Virtual Leadership and Effective Virtual Teams:

Cultural Intelligence, Effective Communication, and Successful Projects

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Abstract

For global companies to continue to grow, members must work and/or lead virtually. The purpose of my research was based on a two-dimensional model for measuring successful projects among virtual team members: effective communication and cultural intelligence (CQ) for team members working in a global pharmaceutical company. The main focus was on project management team members who work on global virtual teams and their team managers who lead global virtual teams. Currently, there is very limited empirical research that focuses on the relationship between cultural intelligence, effective communication within virtual teams, and successful projects. The researcher used triangulation mixed methods to explore the interrelationship among all three elements. It was hypothesized that all three elements are interrelated. Surveys on all three elements were used to assess both global leaders and project management team members who manage and lead projects virtually, working in collaboration with their global counterparts. Based on both the quantitative and qualitative results of the data, as well as the result of this interrelationship, further training on openness and global identity, adjustment to the current strategy, and education of all project management team members could then be recommended. If no difference in the collaboration level is found based on a high level of CQ, then additional opportunities for CQ would be recommended to the organization leadership.

Keywords: virtual teams, project managers, team managers, global, cultural intelligence (CQ), effective communication, leadership, successful projects.

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Chapter One

Background of Problem

This research is based on a two-dimensional model for measuring successful projects among virtual team members based on the relationship between communication effectiveness and cultural intelligence (CQ) for team members working in a global pharmaceutical company. Zakaria, Amelinckx, and Wilemon (2004) indicated that all team members learn sufficient intercultural communication and behavioral competencies with cross-cultural training. Connaughton and Daly (2004) discussed the fact that, due to diversity and increased communication barriers, leadership plays a central role in the success of effective virtual teams. The difficulties caused by differences in language and even pronunciation are well known when working virtually. In addition, despite the adoption of project management methodologies, structures, and tools, organizations are continuing to experience many challenges to reach project success (Standish Group, 2004b).

A study was done by Balogh, Gaál, and Szabó (2011), where their research focused on CQ and organizational culture. They found that students with high CQ would work at a flexible company with an external focus and be attracted to work and meet their organization's requirements in terms of culture and communication, whereas students with low CQ were not able to meet those requirements.

There are no studies currently that investigate the interrelationship between cultural intelligence, effective communication, and successful virtual global teams' performance, in terms of delivery, efficiency, and productivity.

According to McLean (2007), leading a virtual team differs in many aspects from leading a traditional team; it requires different management approaches in order to achieve optimal success. Some of the challenges associated with leading virtual teams are related to trust building, which requires time, effort, and commitment from all team members, including the leader. Nicholson, Sarker, and Valacich (2007) mentioned that virtual leaders embrace situational leadership and have an elevated sensitivity in knowing which power bases, traits, and behaviors are most effective, depending on the situation.

Durate and Snyder (2006) discussed the importance of leadership and its relationship to the success of the team. They also reported that leaders identify the increased sense of burden and responsibility as their biggest challenge in leading virtual teams. According to Durate and Snyder, the traits a virtual team leader must have at all times are:

> an understanding of human dynamics and performance without the benefit of normal social cues, knowledge of how to manage across functional areas and national cultures, skill in managing their careers and others without the benefit of face-to-face interaction, and the ability to use electronic communication technology as their primary means of communicating and collaborating. (p. 4)

Weisband (2007) discussed the need of new skill sets for virtual team leaders. Avolio and Kahai (2003) defined leadership as "engaging people and directing them toward achieving a particular goal or outcome" (p. 331). It is about influencing people to move in one direction to achieve a goal. Avolio and Kahai concluded that leadership must include the development of relationships. Nemiro (2004) indicated that leadership is based on relationships. According to Combs and Peacocke (2007), virtual leaders are still learning how to build relationships and

communicate in the virtual world without relying on daily visits and conversations with team members. Combs and Peacocke indicated that "while technology is the lifeline of the virtual team, building the relationship over time provides the most challenges" (p. 27). They further indicated that leaders should define goals for each team member, outline the decision making process, and establish ground rules for the team.

Lee-Kelley and Sankey (2008) mentioned that global virtual project teams need one identified leader who is capable and has the authority to execute and coordinate across different sub-groups. Furthermore, good leadership in effective expert teams is shared leadership. According to Fisher and Fisher (2001), the skills required by virtual team leaders are divided into seven competencies: 1) leader, 2) result catalyst, 3) facilitator, 4) barrier buster, 5) business analyzer, 6) coach, and 7) living example. Zigura (2003) mentioned that distributed leadership in most teams is not under the control of one leader; instead, leadership in virtual teams is expressed through the interaction of team members and technology.

Durate and Snyder (2006) suggested that "this is the age of the virtual team leader" (p. 73) where the leader is the "glue that holds the team together" (p. 76). Teams who utilize shared leadership are high performing teams and are very effective. Zaccaro, Ardison, and Ovris (2004) reflected on leader-member exchange theory, indicating that closeness and cohesion within teams occur "when leaders maintain high levels of interaction with followers, grant them significant responsibilities, provide them with high levels of trust support, and respect, and allow greater participation in team decision making" (p. 277). According to Holton (2001), virtual leaders must encourage team members to carry personal conversations and storytelling in order to establish the level of trust needed among members of the virtual team.

Statement of the Problem

Working in a global environment is very challenging and requires behavioral intelligence, which focuses on what individuals do rather than what they think. Behavioral CQ is demonstrated via the use of both verbal and non-verbal aspects when interacting with people from different cultures. Ang and Van Dyne (2007) explored cultural intelligence as a predictor of intercultural effectiveness, such as decision making and cultural judgment, and task performance at the individual level based on cultural adaptation. This research extends the analysis of cultural intelligence among global virtual team members with focus on both successful projects and effective communication. Sustaining behavioral CQ would result in a sustaining relationship among team members (Hall, 1976). Zografi (2009) emphasized the great importance of communication competence in high and low context cultures. People who have a high level of non-verbal communication are most likely to be able to adapt to new situations. They possess a wide range of tools and can use them in a flexible way (Earley & Mosakowski, 2004).

Based on the virtual team and cultural intelligence research published thus far, the following tentative conclusions have been suggested by researchers. Lee-Kelley and Sankey (2008) mentioned that global virtual project teams need one identified leader who is capable and has the authority to execute and coordinate across different sub-groups. Malhotra, Majchrzak, and Rosen (2007) discussed six criteria that are related to virtual team effectiveness: 1) establish and maintain trust through the use of communication technology, 2) ensure that diversity in the team is understood, appreciated, and leveraged, 3) manage virtual work-cycles and meetings, 4) monitor team progress through the use of technology, 5) enhance external visibility of the team and its members, and 6) ensure individuals benefit from participating in virtual teams.

The researcher has yet to find a concrete and in-depth knowledge of the existing gaps among global virtual project management teams in relation to communication and cultural intelligence. In summary, this study should allow project management team members to possibly identify some of the gaps that currently exist which are possibly related to the poor delivery on quality projects among global virtual team members in relation to the cultural intelligence and effective communication aspects.

The following two-dimension diagram, based on literature review, focuses on the various areas global management team members need to keep in mind when working and leading among virtual teams in terms of effective communication and cultural intelligence. See Figure 1 (2-dimension model) and Figure 2 (Geographic Organizational Culture).

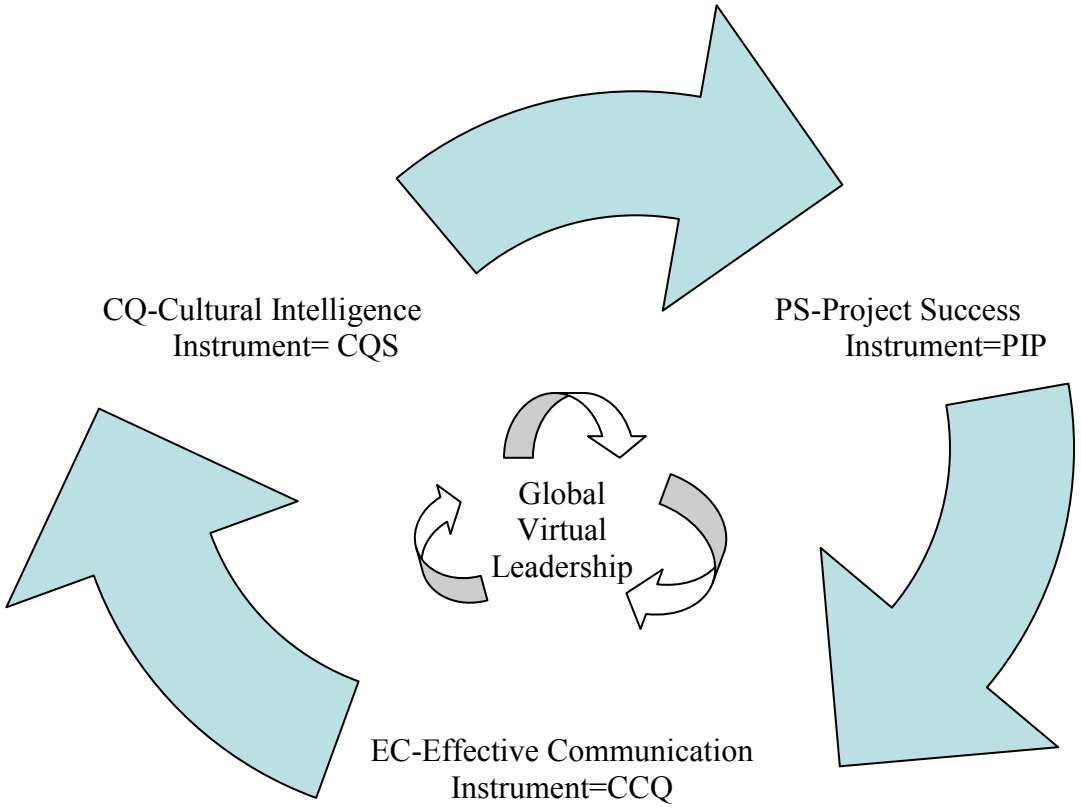


Figure 1. CQ-EC among virtual team members—Two-dimension model

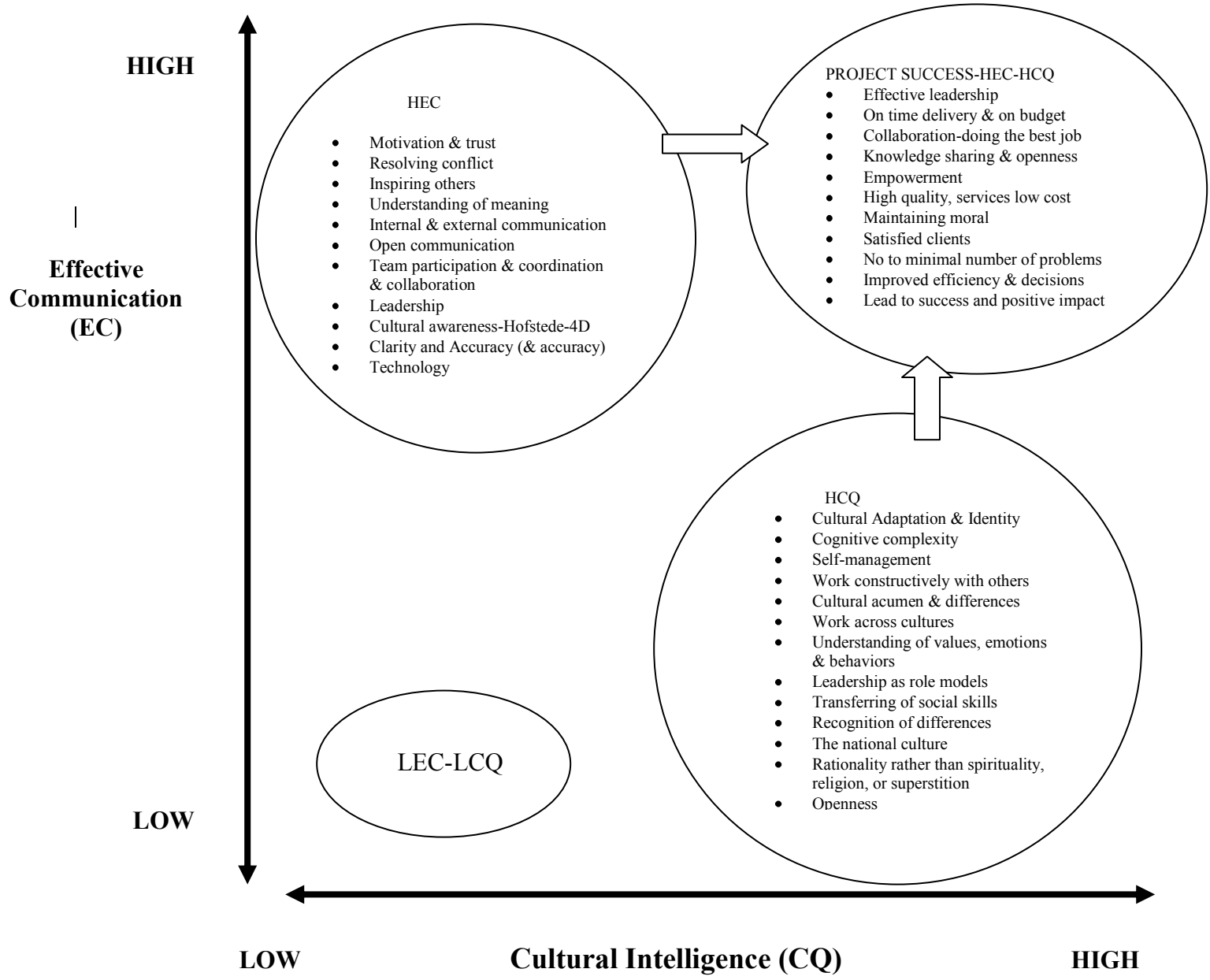


Figure 2. Geographic organizational culture

Purpose of the Study

The purpose of the present study was to further explicate the nature of effective cultural intelligence and effective communication among global virtual team members and their leaders. The correlation study aimed to define the need to study the direction and degree of association between CQ and communication levels among global virtual teams. It also aimed to explore the complex relationship of multiple factors in relation to the outcome of team performance in terms of delivery, quality, and efficiency. Furthermore, it examined the outcome from one predictor which was, in this case, a high level of CQ among global virtual team members. It showed the association between these variables that is discussed later in this paper. The findings of this study may enable virtual project managers to affect their project success through effective communication technique, improve the delivery and quality of leading and managing global trials, and contribute to the body of knowledge on the topic of leading and working virtually, across geographical and cultural boundaries.

Significance of the Study

Despite the methodological diversity, one of the intended results for the company is to explore the relationship between high CQ and effective communication among global virtual team members and their relation to high delivery, high quality, and high efficiency for global clinical trials, and global virtual teams. CQ continues to produce a new body of knowledge in this field, especially relating to companies that are going global and those whose level of outsourcing services is increasing daily. The present study is no exception.

The researcher may envision this study as having two audiences: virtual team members at the vendor side and virtual team members at the service provider side, as global virtual teams do not only apply to the specific company in question, but rather they apply to many other global

companies. The company being studied might specifically benefit from this research and it is hoped that it will identify the areas on which management must focus so they can increase the level of sales on global clinical trials. Furthermore, customers may also directly witness this improvement in terms of relationship building, quality projects, and increased cultural intelligence and its awareness across all global team members they encounter. Other organizations might also benefit from this research; as mentioned previously in this paper, there is an increasing shift towards companies working in a global environment and encompassing virtual team members who rely heavily on their counterparts and work together toward the same end result.

The researcher is anticipating that this research will expand and open new opportunities for future research to take place with a focus on CQ and other areas within global virtual teams, such as the trust factor, technology factor, language barrier factors, and decision making factor. Conducting future research in this field will help provide more educational opportunities, new policies, new curricula, and possibly new theories in the arena of CQ and the global virtual teams.

The researcher planned, based on the results found, to enhance the theoretical framework for the relationship between the three variables, CQ, and communication that framed this theory of interest. Of course, subsequent research could definitely take place in the area of trust, decision making, etc. Another aim from this study was to allow management teams within the studied organization to focus on the study areas and improve certain processes, practices, and procedures across the global project management teams, which in turn will influence global leaders on the approach they must pursue in order to have highly effective, efficient, and quality-driven global teams.

The direct impact of the results should be reflected on client customer surveys that are conducted by the organization at various milestones throughout the life of clinical trials. Management should also see an increase in sales; if global teams have the ability to collaborate and to work with each other effectively, tension is decreased, particularly when both sides are more culturally intelligent and the level of communication is enhanced and elevated. New processes might also be put in place for both leaders and team members of the virtual teams to define expectations up front at the awarding of new studies in terms of CQ and communication.

Research Questions

The overarching issue of this study related to the importance of effective communication based on the CQ among global team members, which affects project success. The question for this research was: "Do high levels of CQ affect communication and success of projects when working and leading virtually?"

Research Question 1 (RQ1): Is there a relationship between CQ and effective communication among global virtual team members?

Research Question 2 (RQ2): Is there a relationship between effective communication and successful projects?

Research Question 3 (RQ3): Is there a relationship between CQ and successful projects?

Conceptual/Theoretical Framework

Research conducted by Brown (2006) suggested that cultural intelligence and collective efficacy can help improve diverse virtual team effectiveness. Zakaria et al. (2004) indicated that all team members learn sufficient intercultural communication and behavioral competencies with cross-cultural training. Connaughton and Daly (2004) discussed the fact that, due to diversity

and increased communication barriers, leadership plays a central role in the success of effective virtual teams. The difficulties caused by differences in language and even pronunciation are well known, when working virtually (Connaughton & Daly, 2004). Pulakos, Arad, Donovan, and Plamondon (2000) indicated that adaptive performance is likely predicted by an individual's level to openness. The model studied on adaptive performance is shown in Figure 3.

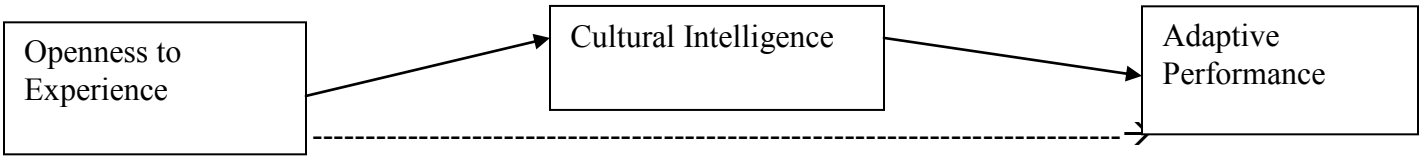


Figure 3. Cultural intelligence as a mediator between openness to experience and adaptive performance

Limitations

Research helps improve opportunistic and practical knowledge. However, some strengths and weaknesses are anticipated to arise as a result of the research. Some of the potential weaknesses included not being able to interview all the targeted individuals, possibly due to such things as last minute interview cancellations; therefore, the amount of data being collected might not have been enough to draw a comprehensive picture of the organization's culture. Another was in the case of observation: as people being observed were aware of the situation, the researcher was cautious that individuals might behave differently or try to improve their communications during these events. A third risk was related to the researcher as she works at the company. She needed to label her samples in a precise way so as to not overlook some important questions that did not get included in the survey which could have possibly resulted in an incomplete picture.

Some other challenges were related to possible lack of responses to the questionnaire in case the survey was not sent to the global teams through the company's HR department. In other words, individuals may not have recognized the importance if they received the survey as a personal email. Since the survey was sent to all global project management teams, some answers may have been biased due to individuals discussing among themselves which answers to select.

