicted cultural adaptation; and metacognitive CQ and behavioral CQ predicted task performance (Ang et al. 2007). Recent research also provided evidence of the importance of CQ for the multicultural team, with CQ being related to interpersonal trust in cross-cultural dyads (Rockstuhl and Ng 2008), acceptance and integration by other team members (Flaherty 2008), as well as development of a global identity (Shokef and Erez 2008). As far as we are aware, there has been little research on the importance of CQ for IT professionals specifically, except our study on foreign IT professionals working in a global IT consulting company (Ang et al. 2007, Study 3). Our results showed that CQ has a significant impact on the IT professionals' adjustment and task performance, as rated by their supervisors. Thus, we propose that CQ will lead to increased global team effectiveness for IT professionals.

CONCLUSION

In this chapter, we present recent trends in IT offshoring that have made it a necessity for the IT workforce to operate across cultures and work in global teams. We propose cultural intelligence (CQ) as an important individual capability for IT professionals to function effectively in this global context. Specifically, we show how CQ can improve five core competencies required for global team effectiveness.

This chapter has several important research implications. First, although research on culture and IT has provided evidence of the importance of culture and the challenges of managing global software teams, there is a lack of research on its actual implication for the IT workforce. Our framework addresses this gap, by proposing CQ as an essential capability that IT professionals need. We hope that this will motivate more research into the competencies needed for today's global IT workforce. Research can also examine how different competencies (e.g., cultural intelligence, practical intelligence, emotional intelligence, social intelligence) are related. Second, we encourage more empirical research on CQ and its effect on global team effectiveness. There is some evidence that CQ affects individual effectiveness (e.g., Ang et al. 2007) as well as multicultural teams (for example, Flaherty 2008; Rockstuhl and Ng 2008; Shokef and Erez 2008). Empirical research is needed to determine whether these relationships hold true in the IT context and to validate our framework. Third, future research is needed to theorize specific propositions

regarding CQ and its effect for the IT workforce. We encourage more theoretical development in this area, for example, to identify boundary conditions of the model and potential moderators. Additionally, the nature of the IT task involved and the nature of the IT system being designed may moderate the effects of CQ on global team effectiveness.

The ideas introduced in this chapter also have important implications for practice. Firms need to be cognizant of the challenges the global IT workforce faces today, and invest in efforts to train and develop their IT professionals to meet this challenge. Our framework provides a useful starting point, as CQ is a malleable capability that can be developed and improved through cultural exposure, training, modeling, mentoring, socialization, and other experiences (see Ng, Van Dyne, and Ang 2009). We have introduced various executive CQ training programs, where participants received multisource feedback on their CQ, and participated in experiential role-playing exercises to help develop their CQ. Results to-date have been promising, with participants showing improvements in their CQ after the experience. Firms could assess their current IT professionals' CQ, and tailor training programs to develop areas that need improvement.

GLOSSARY

Behavioral Cultural Intelligence (Behavioral CQ): One of the dimensions of cultural intelligence, referring to an individual's capability to exhibit appropriate verbal and nonverbal actions during intercultural interactions.

Centers of Excellence: Locations, local as well as international, where there is a pool of particular research and development expertise.

Cognitive Cultural Intelligence (Cognitive CQ): One of the dimensions of cultural intelligence, referring to an individual's knowledge of the norms, practices, and conventions in different cultures.

Cultural Intelligence (CQ): An individual's capability to function and manage effectively in culturally diverse settings, comprising four dimensions (metacognitive, cognitive, motivational, and behavioral CQ).

Cultural Intelligence Scale (CQS): A scale to measure the four dimensions of cultural intelligence (CQ).

Global Delivery Model (GDM): Refers to the provision of seamless development and delivery of products and services to clients by combining the expertise of geographically dispersed IT professionals.

GLOBE Project: Refers to the Global Leadership and Organizational Behavior Effectiveness study (see www.thunderbird.edu/wwwfiles/ms/globe/).

Internationalization: Refers to the setting up of offshore facilities to market and distribute products and services.

Metacognitive Cultural Intelligence (Metacognitive CQ): One of the dimensions of cultural intelligence, referring to an individual's cultural consciousness and awareness during intercultural interactions.

Motivational Cultural Intelligence (Motivational CQ) : One of the dimensions of cultural intelligence, referring to an individual's capability to direct attention and energy toward learning about and functioning in intercultural situations.

Nearshoring: Refers to a form of outsourcing performed from countries in geographic proximity to a client's country.

Offshoring: Refers to a form of outsourcing performed outside the client's home country.

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