For the short answer questions, the researcher was aware that people were not going to provide the detailed comments expected, so she had to stress the importance of these issues in the cover letter that accompanied the survey questions. In order to help minimize as many weakness and as many threats as possible, the researcher made sure consent forms, questionnaires, letters of intent, scheduling interviews, and any other pre-work documents were ready and reviewed by the researcher herself as well as other individuals to help mitigate and close any gaps as necessary.

Delimitations

Some of the delimitations were related to the use of uncomfortable questions that were listed in the survey, questions that tested the English level of the individuals, or personal questions, some of which allowed the researcher to draw specific conclusions, but may have put pressure on the participants answering them. However, the researcher tried to replace these questions with others that would help lead to the same results. Another delimitation was related to the decision to not use existing results from previously collected data; the reason for this decision was due to the fact that this study was customized specifically to study global project management teams within this specific company so data collection was tailored to represent the people who were performing this job daily. The researcher is comfortable on how the cross-cultural translated and its interpretation is seamless.

Face-to-face observation was limited to the North America team only since the researcher is located in the North America office and the researcher did not travel to other business units to measure global team observations. However, email monitoring and quality of communication in verbal and in written form was monitored for all locations, globally. The researcher decided to review all the literature published in this field since she could not find any that measures the relationship between CQ and communication among global virtual team members and, specifically, project management teams.

Definition of Terms

Adaptive Performance: Defined as the proficiency with which people alter their behavior to meet the demands of the environment, an event, or a new situation (Pulakos et al., 2000).

Communication: Communication is the transfer and understanding of meaning (Robbins & Coulter, 2005).

Cultural Intelligence: Cultural intelligence is a model to measure and identify the degree to which an individual is able to adapt successfully to unfamiliar cultural environments (Earley, Ang, & Tan 2006; Earley & Mosakowski, 2004).

Culture: defined by Hofstede and Hofstede (2004) as the learned and shared values, knowledge, and beliefs of social groups that influence behavior.

Emotional Intelligence: The ability of the person to deal with personal emotions, it focuses on the ability to perceive and manage emotions without consideration of cultural context (Ang & Van Dyne, 2007).

Global Identity: Derived from a sense of belonging to a Multicultural Team (MCT), and the individual identity is based on social identification (Ang & Van Dyne, 2007, p. 187).

Leadership: Defined by Koontz and O'Donnell (1959) as "leadership is influencing people to follow in the achievement of a common goal" (p. 435).

Project: "A project is a temporary endeavor undertaken to accomplish a unique product, service, or result with a definite beginning and end" (Project Management Institute, 2008a, p. 5). A project for the purposes of this study is as "a temporary endeavor undertaken to create a unique product, service, or result" (Project Management Institute, 2004, p. 368).

Project success: According to Project Management Institute, project success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction (Project Management Institute, 2008a, p. 9).

Project Management: Project management is "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements" (Project Management Institute, 2004, p. 8).

Project Manager: A project manager is "the person assigned by the performing organization to achieve the project objectives" (Project Management Institute, 2004, p. 369).

Project Success: Project success denotes projects delivered "on time, within budget, and meeting quality requirements" (Project Management Institute, 2004, p. 8).

Project Team: A project team is "all the project team members, including . . . the project manager, and for some projects, the project sponsor" (Project Management Institute, 2004, p. 370).

Project Team Member or Team Member: The project team member or simply team member is "the person who reports directly or indirectly to the project manager, and who is responsible for performing project work as a regular part of their assigned duties"

(Project Management Institute, 2004, p. 371).

Virtual Teams: Virtual teams are groups of people who work interdependently with shared purpose across space, time, and organizational boundaries using technology (Lipnack & Stamps, 2000).

Summary

The purpose of the current study was to determine if cultural intelligence impacts the effectiveness of communication among virtual team members who work in the project management division of a specific global pharmaceutical company. Currently, there is no empirical research defined to measure the relationship and effectiveness between the two mentioned variables in the functional area of project management among virtual team members. The value of this concurrent triangulation mixed method study was that it may enable leadership at the studied organization to make changes to impact the delivery, quality, and effectiveness of global team members and leaders, improve the best practices when communicating virtually, and contribute to the body of knowledge on the subject of virtual teams in the area of project management through the examination of both variables that are related to communication effectiveness as well as the variable that is related to cultural intelligence.

Chapter Two presents a literature review related to this study and its research questions that includes a review on the topic of effective communication among virtual teams with relation to cultural intelligence, using both the qualitative and quantitative methods for conducting this research.

Chapter Two

Literature Review

The goal of this chapter is to review literature that relates to cultural intelligence and its relationship to communication effectiveness among global virtual teams. The review of literature is partitioned into several sections. The first section focuses on global leadership in the context of virtual and shared leadership, global teams, virtual and face-to-face teams, and the effectiveness of virtual teams. The second section looks at Cultural Intelligence with a focus on cultural diversity, the GLOBE Project, and cultural and language barriers. This section is followed by Communication as related to cross-cultural communication, communication-structure, culture, and technology.

The literature review came from a variety of sources, including books written by subject matter experts pertaining to the topic of interest, peer-reviewed journals, magazine articles, relevant dissertations, research documents, and websites. Online databases utilized for gathering research were obtained through EBSCOhost, ProQuest, ProQuest Dissertations, and Thesis databases.

Global Virtual & Emergent Leadership

According to Fisher and Fisher (2001), the skills required by virtual team leaders are divided into seven competencies: 1) leader, 2) result catalyst, 3) facilitator, 4) barrier buster, 5) business analyzer, 6) coach, and 7) living example. McShane and Von Glinow (2004) indicated that people on high performing teams exhibit identification based on trust; they understand the expectations of each member of the team and share the same values.

Durate and Snyder (2006) discussed the importance of leadership and its relationship to the success of the team. They also reported that leaders identify the increased sense of burden and

responsibility as their biggest challenges in leading virtual teams. According to Durate and Snyder, the traits a virtual team leader must have at all times are:

> an understanding of human dynamics and performance without the benefit of normal social cues, knowledge of how to manage across functional areas and national cultures, skill in managing their careers and others without the benefit of face-to-face interaction, and the ability to use leveret and electronic communication technology as their primary means of communicating and collaborating. (p. 4)

Weisband (2007) talked about the need for new skill sets for virtual team leaders. Avolio and Kahai (2003) defined leadership as "engaging people and directing them toward achieving a particular goal or outcome" (p. 331). It is about influencing people to move in one direction to achieve a goal. Avolio and Kahai concluded that leadership must include the development of relationships. Nemiro (2004) indicated that leadership is based on relationships. According to Combs and Peacocke (2007), virtual leaders are still learning how to build relationships and communicate in the virtual world without relying on daily visits and conversations with team members. Combs and Peacocke indicated that "while technology is the lifeline of the virtual team, building the relationship over time provides the most challenges" (p. 27). According to Holton (2001), virtual leaders must encourage team members to carry personal conversations and storytelling in order to establish the level of trust needed among members of the virtual team.

In summary, virtual leadership is critical to virtual team success. It helps build trust among team members, strengthens leader-team members' relationship, and helps them understand challenges and human dynamics. It also allows leaders to manage across functional areas and national cultures, engaging with their team members and focusing them toward their goals, and they still have a lot to learn.

Effectiveness of Virtual Teams

MacBryde and Mendibil (2003) defined an effective team as one performance element out of four: effectiveness, efficiency, learning and growth, and team member satisfaction. Piccoli, Powell, and Ives (2004) defined team effectiveness in two parts: team performance in which the on-time delivery of high quality product is critical and team performance in which satisfaction of individual needs is present.

Diversity of the team is key to team effectiveness. Mulec and Roth (2005) indicated that different skills and collaborative actions are well reflected in diverse teams: "In trying to become highly effective, teams must make use of their different skills and reflect upon their collective actions, thereby combining knowledge that could lead to value-adding activities for the company" (p. 483). Autonomy is another factor related to team performance. Leach, Wall, Rogelberg, and Jackson (2005) indicated that team autonomy is related to team performance and job strain, which also promote the acquisition of skills, learning, and knowledge.

According to Horii, Jin, and Levitt (2004), Maznewski and DiStefano (2000), and Shapiro, Furst, Spreitzer, and Von Glinow (2002), culture is another area that has an impact on team performance. Malhotra et al. (2007) discussed the importance for leaders and team members to face cultural and technological challenges when working virtually. The leader's priorities should also focus on relationship building and trust that will enable open knowledge, sharing, and feelings of collective efficacy.

In summary, team effectiveness is focused on team learning, growth, quality in delivery, team diversity, value added activities, knowledge building, cultural awareness, and relationship building.

Cultural Intelligence

"Cultural intelligence captures a person's capability to adapt effectively to new cultural contexts and it has both process and content features" (Earley & Ang 2003, p. 9). Cultural intelligence is a multi-dimensional construct. Cognitive and metacognitive, motivational and behavioral components complete the concept of CQ (Early & Ang, 2003). Earley and Mosakowski (2004) defined cultural intelligence as a model to measure and identify the degree to which an individual is able to adapt successfully to unfamiliar cultural environments.

To manage the cognitive complexity of global teams, leaders of those teams must possess emotional intelligence, which focuses on the self-management aspect, ability to work constructively with others, cultural acumen, and the ability to work across cultures. The notion of cultural intelligence is based on extensive research that had been carried out in 60 countries involving about 2000 managers (Earley & Ang, 2003).

Applying cultural intelligence definition to managers calls for the ability of those individuals to identify and solve problems sensitively and effectively in cross-cultural situations. These situations are often characterized by a large amount of ambiguity and complexity. The concept of cultural intelligence has only recently been introduced to management teams and organizational cultures, but the large amount of research and academic articles and books indicate the significance of this new domain (Earley & Ang, 2003).

Cognitive CQ reflects an individual's knowledge about culture and the structures

of a culture, such as the specific norms, values, attitudes, and behaviors (Ang & Van Dyne, 2006). One can gain such information from education and experience while interacting with people from different cultural backgrounds. In addition to the knowledge of other cultures, the knowledge of self and one's own culture plays a critical component of CQ. For individuals to know their own cultures, those individuals will be able to see the differences of other cultures and ultimately be able to exhibit more effective intercultural behavior (Thomas, Elron, Stah, Ekelund, Raulin, & Cerdin, 2008).

Metacognitive CQ refers to the control and monitoring of cognition, the process of knowledge acquisition and comprehension. This ability includes the adaptation and adjustment of the model to the cultural norms of others and the planning and monitoring of a cognitive model. Individuals with high metacognitive CQ are well aware of the cultural preferences of others and devote considerable amount of time and energy to deeply analyzing cultural interactions. According to Ang and Van Dyne (2007), metacognitive CQ is a critical element of CQ: it promotes active thinking about people and situations in different cultural settings, it triggers active challenges on stereotypes and assumptions of other cultures, it drives individuals to adapt and revise their strategies so that they are more culturally appropriate and more likely to achieve desired outcomes in cross-cultural encounters, and it makes individuals suspend judgment until enough information become available.

Motivational CQ refers to an individual's drive to learn more about and function effectively in different cultural settings (Ang, Van Dyne, & Koh, 2006). A person's motivational CQ is related to self-efficacy and cultural values. It is important for the individual to be confident that he/she has the capability to adapt to the new culture. This is because early encounters with

people from another culture often lead to mistakes and possible embarrassment. People lacking confidence are less likely to reengage under such negative feedback. Besides, incongruence of personal and other cultural values may also lead to low motivation (Earley & Mosakowski, 2004).

Behavioral CQ reflects the action component of CQ, which is the capability to exhibit appropriate verbal and non-verbal actions as well as the capability to inhibit displaying inappropriate behaviors (Earley, Ang, & Tan 2006). This is important because an individual may have the knowledge and energy to interact with people from diverse backgrounds, but if he/she is unable to translate the intention into action, he/she will still fail in the interaction (Earley & Mosakowski, 2004).

Table 1
Definitions and Applications of Cultural Intelligence (Thomas 2008, p126)

Source	Definition of CQ	Constituent Elements	Outcomes/Applications
Earley, 2002; Earley & Ang, 2003	"…a person's capability to adapt effectively to new cultural context."	Cognitive/Metacognitive Motivational Behavioral	Global assignments success Diversity assignment Training methods
Thomas & Inkson, 2003	"…involves understanding the fundamentals of intercultural interaction, developing a mindful approach to intercultural interactions, and finally building adaptive skills and a repertoire of behavior so that one is effective in different intercultural situations."	Knowledge Mindfulness Behavioral Skills	Cross-cultural decision-making Cross cultural-communication Multi-cultural teams International career
Earley & Mosakowski, 2004	"…a seemingly natural ability to interpret someone's unfamiliar and ambiguous gestures in just the way that person's compatriots and colleagues would even to mirror them."	Cognitive Physical Emotional/Motivational	Appropriate behavior in new cultures
Earley & Peterson, 2004	"…reflects a person's capability to gather, interpret, and act upon three radically different cues to function effectively across cultural settings or in a multicultural situation."	Meta-cognitive/Cognitive Motivation Behavior	Intercultural training Multinational teams
Earley, Ang & Tan 2006	"…person's capability for successful adaptation to new cultural settings, unfamiliar settings attributable to cultural context."	Cultural, strategic thinking Motivation Behavior	Diversity assignments Global work assignments Global teams Global leadership
Thomas, 2006	"…the ability to interact effectively with people who are culturally different."	Knowledge Mindfulness behavior	Development assessment
Ang, et al., 2007	"…an individual's capability to function and manage effectively in culturally diverse setting."	Cognitive Meta-cognitive Motivation	Cultural judgment and decision making Cultural adaptation and performance

Cultural Diversity

Humes and Reilly (2008) recommended that virtual teams are led more effectively when leaders understand the cultural background and cultural impact of values, emotions, and behaviors. Cox and Blake (1991) indicated that diversity is the presence of difference, which exists in every community, society, workplace, and culture (learned behavior).

Most organizations realize the importance of educating employees about cultural diversity. Parvis (2005) suggested that supervisors, managers, directors, and leaders should educate themselves fully so they can be role models for the rest of the people in their organization. The research in the leadership field suggests that effective leaders not limit themselves to any single style of leadership; rather they should adjust their styles to the situation. Brislin, Worthley, and MacNab (2006) mentioned that individuals with higher cultural intelligence are capable of transferring social skills across cultures and can adapt faster to new cultural settings, due to their high ability to recognize differences. Robbins and Coulter (2005) talked about the age of globalization. The apparent situation is the national culture, which represents an important situational variable in determining which leadership style is the most effective. What works in China may not work exactly in other parts of the world.

Robbins and Coulter (2005) discussed how national culture affects leadership style because it influences the response of the followers. In summary, the cultural conditions that followers have come to expect place constraints on how leaders develop their styles. Most leadership theories have been developed in America using American subjects; therefore, they have an American culture bias. They stress followers' responsibilities rather than rights, assume self-gratification

rather than commitment to duty of altruistic motivation, assume centrality of work, and democratic value. They emphasize rationality rather than spirituality, religion, or superstition.

Cultural & Language Barriers

Larson, Larson, and Learning Watermark (2006) indicated that the level of proficiency among group members, i.e., speaking, writing, and reading, can vary, which adds to the problem. Another roadblock in communicating across cultures is the use of communication shortcuts, such as acronyms. Euphemisms (e.g., powder room, downsizing) and sports analogies (e.g., ball park estimate) cause confusion and misunderstanding in multi-cultural settings. Larson et al. also mentioned that culture barriers can breed problems and sometimes go unnoticed due to lack of cultural awareness and can hinder the completion of the project. In some cultures, jobs or tasks are done based on relationship building rather than project breakdown. If teams fail to build relations up front the task may not be completed on time. Knowing these differences up front can help strengthen the team and lead to the successful completion of the project.

Hindustan (2006) stated that cultural and language differences become magnified in virtual settings and may become a source of conflict. Hiding errors and problems, sweeping misunderstandings under the rug, and making wrong assumptions when a person is communicating virtually can quickly turn into a full-fledged disaster when the group does not acknowledge these problems accordingly. Hindustan also stated that, whether a person is managing a team or a new acquisition, trust always begins with the leader who must be responsive and committed to a virtual team at the same level as the co-located colleagues.

Team members have to know that the leader's door is open even when they do not see it. Leaders must go out of their way to accommodate cross-cultural differences, changing their own

habits and trying to get the best out of their team members' knowledge and contributions. A small amount of face-to-face contact goes a long way toward creating trust among co-workers, according to Professor Margaret Neal, graduate school of business, Stanford University. She recommends a physical launch when starting a virtual team.

Larson et al. (2006) mentioned that one of the best ways to elicit requirements for a multi-cultural project is to use various models, such as process models, usage models, and prototypes. These models provide a structure that encourages asking questions in order to find hidden requirements and quickly document a complete set of requirements. Models have a number of advantages, in general, and for cross-cultural projects in particular. They require few words, so language barriers can be easily overcome. Models also have the advantage of promoting two-way translations of requirements, from business to customer to model and back with a great deal of structure and minimal word use.

Larson et al. (2006) stated that business clients should create models in a way that is clearly understood. This eliminates having different mental pictures of the requirements, since they are culturally independent, and the models can be created using several mechanisms including facilitation sessions, one-on-one meetings, and observations. Models can bridge the cultural gap leaving little room for misinterpretation. Cultural interpretations of the requirements are minimized because pictures are used instead of text. When working cross culturally, Larson et al. indicated that leaders and project managers must plan extra time for meeting all the model requirements. Taking the time to define key terms and record them in a glossary during projects leads to minimal chances for misinterpretation. In addition, leaders should define all acronyms since they are often not understood in a cross-cultural setting.

In summary, leaders and business analysts should spend time developing relationships, clarifying roles and responsibilities in a chart format to ensure full understanding by all members, using terms and language very carefully, and modeling the requirements to help solicit information.

Effective Communication

Literature review is also supported by well-established measuring survey instruments and a communicator competency questionnaire taken from Monge, Backman, Dillard, and Eisenberg (1982).

Tyran, Tyran, and Shepherd (2003) discussed the importance for virtual team leaders to utilize a variety of communication media to motivate, resolve conflicts, inspire, and develop interpersonal trust within virtual teams. Communication is the transfer and understanding of meaning. Robbins and Coulter (2005) indicated that the communication process puts emphasis on the transfer of meaning, which means that if no information or ideas have been conveyed, communication has not taken place; more importantly, communication involves the understanding of meaning.

For communication to be successful, the meaning must be imparted and understood. Perfect communication occurs when the receiver perceives a transmitted thought or idea exactly as the sender envisioned it. The communication process encompasses both interpersonal communication (communication between two or more people) and organizational communication (all the patterns, networks, and systems of communication within an organization). Both of these types of communication are important to manage an organization.

According to Combs and Peacocke (2007), reviewing and establishing communication etiquette is critical for virtual team leaders.

In the virtual world, the process of communication becomes more difficult and requires close attention, particularly if the sender and the receiver have different cultural backgrounds. Robbins and Coulter (2005) mentioned that a message can be interpreted differently; the feedback link that uses the same channels, all of which are widely open to noise, can compromise the entire communication cycle. Cross-cultural communication is essential for a global virtual team to succeed at its task. Any misrepresentation (sender) and misinterpretation (receiver) can hinder the effectiveness of the virtual team at large.

Hollenbeck and Wright (2003) stated that managers must watch for any cross-cultural miscommunication and provide the knowledge, awareness, and training for team members to enable them to participate fully in the communication process. In fact, it is more important than the technology itself in providing the links. One of the best tools to help in cross-cultural communication, as well as in global business, is the Hofstede Cultural Dimension Model. Hofstede and Hofstede (2004) identified four dimensions on which various cultures could be classified; in a later study, they added a fifth dimension that aids in characterizing cultures, which help managers to understand the potential problems of managing employees from different cultures. Deresky (2005) mentioned that it is important to note that these differences can have a profound influence on whether or not a company should enter a given market.

Communication and Culture

Being separated by distance, time zones, and different cultures should not prevent leaders and team members from communicating effectively. Alexander (2000) indicated that communication technology is part of what makes it work. Lipnack & Stamps, (2000) stated that managers must learn how to trust and evaluate their teams when working virtually; they need to know specifics. Seeing them being busy is not enough. They should evaluate their teams on what actual actions are being executed and completed. Not everyone is suited to work or manage in the virtual atmosphere; they need to be self-starters.

When working in a cross-cultural setting, it is likely important to ensure the language spoken is English. Taking into account time zone differences is another important point to keep in mind. Managers can evaluate their employees effectively without seeing them daily. For example, evaluation may be based on the amount of time it takes to complete specific tasks. They need to foster trust among team members and communicate effectively with them. They should ensure team communication occurs in efficient and understood messages for all members; they should spend 90% of their time on managing their staff and 10% on use of technology. Phone conferences with team members should occur frequently because members may not be seen physically for the duration of a project; this will foster a sense of inclusion and camaraderie. Lee, Delone, and Espinosa (2006) indicated that virtual team performance is defined by effective communication, team participation and coordination, trust, and work outcomes in relation to quality and devotion to schedule.

The GLOBE Project

The GLOBE Research Program, an expensive and comprehensive study of leadership, suggested that there are some universal aspects of global leadership. Drew (2002) talked about how the number of elements of transformational leadership appears to be associated with effective leadership regardless of the nationality of the leader. The elements of leadership that appear to be universal include vision, foresight, providing encouragement, trustworthiness, dynamism, optimism, and proactive action. The result of the research led two members of the GLOBE team to conclude that

> effective business leaders in a country are expected by their subordinates to provide a powerful and proactive vision to guide the company into the future, strong motivational skills to stimulate all employees to fulfill the vision, and excellent planning skills to assist in implementing the visions. (Robbins & Coulter, 2005, p.)

In the midst of this global trend, globalization reconfigures enterprise more than localization redefines work to fit diverse home circumstances as accountability and responsibility migrate down the chain and out through the functions. According to Javidan, Dorfman, de Luque, and House (2006), virtualization, as the newest large-scale trend in organizational agility, enables unprecedented collaboration. Globalization calls for high levels of cultural awareness in order to deploy the best leadership style for the situation and to achieve the highest level of collaboration.

Javidan et al. (2006) identified many clusters of countries with similar behaviors across various cultural dimensions: Anglo, Confucian Asia, Eastern Europe, Germanic Europe, Latin America, Latin Europe, Middle East, Nordic Europe, Southern Asia, and sub-Saharan Africa.

The GLOBE project focused on identifying the leadership specifics and differences in cultural clusters.

Kimble, Li, and Blanchflowe (2006) argued that the local characteristics will continue to affect the effectiveness of communication between people from different places, even in the virtual workplace. In the virtual space, the friction of distance has been eroded. Other challenges of distance derived from differences between places (e.g., local culture and language) will continue to affect the effectiveness of virtual teams. Hofstede and Hofstede's (2004) dimensions are key for global virtual leaders to keep in mind to play the role of cultural mentors to their teams. As indicated by Apospori, Nikandrou, and Panayotopoulou (2006),

> In light of the changing workforce, that ability to bridge the cultural gaps that separate us will be increasingly critical to the sustained well-being of a diverse workforce. Now more than ever, mentoring can serve as a bridge to crossing cultural differences. (p.)

Global team leaders should have the ability to make sense of and fit into unfamiliar contexts (Earley & Mosakowski, 2004). They should be able to distinguish between aspects of behavior that can be related to cultural norms and aspects that are idiosyncratic, so they can understand what is specific as opposed to what is general. Anzaldua (2002) stated that the ability of global leaders to bridge the gap of mentoring and relationship with their teams is critical for the success of the team and its leader. However, Mahallingam and Orr (2005) found that the virtual concept is broader than cultures and values, and far more productive in understanding and predicting cross-national exception in projects.

Each culture has its own way of reflecting its differences. For example, Lee (2002) indicated that critical reflection is a concept used in Korean culture to reflect the difference in use of email between Korean culture and United States culture in virtual team environments and due to cultural differences. For example, special codes in email use in Korean culture are identified as respect for an individual with more seniority; this code is achieved by applying the critical social theory, which provides adequate theoretical support for the use of emails that can vary between cultures. Lipnack and Stamps (2000) argued that global teams have bigger cultural and language issues due to increasing diversity in the workplace and the complexity of the task requirement, which demand a more diverse group of people to work together.

Research shows that people are more likely to communicate with a coworker in another building than with a colleague upstairs in the same building. When people know they are at a distance, culturally and linguistically as well as spatially, they tend to be more conscious of the need to be explicit and intentional about communication. With the new borderless economy, few meetings on global projects are face-to-face. Larson et al. (2006) indicated that most of the meetings are made in virtual space, which makes non-verbal communication assessment impossible. Not being able to read the non-verbal cues makes it hard for a business analyst to make use of the elicitation process, which leads to a diminishing success factor of the communication process and ability to capture requirements.

Neither video conferencing nor net meetings are ideal. Video conferencing usually lacks some continuity and the audio lag can be distracting. Facilitating a large group via video conferencing can be challenging due to multiple conversations that make one group or individual a dominant factor. In addition, video conferencing and net meetings often experience equipment

issues that hinder the elicitation requirements. Earley and Mosakowski (2004) indicated that the most common manifestation of cultural intelligence was observed in multinational companies.

Competitive Advantage & Successful Projects

Executives are challenged daily to compete successfully with anybody, anywhere, anytime. Petrick, Schere, Brodzinski, Quinn, and Ainina (1999) indicated that global leadership must exist to implement global strategies, enhance global reputation, and produce sustainable competitive advantages to the organization. Hall (1992) argued that an organization's employees can be a source for sustained competitive advantage and can determine the ultimate success of the organization. Sustainable global competitive advantage is the process that links the key role of managing intangible resources to produce a strategic success. It is identified by the differential capabilities and utilization of the best skills based on cumulative know-how, experience, and assets. Chiles and McMackin (1996) mentioned that the ability to manage cultural differences based on collective leadership talent will enhance services both domestically and globally. Excellent global leaders demonstrate their leadership skills and behaviors by acting as responsible stewards and will also enhance an organization's reputation at a global level.

Stanleigh's (2006) study of the project management practices, successes, and failures of 750 organizations found that measures of success included traditional metrics such as project on time, project within budget, project requirements met, and project achieved milestone deliverables (p. 4). Stanleigh recommended that organizations needed to look at more *strategic* measures of success such as successful management of all major issues, ability of the organization to manage the project within specific quality criteria, and customer post-surveys regarding satisfaction with the product or service delivered (p. 4). These

types of measures will assist leadership in making project decisions.

Failure to understand employees and their needs will not lead to success. It is important for leaders to see their employees as their customers who ensure that their internal systems run seamlessly. Business growths are supported by leaders' confidence in their employees and commitment to foster a positive working environment. Employees are motivated to do a better job and always go above and beyond when leaders embrace employees' recognition. According to Oakley (2005), there is a direct link between employee satisfaction and motivations and company profits. Oakley's studies indicated that engaged employees who represent the internal voice of the company are inspired to provide good service and deal directly with the customer, which will in turn bring success to the organization and more business due to positive employee-customer relations.

As indicated by Watson and Lapointe (2005), flex time, telecommuting opportunities, and bonuses tied to attendance granted to employees, may be other ways of rewarding the employees for a job well done. Leaders must create innovative ways to recognize employees' performance; for instance, in addition to saying thank you, an email message sent to the employee letting him/her know he/she is valued. Doing so will also create a challenging and rewarding work environment, as well as showing employees that the company for which they work values its customers, both internally and externally. In the end, leaders are creating a pleasing and rewarding work environment; the employees' performance will exceed expectations and will in turn bring more business to the company.

Table 2

Comparison of Fayol's Classic Management Functions and Project Lifecycle

Fayol's Five Functions of Management	*Five Phases of Project Lifecycle*
Planning	Initiating
Organizing	Planning
Command	Execution
Coordination	Controlling
Control	Closing

Above table is Adapted from *General and Industrial Management* by H. Fayol, 1919, London: Pitman. Copyright 1919 by Pitman. Adapted from *A Guide to the Project Management Body of Knowledge (PMBOK guide)* (3rd ed.) by Project Management Institute, 2004, Newton Square, PA. Copyright 2004 by Project Management Institute.

Leadership styles influence teams' performance and processes. Teams and processes also influence leadership styles. Several leadership theories called for the need for leaders to adjust their styles or the situation to arrive at an effective working relationship and thus achieve desired results (Fiedler, 1965; Hersey & Blanchard, 1977). Bass (1990) indicated that a participative leadership style is most appropriate in groups where the team members hold a higher level of expertise and knowledge than the leader, when there is time to make a quality decision, and where the structure is less formal. In contrast, teams that lack necessary skills, education, decision making process, require an authoritarian style (Bass, 1990).

Below, Table 3 shows the different levels of maturity model for project management, created by P. F. Rad and G. Levin, 2003, *AACE International Transactions,* PM41-46. Copyright 2003 by CRC Press LLC.

Table 3. *Organizational Project Management Maturity Model*

Maturity Level	*Description of Organization*
Level 5 – Optimizing with a Focus on Continuous Improvement	In Level 5 organizations, project management is consistently applied efficiently and effectively, resulting in project success. Project management is viewed as a critical business process and efforts are made to continuously improve the project process.
Level 4 – Comprehensive or Integrated	In Level 4 organizations, the project management culture is widely accepted and adherence to project processes result in successful projects. .
Level 3 – Integrated or Structured	Level 3 organizations have integrated, documented, and standardized project management methodologies, tools, and techniques.
Level 2 – Consistent or Repeatable	In Level 2 organizations, project management has been introduced and efforts are being made to gain wide acceptance of methodologies, tools, and techniques.
Level 1 – Ad-hoc or Basic	Level 1 organizations do not have formal project management procedures, resulting in inconsistency and unpredictable project performance. .

Note. Adapted from "Is Your Organization Friendly to Projects?" by P.F. Rad and G. Levin, 2003, *AACE International Transactions,* PM41-46. Copyright 2003 by CRC Press LLC.

A study performed on project success by Armeter and Dukerich (2002) concluded that leadership, teambuilding, and team member characteristics were predictors of project success. The researchers interviewed 51 project team members who represented eight high-performance project teams. The interviews of the participants elicited their opinions on critical project success factors. The results of the study reported a positive correlation between leader behaviors and project performance. Beneficial team leader behaviors included communication of project goals, alignment of team members' goals with project goals, empowerment of team members, and good work ethics. Kliem (2004) introduced the ten patterns for project managers. The patterns are: (a) shift, (b) visualize, (c) integrate, (d) understand, (e) decide, (f) motivate, (g) team, (h) trust, (i) communicate, and (j) respond. Project leaders need to inspire and motivate, understand team member strengths, build trust and credibility, and communicate often and effectively.

Conclusion

Chapter Two presented an overview of the main elements global leaders need to consider at all times when leading global virtual teams. According to Kirkman, Rosen, Gibson, Tesluk, and McPherson (2002), due to globalization and improvements, virtual teams have rapidly increased worldwide. All characteristics mentioned in the literature review are equally important. Reaching the best performance of global virtual teams requires effective cultural intelligence and effective communication.

Chapter Three

Methodology

Chapter Three provides a detailed description of the research design, the research questions, the hypotheses, details on sample size, instrumentations, measures, data collection, and data analysis. The findings of this study may enable leaders and project managers at the studied organization to affect their success in leading and managing projects through effective communication and a high level of CQ among its global virtual team members, plus contribute to the body of knowledge on this subject.

Research Design

This research study consisted of both quantitative and partially qualitative methods. This allowed for a multi-strategy approach in which the researcher collected data separately; both types of data had the same priority and integration was based on both the triangulation and the exploratory approach (Creswell, 2009). An important advantage of the mixed method approach was that it allowed the researcher to draw from the strengths of each method and simultaneously minimize the weaknesses of each. It also offered the opportunity for answering research questions via surveys which broadened the data choices and helped bridge the schism between quantitative and qualitative research (Creswell, 2009).

The surveys from CQS and Virtual Teams included both open- and close-ended questions, which allowed the researcher to capture both qualitative and quantitative data collection and analysis at a low cost to both the researcher and the organization being studied. Taking this approach also allowed the researcher to understand and analyze participant responses based on their beliefs, attitudes, and behavioral intentions (Creswell, 2009).

Data from the open-ended questions and short interviews for selected individuals were collected concurrently, but were analyzed independently and analyzed inductively. Parallel analysis also occurred to compare data from both qualitative and quantitative research findings through data transformation. Data also was coded into themes based on the participants' positions in the company. The researcher also was able to see if and where overlapping occurred.

Inferential statistics were used during analysis, data entered was checked carefully for errors, data coding took place to identify the variables that were coded in each column and distinguished values representing missing data. The researcher also employed tables, various graph types, bar charts, histograms, frequency polygons, and frequency distributions, which are numerical displays that show the number and percent of cases corresponding to each value or group of values of a variable (Chambliss & Schutt, 2010).

Minitab program was used to conduct the descriptive and inferential analysis to address this research. The research design was developed to answer the research questions in conjunction with the hypotheses. The variables in this study consisted of cultural intelligence, effective communication, and project success.

Research Questions and Hypotheses

The main focus of this study was to determine the success of projects led by virtual team members based on their high level of cultural intelligence and effective communication among team members and their leaders. The following research questions and hypotheses were used for investigation in this study.

Research Question 1 (RQ1): Is there a relationship between CQ and effective communication among global virtual team members?

Research Question 2 (RQ2): Is there a relationship between CQ and successful projects?

Research Question 3 (RQ3): Is there a relationship between effective communication and successful projects?

Hypothesis $H0^1$ (Null Hypothesis): There is no significant correlation between CQ and effective communication among global virtual team members.

Hypothesis $H0^2$ (Null Hypothesis): There is no significant correlation between cultural intelligence (CQ) and project success.

Hypothesis $H0^3$ (Null Hypothesis): There is no significant correlation between effective communication and project success.

Population and Sampling

The researcher is an employee of the organization being studied and a member of its project management department (total of 400 project management team members, globally). The management team agreed to allow its project management team members to take part in this survey and agreed to send it to the entire department via an email, using the zoom-rang survey link. At the same time, the link was sent to the global project management distribution team and management team that work with team members located in other countries; instructions also went out, explaining the survey and its purpose. The opening page of the survey on zoom-rang contained a statement explaining the purpose and indicating that participation is voluntary, they can stop at any time, and that, if they consent to participate, they should click on 'next' which will then open the actual survey.

Participants consisted of the project management team members at the studied organization, which include project managers, associate project managers, senior project managers, Technical Administrator, and team managers. They all worked on the same nature of projects; they all worked virtually with their counterparts in other countries with diverse cultures and backgrounds, using various means of communication, including email, conference calls, WebEx, and video conferencing. The survey was sent out to the entire departments. However, the interviews were not randomly selected. They targeted individuals based on their positions and locations, to achieve a mixed sample of diverse and global input for this study. Using a purposeful selection for participants was necessary.

Instrumentation

The study contained a survey that consisted of four sections. The first section focused on the demographic items (see Appendix A). The second section focused on CQS; the CQ survey used the 20-item CQS, which measured the four components of CQ: metacognition, cognition, motivational, and behavioral (Ang & Van Dyne, 2007) (see Appendix B). The third section focused on the communicator competence questionnaire CCQ (Monge et al., 1982), which consisted of 12 questions (see Appendix C). The next section focused on the project implementation profile (PIP) to measure the success rate of projects managed virtually based on the CQS elements, consisting of 12 questions (see Appendix D). The final portion was a survey created by the researcher that applied specifically to project management teams. The survey was sent to all members in the project management department and supervisor-manager individuals who worked virtually and with counterparts from other countries, including the United States, Europe, Singapore, and China.

Procedure

Data Collection

A global survey was conducted across all business units within the studied organization and among all members of the project management department. Team members were asked to participate in the survey via an email sent by the company's HR department which specified the requirements for participation (see Appendix F) and zoom-rang link to the survey using SurveyMonkey.com. Survey Monkey combined results and provided reports of total responses. A reminder email followed after one week from the initial email with the survey link included to remind participants of the need to complete the survey and its completion due date. The data was collected using a company computer. Each individual took the survey using his/her computer. Participants had two weeks to complete the survey from the send date to allow for increased participation in case employees were on holiday or vacation. The management team provided written consent to conduct the survey, which acted as the informed consent form (see Appendix G), as all data from all employees will be used by the company to enhance certain processes based on the research findings. The survey included four sections (see Appendices A-D).

All hard copy study documents are kept in a locked cabinet in the researcher's home, and all electronic data are password protected and available to the dissertation committee upon request. Informed consent forms and other study documents will be shredded five years after the study completion date and the electronic data will be kept with the organization's project management team for further use and research if needed.

Data Analysis

The researcher utilized a program with the capability to output graphs and tables for analysis of collected data. After all data was entered, a visual inspection of the data took place to help ensure it was clean and free from any visible errors, such as participant use of a number

higher than what was listed on the survey, or an option not listed at all; this step took place before initiation of data analysis. The researcher also used the Minitab program which allowed her to identify programmatically any mis-entered data or misused criteria.

Descriptive statistics were used for each of the questions related to effective communication, CQ, and successful projects, which indicated the general tendency in the data that focused on the mean, mode, and median. The researcher also looked at the spread of scores that focused on the variance, standard deviation, and range, or a comparison of how one score related to all others that included z scores, independent, dependent, control, or mediating.

The researcher also compared two or more groups among all variables in terms of which one was dependent on which: for example, comparison of the level of CQ between North America staff and Geneva staff versus the level of CQ between North America staff and Singapore staff. In this case, the researcher used the inferential statistics, which allowed her to analyze data from a sample to draw conclusion about the different CQ level among all four global business units.

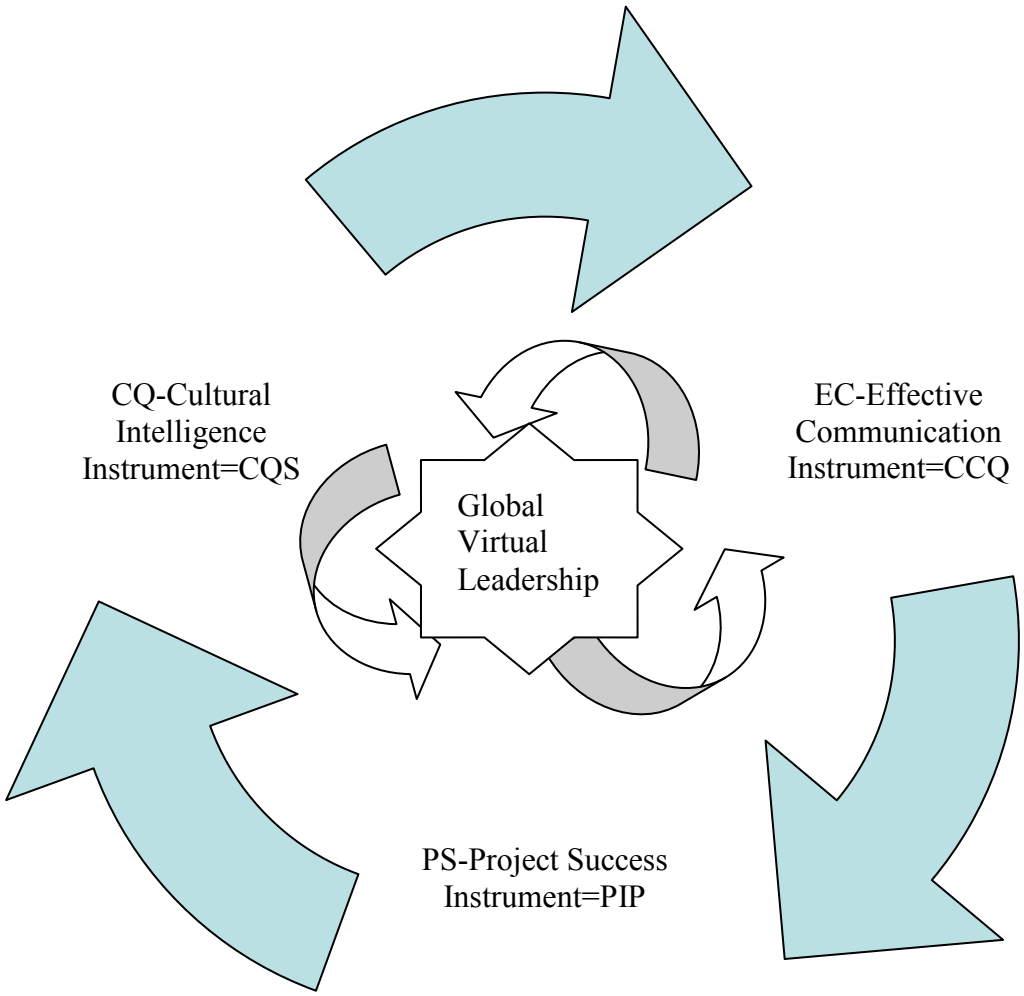


Figure 4. Study diagram

The various business units where project management team members worked together virtually on same projects is listed in Figure 2 below.

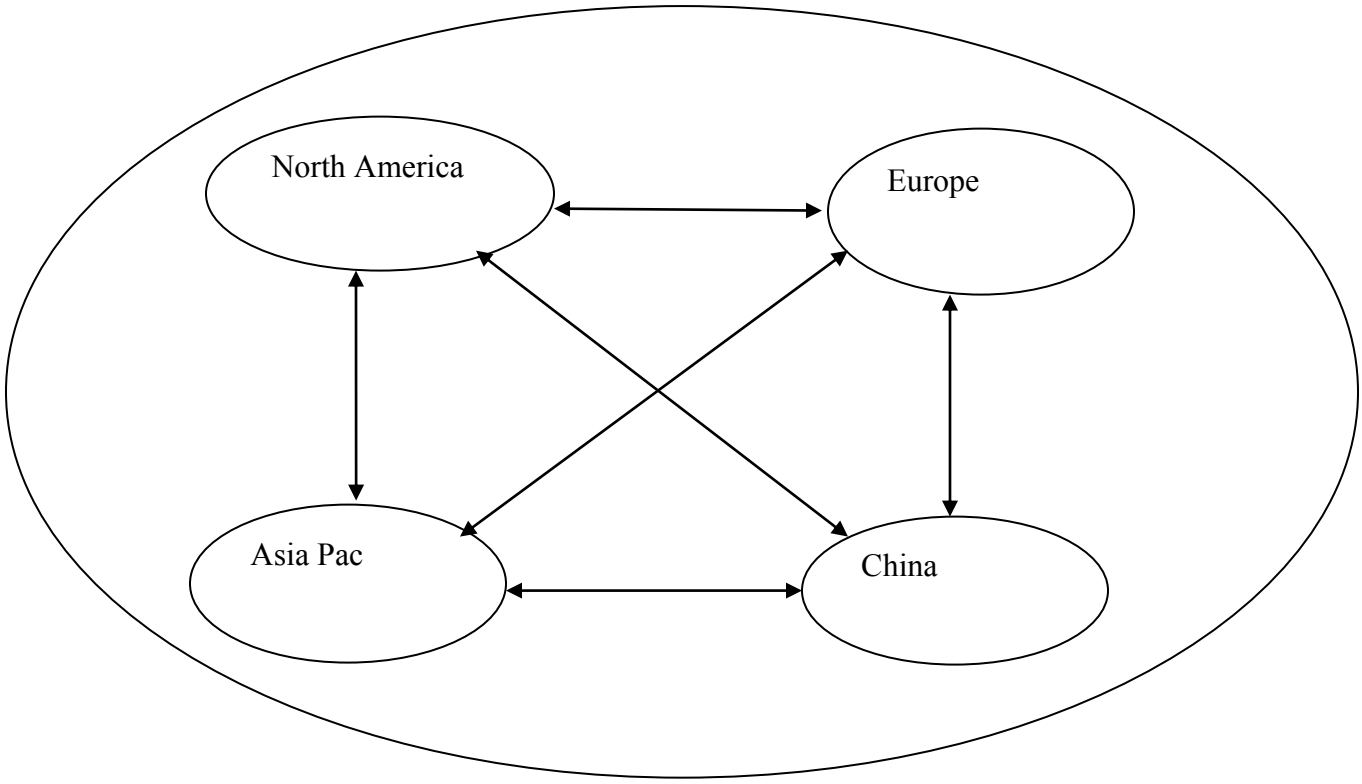


Figure 2. Geographic Organizational Culture

Chapter Four

Introduction

The purpose of this study was to examine if there is a relationship between cultural intelligence, effective communication, and project success among global virtual team members and their leaders, with focus on behavioral and personality like trita. This study used concurrent triangulation methods to include both the quantitative and qualitative results. All respondents work at a culturally very divers, global pharmaceutical organization, with existence in North America, Europe, Asia Pac (AP), and China. The online survey was used to measure quantitative statistical results from both management and non-management team members, to include: project managers, data managers, technical administrators, administrative coordinators, and quality review team, as well as calculation reflexes, desktop publishing, and monitoring center. The survey was sent to all groups on the same day via an email sent by the organization's HR department. The same questions were sent to all groups. There were a total of 44 quantitative based questions and two open-ended ones. This chapter presents all results collected for this study, from all 46 questions.

The overarching questions for this research were:

Research Question 1 (RQ1): Is there a relationship between CQ and effective communication among global virtual team members?

Research Question 2 (RQ2): Is there a relationship between CQ and successful projects?

Research Question 3 (RQ3): Is there a relationship between effective communication and successful projects?

Three null hypotheses were put in place for this study:

Hypothesis $H0^1$ (Null Hypothesis): There is no significant correlation between CQ and effective communication among global virtual team members.

Hypothesis $H0^2$ (Null Hypothesis): There is no significant correlation between cultural intelligence (CQ) and project success.

Hypothesis $H0^3$ (Null Hypothesis): There is no significant correlation between effective communication and project success.

Data Collection and Coding

All groups listed above, management and non-management, received the survey that was sent by HR electronically, via the company's email system. All questions for both quantitative and qualitative were put using the fluidsurvey.com. The purpose of the quantitative data was to construct statistical analysis and provide explanation of the results. The data was analyzed using Minitab software. Each quantitative question had a total of four possible answers. One of the answers was NA, which was coded as missing data. The qualitative data collected from the two open-ended questions was to provide descriptive explanation to support some of the communication based questions. The qualitative answers were analyzed using a coding system.

Method & Data Analysis

The estimated sample size was expected to be 400 to yield a statistical power of .98 for detecting moderately strong effect in a correlation analysis. The actual sample size was 375: a total of 257 completed the full survey, 119 started but did not complete. Due to this high sample size, the null hypothesis will not be rejected. Results from all data collected were measured across boundaries, within boundaries, within functional groups, across functional groups, within

non-management level, across management and non-management employees, and across different geographical locations.

Descriptive statistics were first conducted to characterize the age, gender, number of years of experience, number of languages spoken, and number of times individual travelled outside his/her country, as well as management versus non-management participants. In terms of demographics, a few questions were asked to evaluate respondents' information in relation to the number of countries visited to also see if there is relationship between number of countries visited and cultural intelligence. Out of n=257 participants who took the survey, total languages spoken among all participants are 101 languages; 126 participants speak only one language, 70 participants speak two languages, 44 participants speak three languages, 12 speak four languages, and three speak five languages. In terms of number of times individuals travelled outside their country, out of n=256, 29 participants indicated that they never travelled outside their country, 89 participants travelled 1-5 times, 31 travelled 6-10 times, and 107 participants travelled more than ten times outside their country. Refer to figures 5-11 for demographic information.

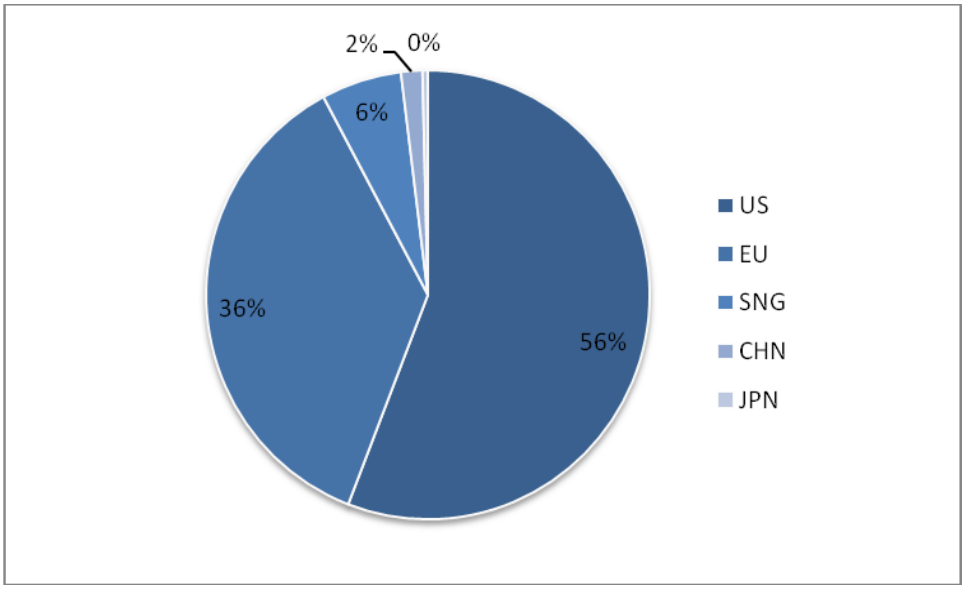


Figure 5. Region.

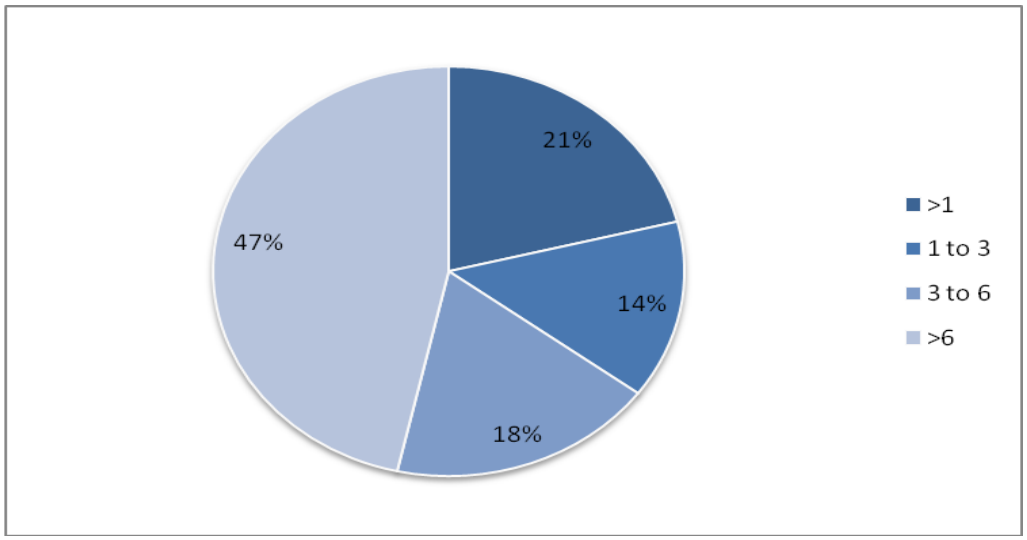


Figure 6. Number of years in Project Management.

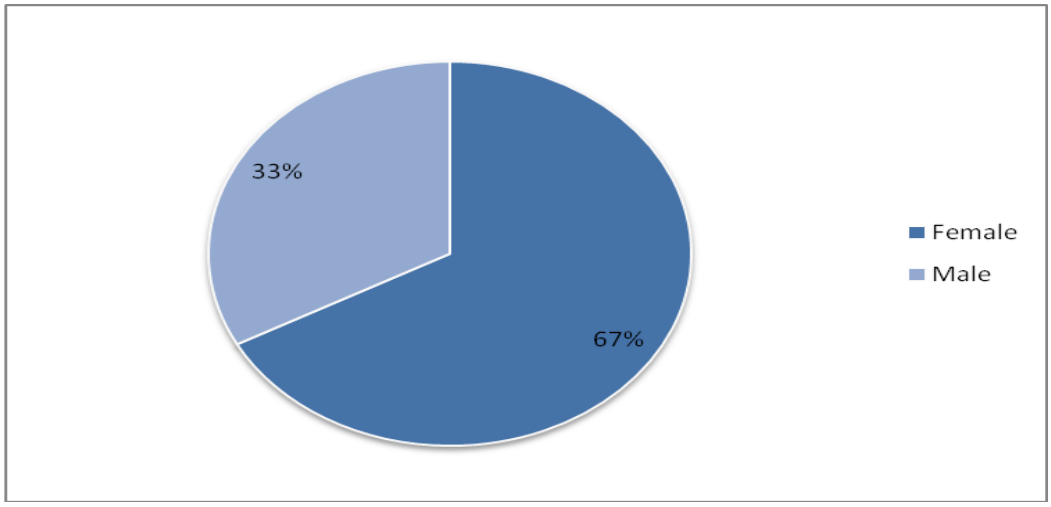


Figure 7. Gender.

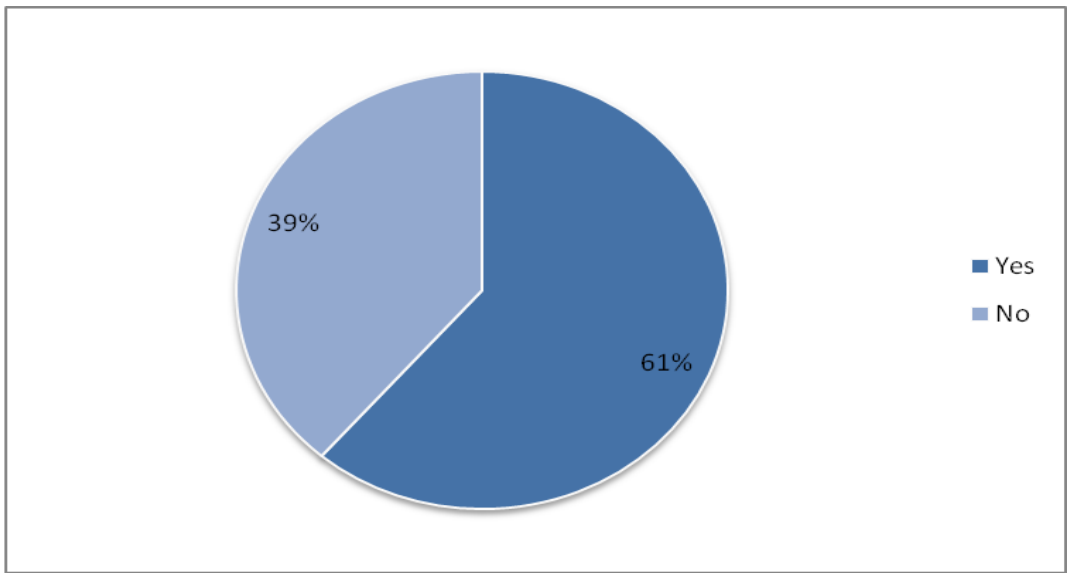


Figure 8. English as primary language

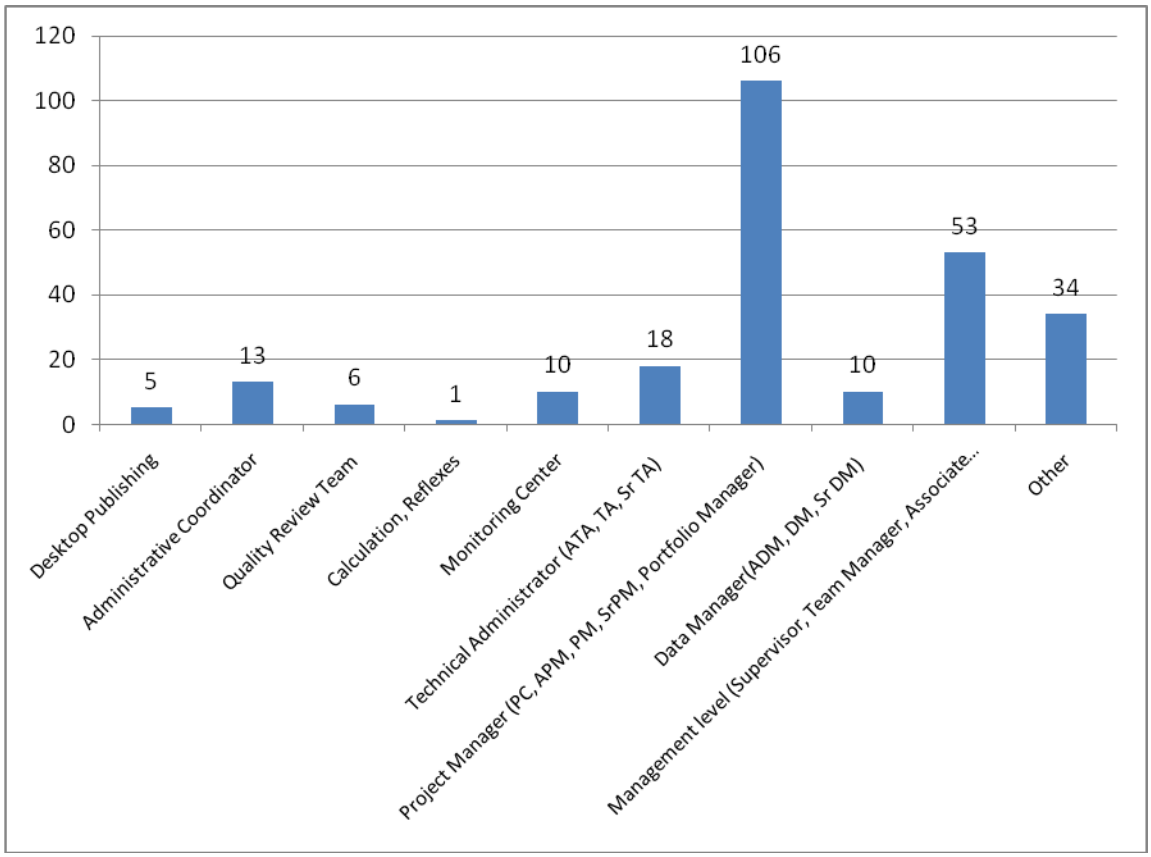


Figure 9. Department

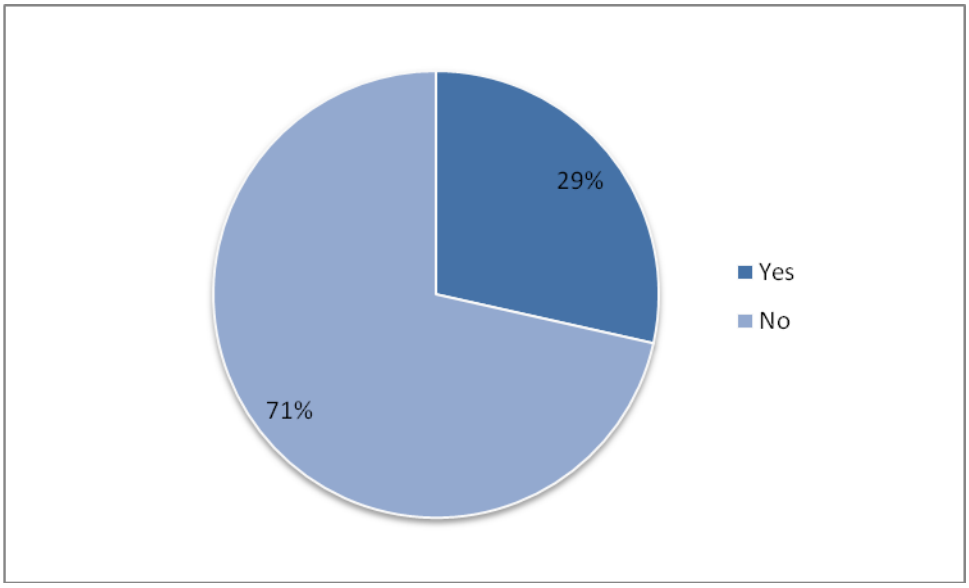


Figure 10. Manages others.

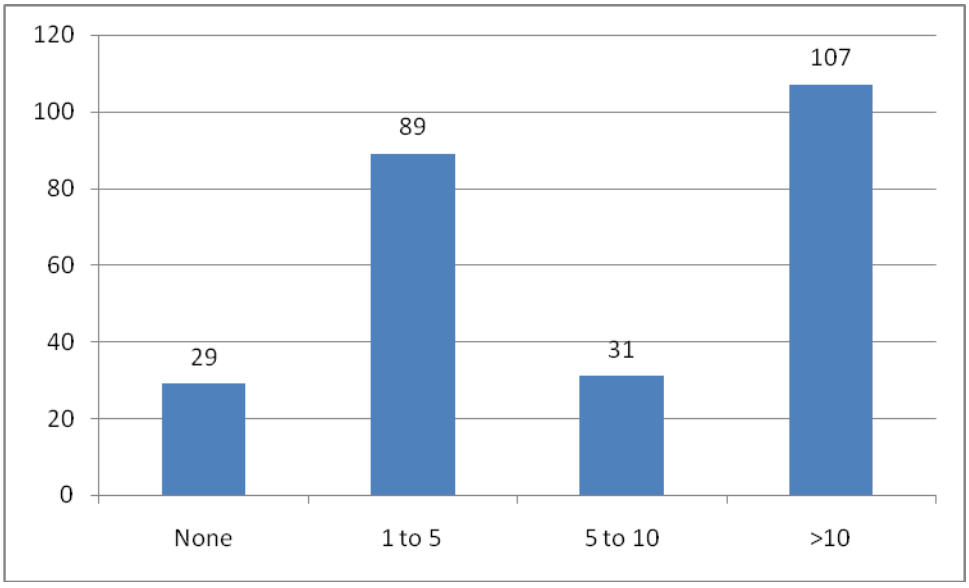


Figure 11. Number of times travelled outside your country in 10 years.

The quantitative analyses were conducted into many stages. The first three stages, used the one way ANoVA regression method, tested the relationship between cultural intelligence (CQ) and effective communication (EC), cultural intelligence and project success (PS), and effective communication and project success. The fourth stage tested the relationship between

cultural intelligence for all four elements of CQ and project success, using the matrix ANoVA regression analysis. The fifth stage tested the relationship between cultural intelligence and effective communication in relation to project success, using the matrix ANoVA regression analysis. Regression analysis was also performed across functional groups to include Desktop publishing, administrative coordinator, quality review team, calculation team, monitoring center, technical administrator, project managers, data managers, management level, and others for: CQ, EC, PS, and different regions. (See tables 4-8).

Table 4
ANoVA Regression Analysis for CQ, EC, PS

Stage	Variable 1	Variable 2	Statistical Tests	Total #	P value	Table #
1	Cultural Intelligence	Project Success	ANoVA/Regression analysis run in Minitab based on survey data	224 cases used, 32 cases contain missing values	**0.001-reject ^{2}H0**	**Table 6**
2	Effective Communication	Project Success	ANoVA/Regression analysis run in Minitab based on survey data	219 cases used, 37 cases contain missing values	**0.000- reject ^{3}H0**	**Table 7**
3	Cultural Intelligence	Effective Communication	ANoVA/Regression analysis run in Minitab based on survey data	219 cases used, 37 cases contain missing values	**0.000- reject ^{1}H0**	**Table 8**
4	Cultural Intelligence	Project Success	Matrix ANoVA/Regression analysis run in Minitab based on survey data	219 cases used, 37 cases contain missing value	META-COGNITIVE 0.068 COGNITIVE 0.421 **MOTIVATIONAL 0.014** BEHAVIORAL 0.599	NA
5	CQ + EC	Project Success	Matrix-ANoVA/Regression analysis run in Minitab	219 cases used, 37 cases contain missing values	CQ 0.010 **EC 0.002**	Table 5

Through the matrix ANoVA regression tests, where PS was used as a function of effective communication and cultural intelligence:

PS as a function of EC, CQ:

The regression equation is
PS = 1.06 + 0.263 CQ + 0.338 EC

219 cases used, 37 cases contain missing values

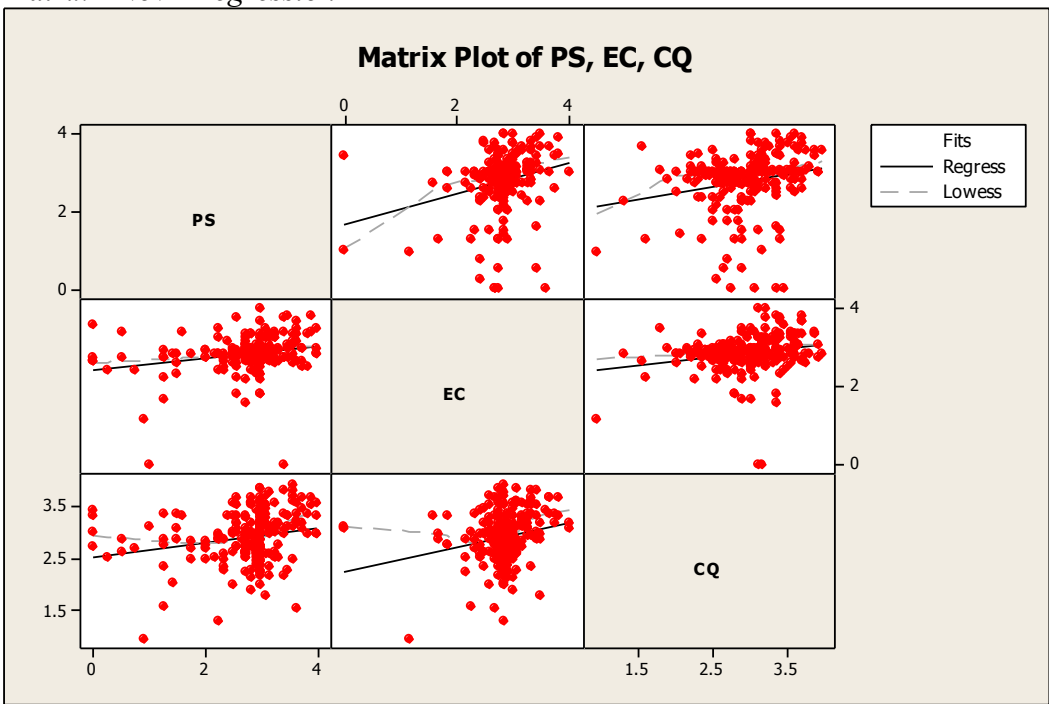
Predictor	Coef	SE Coef	T	P
Constant	1.0598	0.3785	2.80	0.006
CQ	0.2631	0.1014	2.59	0.010
EC	**0.3381**	**0.1067**	**3.17**	**0.002**

S = 0.710235 R-Sq = 9.0% R-Sq(adj) = 8.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	10.7720	5.3860	10.68	0.000
Residual Error	216	108.9577	0.5044		
Total	218	119.7297			

Table 5
Matrix ANoVA regression



PS as a function of CQ:

Cultural intelligence is a critical contributor to project success (p=0.001) and it accounts for 4.3% of the effect seen in this model. This data would also indicate rejection of my third null hypothesis, therefore, there is a relationship between both CQ and PS.

The regression equation is
PS = 1.81 + 0.334 CQ

224 cases used, 32 cases contain missing values

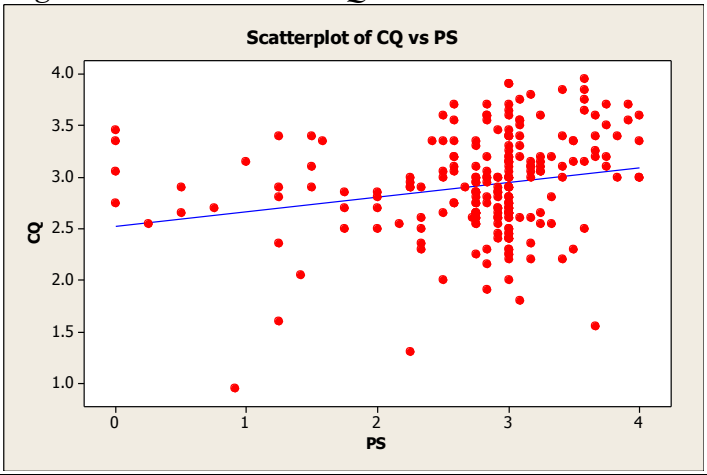
Predictor	Coef	SE Coef	T	P
Constant	1.8079	0.2974	6.08	0.000
CQ	**0.3341**	**0.1004**	**3.33**	**0.001**

S = 0.723716 R-Sq = 4.7% R-Sq(adj) = 4.3%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	5.7973	5.7973	11.07	0.001
Residual Error	222	116.2757	0.5238		
Total	223	122.0730			

Table 6
Regression Between PS & QC



PS as a function of EC:
The regression equation is
PS = 1.66 + 0.398 EC

219 cases used, 37 cases contain missing values

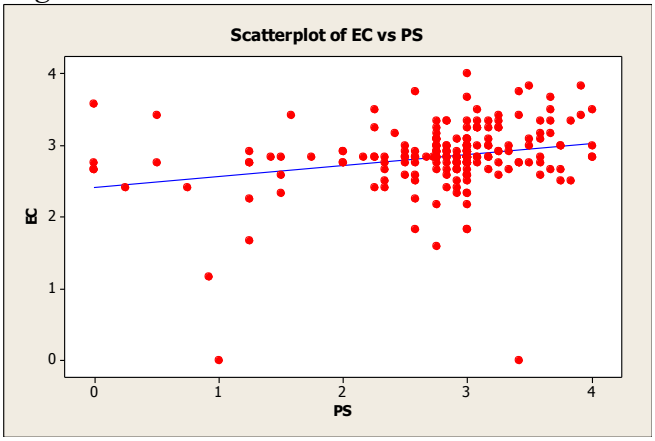
Predictor	Coef	SE Coef	T	P
Constant	1.6580	0.3040	5.45	0.000
EC	**0.3983**	**0.1055**	**3.78**	**0.000**

S = 0.719543 R-Sq = 6.2% R-Sq(adj) = 5.7%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	7.3796	7.3796	14.25	0.000
Residual Error	217	112.3502	0.5177		
Total	218	119.7297			

Table 7
Regression Between PS & EC



CQ as a function of EC:
Effective communication is a critical contributor to cultural intelligence (p=0.000) and it accounts for 7.9% of the effect seen in this model. Below analysis would allow me to reject the null hypothesis, which means there is a relationship between CQ and EC.

The regression equation is
EC = 1.51 + 0.420 CQ

Predictor	Coef	SE Coef	T	P
Constant	1.5090	0.2584	5.84	0.000
CQ	**0.42022**	**0.08776**	**4.79**	**0.000**

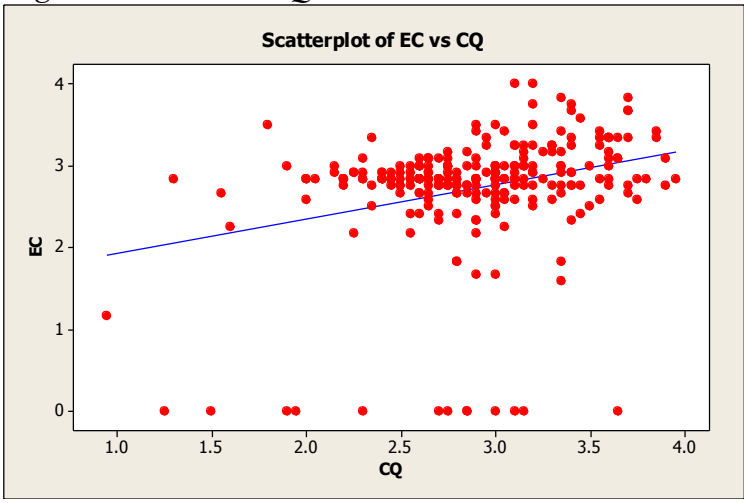
S = 0.702383 R-Sq = 8.3% R-Sq(adj) = 7.9%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	11.312	11.312	22.93	0.000
Residual Error	254	125.309	0.493		
Total	255	136.621			

Table 8

Regression Between CQ & EC



Project Success as a function of different CQ:

The relationship based on the individual CQ categories showed a very good value for Motivational of = 0.014, which indicated the null hypothesis to be rejected, therefore, there is a relationship between PS and motivational aspect of the CQ, with a 5.6% of the relationship related to PS and 4-CQ elements.

The regression equation is:

PS = 1.57 + 0.240 META-COGNITIVE - 0.091 COGNITIVE + 0.267 MOTIVATIONAL - 0.0520 BEHAVIORAL

224 cases used, 32 cases contain missing values

Predictor	Coef	SE Coef	T	P
Constant	1.5686	0.3142	4.99	0.000
META-COGNITIVE	0.2404	0.1308	1.84	0.068
COGNITIVE	-0.0906	0.1124	-0.81	0.421
MOTIVATIONAL	**0.2669**	**0.1080**	**2.47**	**0.014**
BEHAVIORAL	-0.05202	0.09880	-0.53	0.599

S = 0.718932 R-Sq = 7.3% R-Sq(adj) = 5.6%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	4	8.8798	2.2200	4.30	0.002
Residual Error	219	113.1932	0.5169		
Total	223	122.0730			

CQ as a function of languages spoken:

There does not seem to be a link between the number of languages spoken and cultural intelligence and there does not seem to be a link between the times travelled outside the US and cultural intelligence.

The regression equation is
CQ = 2.86 + 0.0218 How many languages do you speak

Predictor	Coef	SE Coef	T	P
Constant	2.85874	0.03953	72.32	0.000
How many languages do you speak	0.02183	0.01243	1.76	0.080

S = 0.499186 R-Sq = 1.2% R-Sq(adj) = 0.8%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	0.7687	0.7687	3.08	0.080
Residual Error	254	63.2934	0.2492		
Total	255	64.0620			

Descriptive Statistics based on Boxplot

Descriptive analysis was also performed between departments for CQ, EC, and PS. Boxplot diagrams are presented in the figures below to show how each department ranked in relation to various variables. Boxplot deals with spread of data and n value, based on the value of range, median, and mean of the data. The size of the box determines the spread of data. Large box means more spread of data and smaller box reflects smaller spread of data. Outliers are also shown in the below diagram. All boxplots for all configurations do not show a statistical difference between variables for CQ, EC, and PS, within departments.

Departmental Analysis: 0= Other , 1= Desktop Publishing, 2= Administrative Coordinator, 3= Quality Review Team, 4= Calculation, Reflexes, 5= Monitoring Center, 6= Technical Administrator (ATA, TA, Sr TA) , 7= Project Manager (PC, APM, PM, Sr PM, Portfolio Manager) , 8= Data Manager (ADM, DM, Sr DM) , 9= Management level (Supervisor, Team Manager, Associate Director, Director, VP)

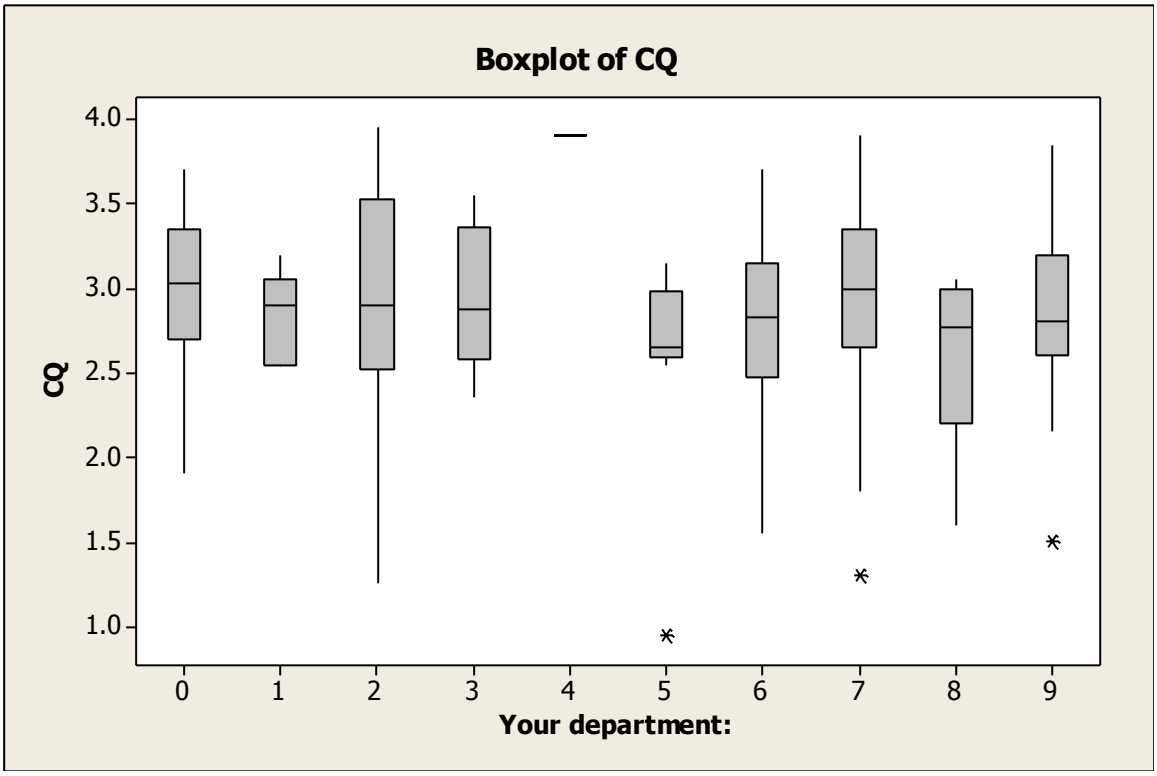


Figure 12. Boxplot between departments for CQ.

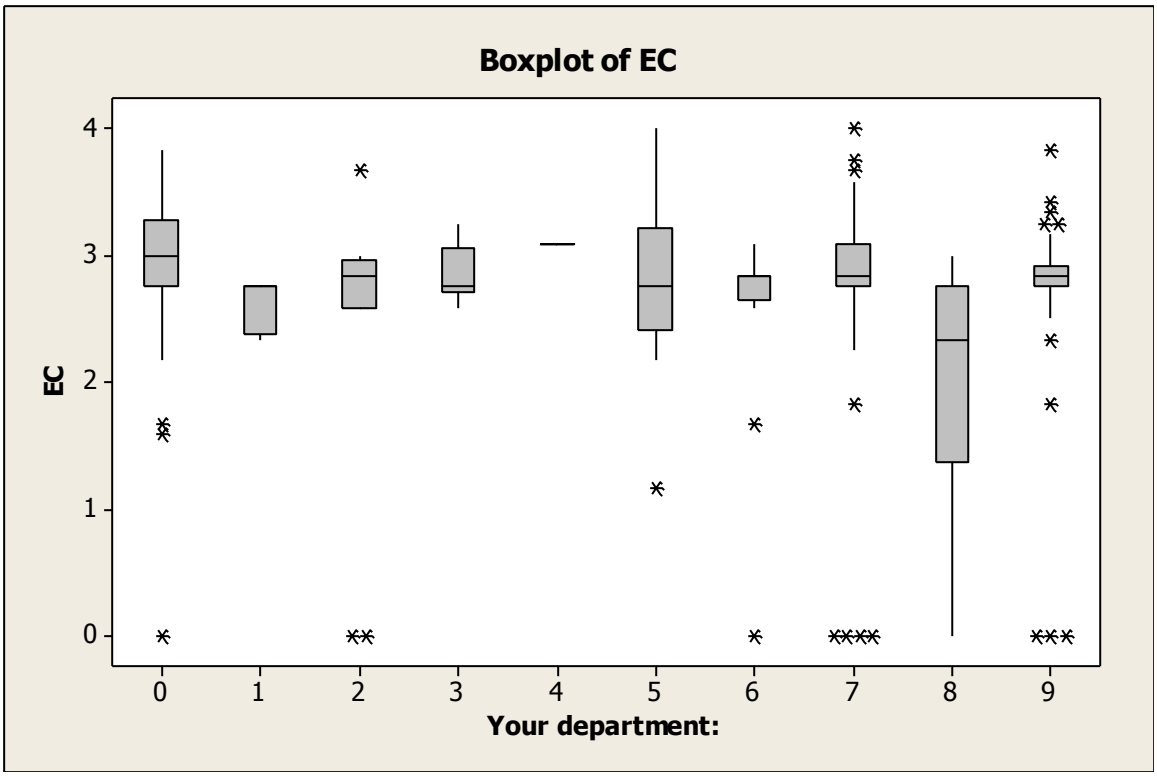


Figure 13. Boxplot between departments for EC.

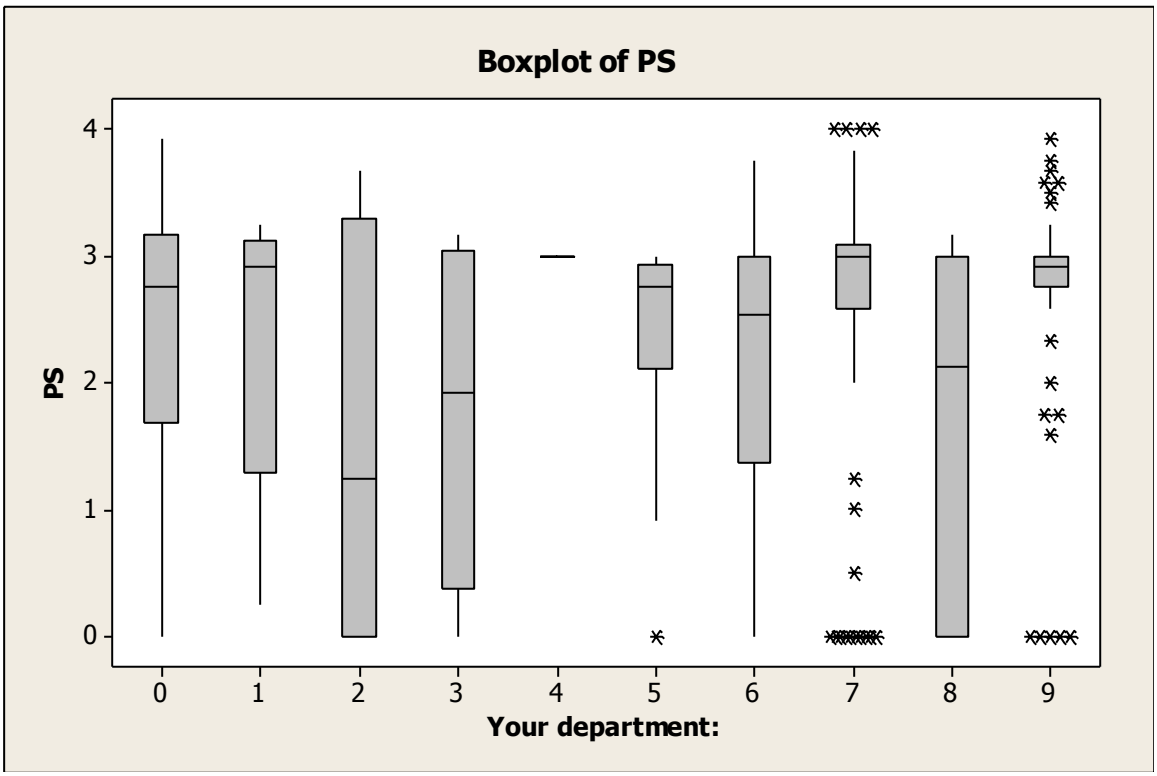


Figure 14. Boxplot between departments for PS.

Descriptive statistics was also performed using the box plot between regions. None of the data showed to make statistical difference for any of the CQ, EC, and PS variables.

Regional Analysis: (1=US, 2=EU, 3=SNG, 4=CHN, 5=JPN)

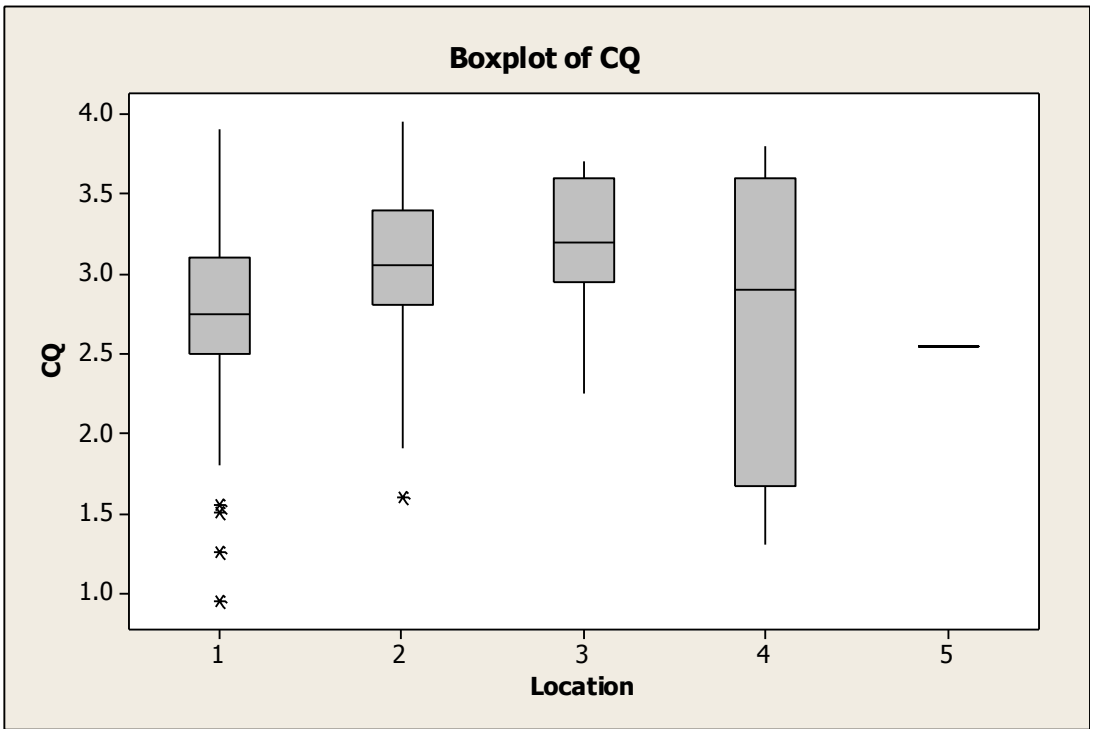


Figure 15. Boxplot within region for CQ.

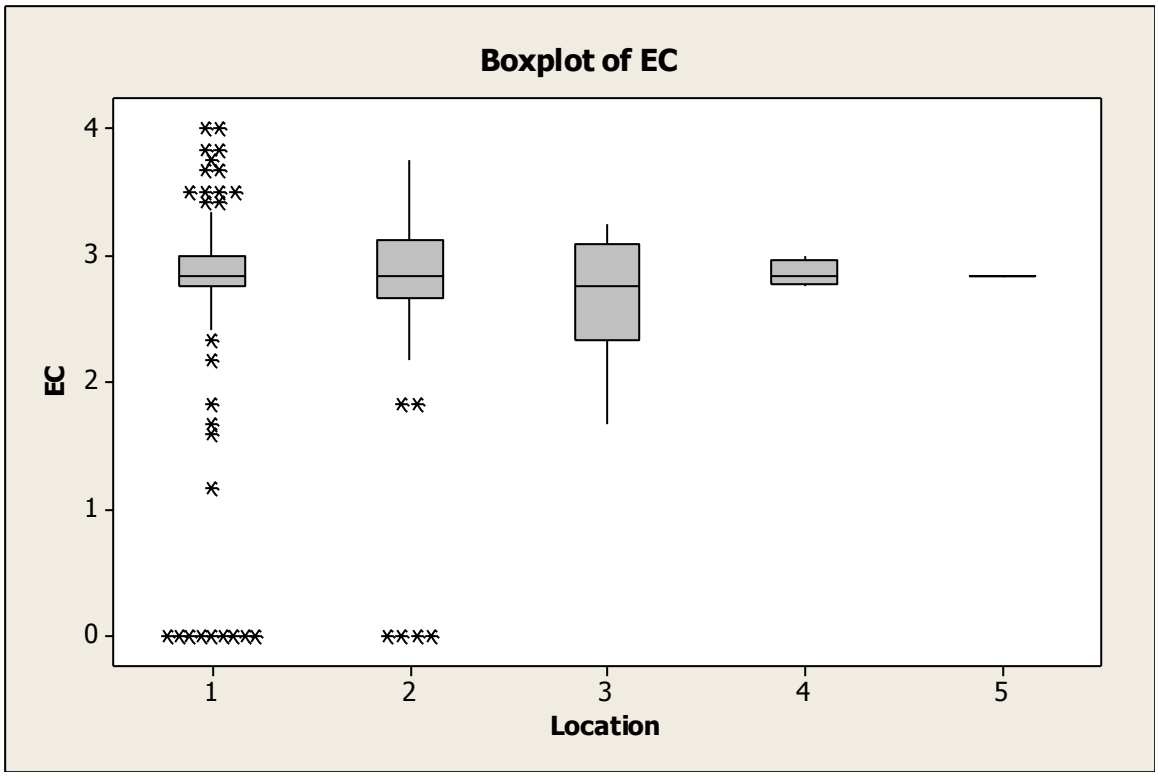


Figure 16. Boxplot within region for EC.

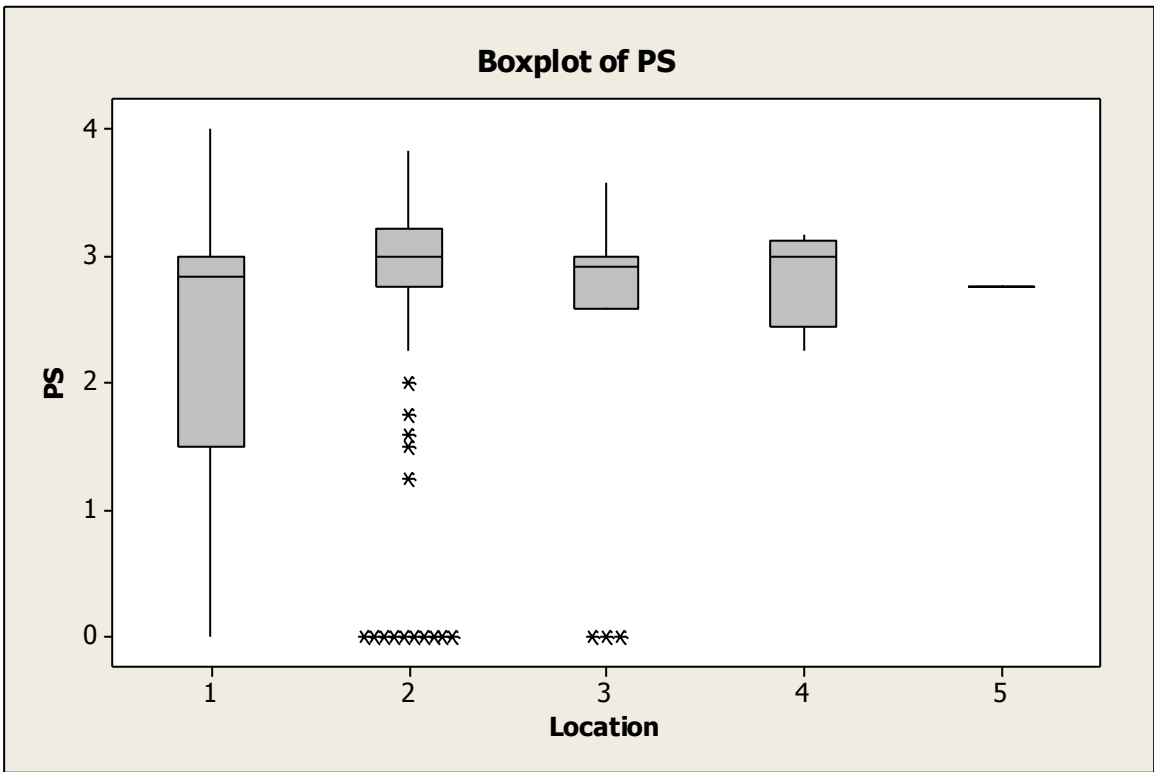


Figure 17. Boxplot within region for PS.

Regression Analysis using Scatter Plots Showing Relationship Between CQ and Number of Languages

Scatter plot analysis is also performed to analyze data between variables and demographic information. Results showed that the number of languages spoken is statistically significant in relation to CQ with n= 253 and p=0.00.

EC as a function of Languages Spoken:

The regression equation is
EC = 2.71 + 0.0086 How many languages do you speak

Predictor	Coef	SE Coef	T	P
Constant	2.71288	0.09802	27.68	0.000
How many languages do you speak	0.00860	0.04787	0.18	0.858

S = 0.734793 R-Sq = 0.0% R-Sq(adj) = 0.0%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	0.0174	0.0174	0.03	0.858
Residual Error	253	136.6001	0.5399		
Total	254	136.6175			

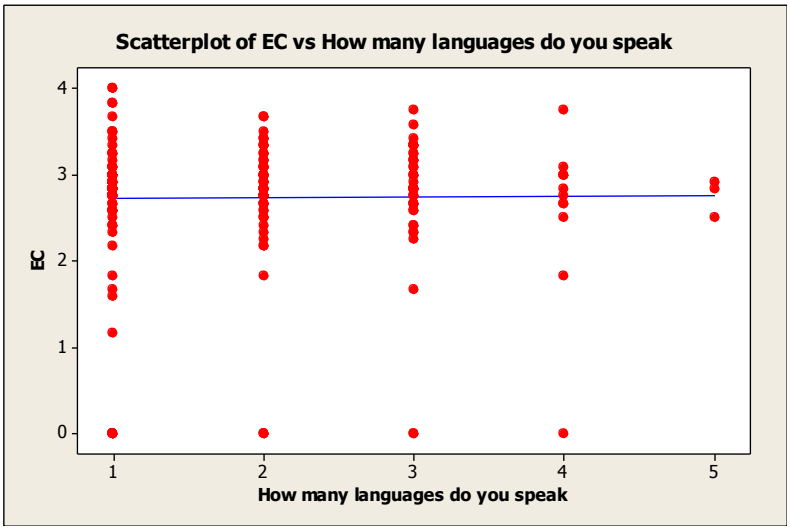


Figure 18. Scatter Plot between EC and number of languages.

PS as a function of Languages Spoken:
The regression equation is
PS = 2.27 + 0.0960 How many languages do you speak

Predictor	Coef	SE Coef	T	P
Constant	2.2722	0.1526	14.89	0.000
How many languages do you speak	0.09597	0.07452	1.29	0.199

S = 1.14378 R-Sq = 0.7% R-Sq(adj) = 0.3%
Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	2.170	2.170	1.66	0.199
Residual Error	253	330.983	1.308		
Total	254	333.153			

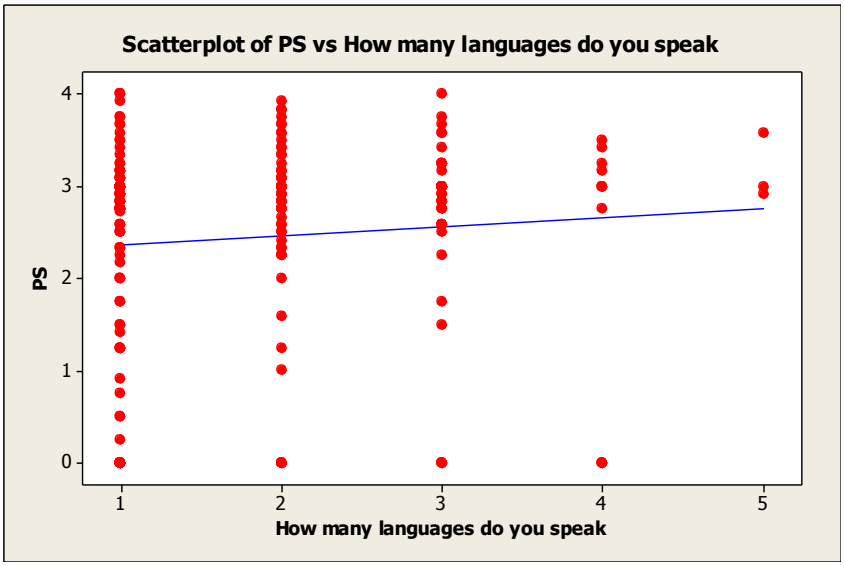


Figure 19. Scatter Plot between PS and number of languages.

CQ as a function of Languages Spoken (removed outlier of 39, analysis re-run):
The regression equation is
CQ = 2.55 + 0.197 How many languages do you speak

Predictor	Coef	SE Coef	T	P
Constant	2.54629	0.06210	41.01	0.000
How many languages do you speak	**0.19706**	**0.03033**	**6.50**	**0.000**

S = 0.465498 R-Sq = 14.3% R-Sq(adj) = 14.0%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	9.1486	9.1486	42.22	0.000
Residual Error	253	54.8222	0.2167		
Total	254	63.9708			

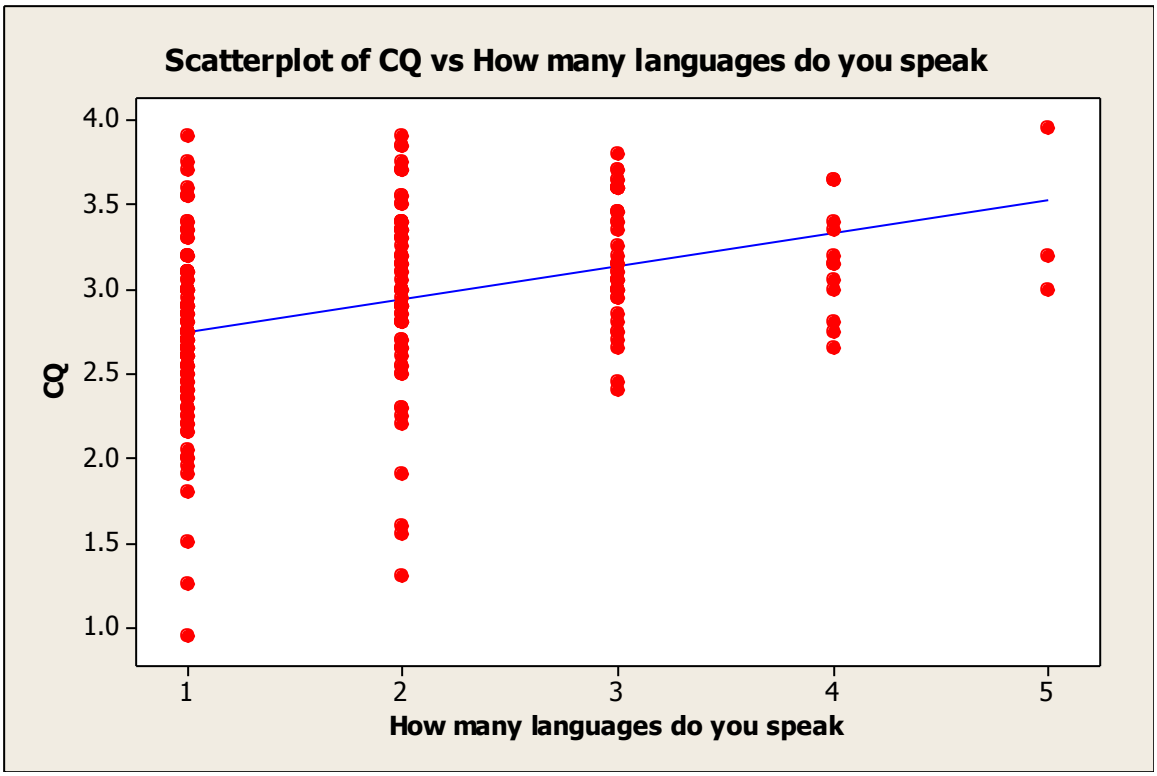


Figure 20. Scatter Plot between CQ and number of languages.

t-test Analysis

t-test method was used to test the relationship between the number of languages spoken and cultural intelligence, number of times an individual travelled outside the United States and cultural intelligence, managers versus non-managers with relation to CQ, managers versus non-managers in relation to effective communication, managers versus non-managers in relation to project success, females versus males in relation to CQ, females versus males in relation to effective communication, females versus males in relation to project success, and number of years for project managers in service in relation to CQ, EC, and PS.

Managers versus Non-managers:

CQ: **Managers do not seem to have higher CQ than non-managers**

Variable	N	Mean	StDev	SE Mean	95% CI
Mgr CQ	73	2.8171	0.4457	0.0522	(2.7131, 2.9211)
Non CQ	183	2.9350	0.5191	0.0384	(2.8593, 3.0107)

EC: **Managers do not seem to have higher EC than non-managers**

Variable	N	Mean	StDev	SE Mean	95% CI
Mgr EC	73	2.7854	0.6760	0.0791	(2.6277, 2.9431)
Non EC	183	2.7054	0.7537	0.0557	(2.5954, 2.8153)

PS: **Managers do not seem to have a higher PS than non-managers**

Variable	N	Mean	StDev	SE Mean	95% CI
Mgr PS	73	2.558	1.038	0.122	(2.316, 2.800)
Non PS	183	2.3874	1.1951	0.0883	(2.2131, 2.5617)

Females versus Males:
CQ: **Females do not seem to have higher CQ than males**

Variable	N	Mean	StDev	SE Mean	95% CI
Female CQ	172	2.8608	0.5136	0.0392	(2.7835, 2.9381)
Male CQ	84	2.9845	0.4669	0.0509	(2.8832, 3.0858)

EC: **Females do not seem to have higher EC than males**

Variable	N	Mean	StDev	SE Mean	95% CI
Female EC	172	2.7282	0.7450	0.0568	(2.6161, 2.8403)
Male EC	84	2.7282	0.7090	0.0774	(2.5743, 2.8820)

PS: Females do have higher PS than males

Variable	**N**	**Mean**	**StDev**	**SE Mean**	**95% CI**
Female PS	**172**	**2.3075**	**1.2204**	**0.0931**	**(2.1238, 2.4912)**
Male PS	**84**	**2.699**	**0.956**	**0.104**	**(2.492, 2.907)**

t-test across regions for PM group:

CQ Across Regions in the PM Group:

Variable	N	Mean	StDev	SE Mean	95% CI
PM US CQ	49	2.8765	0.4817	0.0688	(2.7382, 3.0149)
PM EU CQ	45	3.0511	0.3829	0.0571	(2.9361, 3.1662)
PM AP CQ	12	3.092	0.678	0.196	(2.661, 3.523)

EC Across Regions in the PM Group:

Variable	N	Mean	StDev	SE Mean	95% CI
PM US EC	49	2.8656	0.6703	0.0958	(2.6731, 3.0582)
PM EU EC	45	2.767	0.693	0.103	(2.559, 2.975)
PM AP EC	12	2.8403	0.2897	0.0836	(2.6562, 3.0243)

PS Across Regions in the PM Group:

Variable	N	Mean	StDev	SE Mean	95% CI
PM US PS	49	2.694	0.967	0.138	(2.416, 2.972)
PM EU PS	45	2.693	1.029	0.153	(2.384, 3.002)
PM AP PS	12	2.375	1.141	0.329	(1.650, 3.100)

t-test within region between PM and number of years for CQ:

CQ by US PM by Region by Number of Years in PM (<1 year vs. >10 years):

Variable	N	Mean	StDev	SE Mean	95% CI
PM US <1yr	8	3.163	0.555	0.196	(2.698, 3.627)
PM US >10yr	22	2.6432	0.4241	0.0904	(2.4552, 2.8312)

CQ by EU PM by Region by Number of Years in PM (<1 year vs. >10 years):

Variable	N	Mean	StDev	SE Mean	95% CI
PM EU <1yr	4	2.800	0.492	0.246	(2.018, 3.582)
PM EU >10yr	20	3.1225	0.3585	0.0802	(2.9547, 3.2903)

CQ by AP PM by Region by Number of Years in PM (<1 year vs. >10 years):

Variable	N	Mean	StDev	SE Mean	95% CI
PM AP <1yr	4	3.338	0.468	0.234	(2.593, 4.082)
PM AP >10 yr	2	3.5750	0.0354	0.0250	(3.2573, 3.8927)

t-test within region between PM and number of years for EC:

EC by US PM by Region by Number of Years in PM (<1 year vs. >10 years):

Variable	N	Mean	StDev	SE Mean	95% CI
PM US <1yr	8	2.657	1.040	0.347	(1.858, 3.456)
PM US >10yr	22	2.9735	0.3175	0.0677	(2.8327, 3.1142)

EC by EU PM by Region by Number of Years in PM (<1 year vs. >10 years):

Variable	N	Mean	StDev	SE Mean	95% CI
PM EU <1yr	4	2.208	1.476	0.738	(-0.140, 4.557)
PM EU >10yr	20	2.729	0.759	0.170	(2.374, 3.084)

EC by AP PM by Region by Number of Years in PM (<1 year vs. >10 years):
Variable N Mean StDev SE Mean 95% CI
PM AP <1yr 4 2.813 0.208 0.104 (2.481, 3.144)
PM AP >10 yr 2 3.2083 0.0589 0.0417 (2.6789, 3.7378)

t-test within region between PM and number of years for PS:

PS by US PM by Region by Number of Years in PM (<1 year vs. >10 years):
Variable N Mean StDev SE Mean 95% CI
PM US <1yr 8 1.865 1.563 0.553 (0.558, 3.172)
PM US >10yr 22 2.693 0.738 0.157 (2.366, 3.021)

PS by EU PM by Region by Number of Years in PM (<1 year vs. >10 years):
Variable N Mean StDev SE Mean 95% CI
PM EU <1yr 4 2.104 1.429 0.715 (-0.170, 4.379)
PM EU >10yr 20 2.829 0.780 0.174 (2.464, 3.194)

PS by AP PM by Region by Number of Years in PM (<1 year vs. >10 years):
Variable N Mean StDev SE Mean 95% CI
PM AP <1yr 4 2.292 1.530 0.765 (-0.143, 4.726)
PM AP >10 yr 2 1.54 2.18 1.54 (-18.05, 21.13)

t-test across region for Management level for CQ:

CQ Across Regions for Management Level:
Variable N Mean StDev SE Mean 95% CI
US Mgr CQ 42 2.6571 0.3995 0.0616 (2.5327, 2.7816)
EU Mgr CQ 23 3.0478 0.3779 0.0788 (2.8844, 3.2113) -> EU mgrs have higher CQ than US mgrs.
AP Mgr CQ 8 2.994 0.543 0.192 (2.539, 3.448)

EC Across Regions for Management Level:
Variable N Mean StDev SE Mean 95% CI
US Mgr EC 42 2.685 0.825 0.127 (2.427, 2.942)
EU Mgr EC 23 3.0109 0.3529 0.0736 (2.8583, 3.1635)
AP Mgr EC 8 2.6667 0.2709 0.0958 (2.4401, 2.8932)

PS Across Regions for Management Level:
Variable N Mean StDev SE Mean 95% CI
US Mgr PS 42 2.333 1.216 0.188 (1.954, 2.712)
EU Mgr PS 23 2.851 0.731 0.152 (2.535, 3.168)
AP Mgr PS 8 2.8958 0.1768 0.0625 (2.7480, 3.0436)-> AP mgrs have higher PS than US mgrs.

Table 9

t-test Results, Where Two Means Are Being Compared

Variable-1	Variable -2	Method used	n	Statically significant?
# of languages spoken	CQ	t-test	254	no
# of times an individual travelled	CQ	t-test	254	no
Managers vs. Non-Managers	CQ	t-test	Mgr CQ 73 Non CQ 183	no
Managers vs. Non-Managers	EC	t-test	Mgr EC 73 Non EC 183	no
Managers vs. Non-Managers	PS	t-test	Mgr PS 73 Non PS 183	no
Females vs. males	CQ	t-test	Female CQ 172 Male CQ 84	no
Females vs. males	EC	t-test	Female EC 172 Male EC 84	no
Females vs. males	PS	t-test	Female PS 172 Male PS 84	yes
Across regions PM group	CQ	t-test	PM US CQ 49 PM EU CQ 45 PM AP CQ 12	No
Across regions PM group	EC	t-test	PM US EC 49 PM EU EC 45 PM AP EC 12	No
Across regions PM group	PS	t-test	PM US PS 49 PM EU PS 45 PM AP PS 12	No
US PM group and # of years	CQ	t-test	PM AP <1yr 8 PM AP >10 yr 22	no
EU PM group and # of years	CQ	t-test	PM AP <1yr 4 PM AP >10 yr 20	no
AP PM group and # of years	CQ	t-test	PM AP <1yr 4 PM AP >10 yr 2	no
US PM group and # of years	EC	t-test	PM AP <1yr 8 PM AP >10 yr 22	no
EU PM group and # of years	EC	t-test	PM AP <1yr 4 PM AP >10 yr 20	no
AP PM group and # of years	EC	t-test	PM AP <1yr 4 PM AP >10 yr 2	no

US PM group and # of years	PS	t-test	PM AP <1yr 8 PM AP >10 yr 22	no
EU PM group and # of years	PS	t-test	PM AP <1yr 4 PM AP >10 yr 20	no
AP PM group and # of years	PS	t-test	PM AP <1yr 4 PM AP >10 yr 2	no
Across regions Management group	CQ	t-test	US Mgr CQ 42 EU Mgr CQ 23 **AP Mgr CQ 8**	Yes
Across regions Management group	EC	t-test	US Mgr EC 42 EU Mgr EC 23 **AP Mgr EC 8**	No
Across regions Management group	PS	t-test	US Mgr PS 42 EU Mgr PS 23 **AP Mgr PS 8**	Yes

Qualitative Data Analysis

The collected results from the two open-ended questions were analyzed using a manual coding system. The data was evaluated based on words, phrases, and sentences as they were answered by participants for questions 39 & 40 of the survey. The qualitative research responses to the two open-ended questions #39 and #40 were examined using quasi-statistics (word frequency count) for the two variables of project success and communication. The researcher drew a pattern by reading each individual response and created a theme based on comments provided by participants.

Two open-ended questions were provided in the survey. The first one asked participants to provide a situation where the global projects that individual worked on did not work and reasons as to why. Words the researcher focused on during the qualitative data analysis were: listening, communication, expectations, emails, language, English, culture, project, phone, manager, time zone, process, misinterpretation, success, message, communicate, written, timelines, response, team, understand, clarify, and challenge. The same words were also used to evaluate data from the second open-ended question that asked the participants to identify a situation where their projects were very successful.

Results for Qualitative Question 39.

Please describe a situation where your project did not work very well in terms of communication with your counterpart and provide specifics as to why.

The themes for the key variables are success and communication. Multiple themes were discovered during the analysis, such as processes, expectations, response level, and clarity of the messages. Results from question 39 support the two dimensional model for Geographic Organizational Culture. Respondents indicated that difficulties in communication due to language differences were a result of individuals not speaking more than one language; specifically, English was not the primary language. Lack of collaboration, global mind set, response in a timely manner, understanding of cultural differences, behavioral differences, sense of urgency among virtual team members who work across regions, led to an angry client and difficulties in communication and cultural intelligence as well as poor projects. Another challenge participants referred to was the difficulties in understanding others due to heavy accent (referred to as "rate of speech is considered a sign of intelligence"). Also, saying "No" due to their culture had some impact on team performance.

In terms of effective communication, all comments shared by the participants support directly the 2-D model in the area of resolving conflict, understanding of meaning, open communication, team participation and collaboration, leadership involvement, cultural awareness, and clarity and accuracy of the messages. Regarding the cultural intelligence aspect, participants' comments also had a direct relationship with the 2-D model in terms of working constructively with others; cultural awareness and differences; work across cultures; understanding of values, emotions, and behaviors; leadership as a role model; transferring of social skills; recognizing differences; and being open to others from different backgrounds.

Finally, respondent comments were also related to the project success element of the 2-D model, with focus on time delivery and on budget, collaboration among team members, knowledge sharing and openness, high quality service, improved efficiency and last satisfied customer.

Table 10

Results for the Key Word Frequency Count for Question 39. Total words = 2,920

Key Word	**Frequency**	**%**	**Key Word**	**Frequency**	**%**	**Key Word**	**Frequency**	**%**
listening	2	0%	phone	7	4%	written	2	0%
communication	18	11%	manager	3	1%	timelines	5	3%
expectations	7	4%	time zone	4	2%	response	16	10%
email	10	6%	process	5	3%	team	7	4%
language	4	2%	misunder-standing	1	0%	under-standing	24	15%
English	6	3%	success	0	0%	clarify	6	3%
culture	3	1%	messages	4	2%	challenge	2	0%
project	24	15%	communicate	3	1%			

Quotes that were related to the theme of communication:

"I was working with a counterpart from the lab that did not speak English very well. I do not speak French very well at all so it made verbal communication difficult. We instead exchanged e-mails which helped a lot. I am one that likes interacting with others verbally so I wished I spoke more languages to help facilitate this."

"A recent event of this is when my counterpart took action which involved my geographical region without informing me of this important change, nor the other departments it concerned (except for the lab, to get their buy-in on the expedited testing time). Therefore both myself and our investigator support team in Europe were giving wrong information to the sites (Dr's & Study Nurses), as well as to the client (EUR contact) versus what the Global Project Manager had informed the client. This looked very unprofessional to the sites and to the client and the client was quiet angry/upset with

this situation and escalated the issue. I think this could have been avoided if the Global counterpart had been in more close/regular contact/communication with the other regional project managers/project coordinators."

"Certain GPM do not involve the regional PM in communication. This creates a poor management of the study for the regional aspect, especially if there is an issue which the LPM is not aware but has to be involved with the resolution. Also, poor and/or no response from GPM which leaves the regional PM frustrated as the latter could not proceed with any decisions/actions that have an impact on study management for the regional platform."

"Communication (especially written one) was not clear enough."

"It is more difficult to have effective communication with Asia than the US.
When things do not go well it is usually a miss-communication between us.
What difficulties there are in verbal communication during meetings is confirmed via meeting minutes or emails so everyone understands and is in agreement.
I recently loaded a project for a project that had a PM from Asia Pac as the global lead, and we were definitely not on the same page with regard to timelines. It was difficult to understand her expectations, and I felt she was not the most congenial person I've ever had written communications with."

"global project but little communication from counterpart on updates/ progress therefore sometimes similar things are reinvented"

"In my experience, projects and communication don't work very well if there is no buy in from the counterpart."

Quotes related to the theme of projects:

"Typically the greater difference the time zone the greater the challenges. Email is a slow and labor intensive way to communicate."

"I worked on a project with a PM in China and the timelines were difficult because of the time zone difference."

"Only when a counterpart does not respond to questions relating to projects in a timely manner. My answers above pertain to most of the counterparts I've worked with."

"In rolling out a project that was mainly led in the US (but had a resource from Geneva), the benefits discussed and agreed upon by the core team seemed to miss the mark for the Geneva staff. Their concerns were much more to do with the integrity and health of the group as a whole, and less about individual impact, or impact to the business."

"Although I was very responsive and timely in my e-mail responses, he would take weeks or months to get back to me after repeated questioning multiple times on multiple

projects. The sponsor was frustrated and many times it had to be escalated to management."

"There have been a few instances where working with people from the US on large-scale projects was tough due to issues related to different understandings of the influence of the cultural background. Namely, they considered cultural background largely irrelevant because different people even within the same culture are more variable than different cultures as a whole, while I was witnessing the impact of the cultural background due to the fact that the average or typical behavior still was noticeably different in each location."

"There have been times when there has not been a complete understanding of a problem or issue and it takes longer to clarify what is needed to complete the project/task."

"I was aligned with my counterpart on a project but when re discussing it I provided some further thoughts that for me impacted the project's application and impact. My counterpart agreed to my points but for him it was not changing what we agreed upon before, but none of us double check that. I did not mention it was for me changing the impact and he did not mention that for him it did not. We both assumed we were thinking the same. We did not check further."

"I had a project once where my counterpart wasn't responsive and did not show ownership. Communication was difficult and things were not always done on time."

"I have had several projects that were late due to my counterpart not having the same sense of urgency for a project. I had to absorb the additional work to ensure project timelines were met."

Quotes that were related to processes:

"When we have different expectations and do not realize we have different expectations. Then we have to stop and clarify expectations. After this, we move forward well."

"When Local PMs are unresponsive as a result of heavy workload or when expectations are not clear."

"My counterpart made a request over the phone for testing to be shipped from their site and tested by ours in response to a down test. The specifics (# of samples, test codes and TATs) were all changed once the samples were shipped. What was received for testing was far more than expected. The change in expectations was not communicated."

"Cross-cultural team (China, India, US, UK, Sweden) with various levels of English fluency and differing cultural expectations and management. Other country participants had a hard time understanding the accent and rate of speech of our Indian counter parts.

Rate of speech is considered a sign of intelligence, so we had fast talkers. Also not easy for members from India to say "No" to something."

Quotes related to the theme of response level:

"There is an ongoing process improvement in which my counterpart is the lead for our team. The timelines have some urgency; however, follow-up has been lacking and when it takes place, there is no pressure to obtain a response quickly. Some of this is due to lack of follow-up as well as limited sense of urgency by my counterpart."

"Although I was very responsive and timely in my e-mail responses, he would take weeks or months to get back to me after repeated questioning multiple times on multiple projects. The sponsor was frustrated and many times it had to be escalated to management."

"I recently loaded a project for a project that had a PM from Asia Pac as the global lead, and we were definitely not on the same page with regard to timelines. It was difficult to understand her expectations, and I felt she was not the most congenial person I've ever had written communications with."

"When Local PMs are unresponsive as a result of heavy workload or when expectations are not clear."

Results for Qualitative Question 40.

Please describe a situation where your project worked very well in terms of communication with your counterpart and provide specifics as to why.

The themes for the key variables are success and communication. Multiple themes were discovered during the analysis, such as use of emails, phones, understanding, timelines, and working as a team. In terms of communication, participants referenced many times the need to have open and frequent communication, which led to high level of knowledge sharing and strong collaboration among virtual team members. Written, fluent, verbal, information, and easy to understand were all comments shared by participants that led to effective communication. Up front clear expectation, be on time, personal exchange, agenda, taking minutes, ensure task completeness, accuracy and quality, all led to a strong relationship and successful projects. Getting feedback from team members individuals worked with helped build stronger

relationships among the group. Face-to-face, emails, and frequent phone calls led to effective communication among team members, respect, building friendly relationships, transparency, and in return satisfied clients, as they were able to see team members, regardless of location, were aligned, focused, and worked as a unified team. Weekly conference calls were another element participants referred to that helped them summarize issues and eliminate the need of sending multiple emails. Leadership played an important role in the effective communication aspect of the model and was also supported by participant comments, with focus on planning, collaboration, sense of ownership, knowing how to get feedback, and knowing how to share on time feedback with others, coaching, empowerment, encouragement, and sense of urgency.

In relation to project success, participants focused on many key points that allowed team members to be successful along with the leadership team. One team early on the project was able to find a "language" and a "culture" that worked for all the team members and led their project to success. Cultural awareness allowed team members to be focused and ensured delivery with efficiency; the same was true for all cultures, based on the comments from participants who interacted with others globally. Use of technology was another key point that allowed team members to be successful; it enabled them to share knowledge while everyone across the ocean could see the same screen. Trust and alignments that led to resolution across cultures was another factor that produced successful projects; its results were seen in the skills and processes team members shared. "Force" was a word used by one of the participants, referencing the different time zone, sharing knowledge, and work in parallel 24/24 that enabled team members across regions to delivery of successful projects. Finally, relating and connecting with others from different cultures based on cultural similarities did have an impact on effective communications. Working style, cultural similarities, mutual understanding, accountability, setting timelines,

sharing tips from individuals from different cultures, regular huddles, flexibility in shifting working hours to come in as early as 6:30 AM to meet with others from different locations, and providing status update and constant feedback were all areas participants commented on that helped them manage, lead, and execute successful projects.

Table 11

Results for the Key Word Frequency Count for Questions 40. Total words = 2,614

Key Word	**Frequency**	**%**	**Key Word**	**Frequency**	**%**	**Key Word**	**Frequency**	**%**
listening	0	0 %	phone	5	4%	written	1	0%
communication	23	21%	manager	0	0%	timelines	2	1%
expectations	0	0%	time zone	5	4%	response	1	0%
email	8	7%	process	7	6%	team	8	7%
language	4	3%	misunderstanding	0	0%	understanding	15	13%
English	4	3%	success	3	2%	clarify	0	0%
culture	5	4%	messages	1	0%	challenge	1	0%
project	11	10%	communicate	4	3%			

Quotes that were related to the theme of communication:

"Communication is key. My counterpart and I spoke on the phone every day, sometimes multiple times a day. In this instance the client could contact either of us as we were equally well informed and knew the issues each other were facing with the project."

"Each site was required to collect and compile production statistics. A spreadsheet was shared to indicate what statistics would be collected and how the data would be compiled. Project worked well because both sites worked off of the same spreadsheet minimizing the possibility of miss communication."

"The same example above has now improved as we are now more often in contact/communication and informing all when important changes occur which are instigated by the Global PM and especially if these involve/touch the other regions."

"Communication (both written and spoken) was very clear and easy to understand for a non English native speaker "

"Many of global projects I'm working on have good communication. Rules are: clear set up, be on time, have few personal exchanges as side bar but cover the whole agenda and keep minutes/reports complete and accurate. Never forget communication flows both sides. Call for feedback and participation."

"Having very frequent calls help to build a relationship and improve effective communication (done with a Local PM in Asia)-"

"This is the case for most of my projects. Keeping good channels of communication and knowing who is who in the matrix always help."

"All of my projects have worked out well because both I and my counterpart work really hard to make sure our communications are informative and easy to understand."

"The communication improved after resolution of how feedback likes to be received."

"Strong communication skills coupled with time-zone efficiencies (brainstorming what to do during on-hours, then asking for the work to be completed in off-hours)."

"We have a very good collaboration and communication, as well as mutual respect."

"Projects work well when the counterpart is involved and has a sense of ownership. Then usually communication works well."

"I have a very good communication with one of my counterparts in US and all our projects are working very well. This person is always attentive to my needs, to the issues that I'm facing. She's always very helpful and I have the impression that she's doing that with all her pleasure. I'm doing the same for her and she always knows how to encourage me, she always has a good word for me. This is a pleasure to work with this person and I'm prioritizing all her requests / e-mails / questions. Even if sometimes we are speaking about personal things, we are not discussing our cultural background which is very different. We are just working and communicating together paying attention to each other. That's it."

Quotes related to the theme of projects:

"When working with our counterparts in Geneva projects tend to work well as they are more fluent in English."

"Same project as above. We were able to overcome the barriers through feedback, time and coaching when 'No' was needed, but a 'yes' was given instead which ended in a

missed deliverable. The whole team had to find a 'language' and 'culture' that worked for us as a team. All members were willing to do this so we were able to be successful."

"Working with a different culture always brings an advantage for at least one aspect (usually several) of the project, on which their cultural background allows them to be more focused, more proficient and generally better suited to that specific aspect. This changes with every culture, but I have yet to see a project where this was not the case."

"I asked my colleagues for help with a project and half of them responded quickly and took the time to help with the project and used Lync to communicate effectively - messages and screen sharing."

"For my last project, I made sure to list carefully upfront the departments and people who should be contacted and informed. I made regular updates to all and paid special attention to IT to ensure they were on board at the early stages. Thanks to that, I avoid to try to impose to IT a technical solution that they would not support afterwards."

"Project to investigate an issue and provide recommendations for corrective action. Counterpart(s) were all aligned with the need to resolve the issue and there was a good cross-function of skills both technical and process to identify the root cause of the issue and come up with comprehensive actions."

"I have had several instances where when both sides take the time to be clear regarding what is needed before taking action. This is when projects seem to work better. "

"most of the time my projects with colleagues work well"

"For projects it is really a force to be able to work on different time zones as when there is a lot to tackle you can share the work, work in parallel and make things advance almost 24h /24h. That happened to me several times when working on projects with my counterparts."

"(Different counterpart than the one described above) We are both on the same line of thought. There is no need for numerous calls or discussions before taking action, we each know what has to be done and we trust each other to do what is best for the project."

"On multiple projects, my counterpart was able to relate to a study team member who was in a different country, due to cultural similarities. They were able to more effectively communicate with this other person than I was."

Quotes related to the theme of use of emails/phone:

"We called and emailed each other routinely over the course of a few weeks to solidify both the client's needs and our ideas on how to meet them. We understood each other well and were able to create a good plan of execution, regardless of any potential cultural, language or geographic barriers."

"Recently had a joint venture with us and Geneva and while the verbal was I believe somewhat difficult, the confirmations of ideas through emails let us come to agreements, along with both parties explaining the separate thoughts to our supervisors for even more translation."

"When Local PMs are very communicative and also not afraid to call when email is not getting the job done. Handled it via email and requested brief responses"

"I really don't have a specific example. I have found that phone and email combination seems to work best for me."

"One of my recent projects worked well because I set up telephone conferences with each of my counterparts, rather than sending them emails only."

"Face to face interactions, regular phone calls, ground rules to set values: respect, transparency, etc...to start with"

"My other local who I am lucky to have on a majority of my studies always responds and we speak regularly on the phone. We also have a friendly relationship and it's not just work related."

"Communication is key. My counterpart and I spoke on the phone every day, sometimes multiple times a day. In this instance the client could contact either of us as we were equally well informed and knew the issues each other were facing with the project."

Quotes related to the theme of understanding:

"When revising our procedure for revising SOPs, it was decided to have weekly conference calls instead of relying on email due to the large amount of discussion items. This helped resolve misunderstandings a lot faster than had it been through email."

"Had a global conference call to discuss successes and areas for improvement on a project. We document the discussion along the way and confirmed understanding (it was projected in a net meeting). Much more effective and required no follow up to confirm understanding."

"In working with one of my PM counterparts, we were able to resolve a logistics situation with a site. It worked because we both had a basic understanding of the site's needs and were able to work together to communicate it to the parties that could ultimately fix the problem. We were able to fill in details for each other to help other parties solve the issue."

"Assigning accountability and timelines in writing worked to ensure understanding of the verbal commitments in meetings."

"My counterpart and I were required to align and work very closely together quickly. We took time to get to know each other, personally and professionally, as well as to gain a mutual understanding of our individual strengths and working styles. We then divided work accordingly. Taking the time to get to know each other also helped to minimize communication issues due to language or cultural differences."

"The communication time required in understanding each other ideas and needs, will shorten tremendously when we speak the common language (e.g. Mandarin with China counterpart)."

Quotes related to the theme of meeting project timelines:

"Assigning accountability and timelines in writing worked to ensure understanding of the verbal commitments in meetings."

"I run a project cross countries (Japan, US, and Switzerland). We had to put in place a production line in Japan; the experts were in US; and I was the PM in Switzerland (time difference was better managed). We shared tips from each other's cultures and maintained a tight communication within the group with regular huddles. Action items and timelines were clearly stated and shared. Project went extremely well (on time, on budget and on target)."

Quotes related to the theme of team work:

"I worked specifically with a Geneva team for a couple of years and really never had any issues. I did adjust my hours so that I came in at 6:30 a.m. to help give us a little more time together but everything else worked fine."

"Same project as above. We were able to overcome the barriers through feedback, time and coaching when 'No' was needed, but a 'yes' was given instead which ended in a missed deliverable. The whole team had to find a 'language' and 'culture' that worked for us as a team. All members were willing to do this so we were able to be successful."

"GPM includes LPM in sponsor communications and provides updates of the study status to the regional contacts. Ditto for the LPM. This teamwork builds a strong working relationship and we can count on either party to reply/respond to sponsor as both PMs are well aware of the study status. Perfect teamwork!"

"While implementing a new process to a study for managing, a conference call was made and counterpart was unfamiliar with how to complete the task at hand. We went offline to walk through the steps for completing and now this is a task that has been transferred to the team in GVA to complete."

"I've been in this department for over four years and I don't recall any global project that has worked well. The department accomplishes its tasks but not without a lot of stress and frustration amongst the global team."

> "On multiple projects, my counterpart was able to relate to a study team member who was in a different country, due to cultural similarities. They were able to more effectively communicate with this other person than I was."

Summary

Measuring the relationship between CQ, EC, and PS is the first of its kind. Below I discuss the results with special emphasis on the various groups across boundaries, management versus non-management team members, and within regions. Results of the current study rejected all three null hypotheses and demonstrated a strong relationship between all three variables (refer to Figure 1 CQ-EC among virtual team members). Total of 257 completed the survey. Data showed that EC represented a positive relationship with PS. Motivational aspect of the CQ also showed a positive relationship with PS. That proves PS is heavily dependent on both EC and $CQ_{Motivational}$. Results also showed that there is no link between number of languages spoken and CQ. The number of times an individual travelled also showed no link to CQ. Managers do not have a higher CQ or PS than non-managers. However, females do seem to have higher PS than males. The number of years a project manager has been in his/her position has no effect on PS, EC, or CQ. Across functional groups, the differences between all 8 functions, does not seem to be statistically significant for all three variables: CQ, EC, and PS levels. However, across regions, CQ does seem to be statistically significant, with Asia Pac and China having the highest level of CQ, followed by Europe region, and the US being third. In terms of EC and PS, there are not statistically significant results across all regions. At the management level and across regions, Europe managers do seem to have higher level of CQ than managers in the US or AP; this is possibly due to the fact that in Europe most managers are from various cultural backgrounds. Regarding project success, AP managers do seem to have higher PS level than managers in the

US and Europe and this is possibly due to the focus on quality, alignment, focus, and team support.

The findings of the qualitative data provided a lot of support to the quantitative results, in particular, support and alignment for the 2-D organizational model. Multiple themes were discovered based on the qualitative data, with specifics around communication and project success. Newly discovered themes were related to team work, communication, understanding others while working virtually, meeting timelines, collaboration, and running successful projects. Findings from both the quantitative and qualitative data support the CQ, EC, PS models. The results for all three questions showed a two way relationship among all three elements. Also, the three null hypotheses proved to be wrong, as results from regression line and t-test supported the rejection of the null hypotheses. Last but not least, the two-dimensional model is well supported by both the quantitative and qualitative findings. Even though there is a positive relationship between CQ, EC and PS, all data from the qualitative results focused on key elements teams and management level would need to keep in mind. Findings identified an element that supports fully the 2-D model, namely collaboration, knowledge sharing, trust, communication, cultural intelligence aspects, successful projects, and leadership.

Chapter Five: Conclusion

Introduction

This chapter includes a review of the study and a discussion of the conclusions drawn from the analysis of the survey, for both closed and open-ended questions that were presented in chapter 4. This chapter also discusses the contribution of the research to the field of cultural intelligence, effective communication, and project success among project management team members and their leadership community. This chapter provides the author's evaluation and interpretation of the study's results for discussion, implications, and makes recommendations for future study.

Key Findings and Conclusions

Quantitative Analysis Key Findings and Conclusions

Results from the data collected and presented in chapter 4 showed that there is a relationship between cultural intelligence, effective communication, and project success among all functional groups being researched, from all four regions, which led to the rejection of all three null hypotheses and supported the conceptual diagram for this study. The results showed that project success and cultural intelligence level is the same between managers and non-managers and so is the level of effective communication between the two groups. Both cultural intelligence and effective communication do affect the success of projects among all virtual groups, and across boundaries. Project success among females is higher than that among males, which could be due to the higher number of females that participated in the survey. Among the management level, cultural intelligence is higher among European management level than the US and Asia Pac management levels. But the level of project success among the Asia Pac management level is higher than the US and Europe management level groups.

Literature review indicated that openness to experience is a crucial characteristic that is related to a person's capability to function effectively in diverse cultural settings (Ang et al., 2006). Other studies indicated that the most satisfied team members among virtual teams are those with effective coordination and communication (Piccoli et al., 2004). Balogh et al. (2011) found that success of the organization and individuals exists when about 80% of the people work in adhocracy, where the emphasis is put on dynamism, being adventurous, and creativity. Adhocracy as an innovation oriented, flexible culture type reacts to changes in the environment almost instantly. Thus people with high cultural intelligence, who are able to meet the requirements of this organizational culture type, are also attracted to it. Similarly, individuals with low cultural intelligence prefer hierarchical organizations that value stability, predictability and control. Qureshi, Liu, and Vogel (2006) indicated that electronic collaboration, communication, and adaptations are indicators of project management success, among project management virtual team members.

Quantitative Key Findings

The motivational aspect of the CQ questions were found to have a significant association with project success. The other three types of the CQ questions, the meta-cognitive, cognitive, and behavioral, did not have a significant association with project success. In terms of communication, results showed a strong relationship between effective communication and project success. Results from managers were more significantly associated with project success than those of non-management level. Effective virtual leadership that leads to successful team performance focuses on leaders who must embrace many behaviors and exemplify numerous traits, adapt to countless situations, and exert a range of power types; however, to be successful, they must learn when and with whom to do so (Sarker & Valacich, 2007).

Team success is also fostered by collaboration and knowledge sharing. Leaders have an important role in this regards; they should not over-monitor staffs but, instead, they should foster an environment conductive to knowledge sharing and mentoring (Yang, 2007). In terms of cultural diversity, leaders/managers would require training in: mentoring & coaching needed to achieve delivery, as well as positive, productive, and beneficial procedures on diversity with focus on self-awareness, understanding, communication, listening and learning about other cultures (Parvis, 2005). Organizational culture and the impact of transformational leadership, with inspirational motivation and behavioral qualities have a high impact on the success of the organizations and teams. A "pure" transactional culture focuses on everything in terms of explicit and implicit contractual relationship (Bass & Avolio, 1993).

Qualitative Key Findings

The two open-ended questions were listed as part of the communication questionnaire. The purpose behind them was to see if their findings would support the communicator competence questionnaires. Complete findings of the results are listed in chapter 4 and detailed in the appendices. Each question looked for areas where participants provided comments explaining a successful situation based on their interactions with their counterparts and another situation where they felt it was not as successful. Multiple themes were discovered during the qualitative analysis. Themes related to virtual team members while working on global projects were: processes; expectations from team members; response level; time zone differences and its challenges; use of phone/emails/clarity of messages; understanding team and project goals so members are aligned; meeting timelines; working as successful and effective virtual teams; role of leadership group in terms of coaching, empowerment, process of providing and receiving timely feedback; knowledge sharing and knowledge building; and openness to others from

different cultures . Data from both questions was directly related to the two-dimensional study model. Results showed in order to achieve the high level of project success, both management and non-management team members must exhibit both high level of CQ and high level of EC.

Limitations

Since the two open-ended questions were optional to answer, not all participants responded to them, which may have prevented some potential good information. The level of response from all regions was not proportional due to the size of project management and data management in each region; therefore, some data may have shown low level of p in certain categories, but the number of participants in those regions was a lot less than the Europe or US regions. Even though leaders' results showed that they were more effective communicators as non-management individuals, if interviews accompanied the survey for leaders it might have highlighted some additional areas for leaders to focus on. Future research that includes interview based questions to leaders may determine more causes for the project success and the cultural intelligence arena.

Another limitation is due to the amount of open-ended questions. There should be more than two open-ended questions, especially for the area of cultural intelligence and project success. The results showed a great correlation between project success and motivational aspect of CQ, but if the research included more open-ended questions in relation to cognitive, meta-cognitive, and behavioral areas of CQ, it might have provided the research with more findings as to aspects virtual teams would need to focus on in relation to both CQ and PS. The same is true for project success: interviews conducted for managers, non-managers, and leaders may have provided some additional areas of focus in relation to this category.

Recommendations

Despite the fact that this research yielded great results and findings were of great value to the studied organization, there are still areas that evoked many questions in the researcher's mind, based on the data and based on research performed thus far in the area of CQ, EC, and PS. Areas of future focus and research may help provide more data as to the aspects among CQ, other than the motivational, that has impact on project success. Future research should be performed in the area of provider-customer relationship in terms of CQ, EC, and PS.

Based on the results of this research, there are multiple areas of deep analysis and recommendation for the organization's leadership that should be evaluated and assessed, in the following areas:

- The CQ data was very high out of Europe to understand aspects that led to high CQ for that region but data was not as strong for the Asia Pac and US regions.
- Needed is leadership training on empowering staff in terms of mentoring and knowledge sharing and knowledge building to enhance the level of knowledge and team performance across all regions and within regions.
- Perform more program based activities to enhance cultural awareness and CQ across a functional group, within the same region, and across regions. Conduct virtual team based activities, to include knowledge building about team nationalities, languages, and food for the individuals within a team, globally.
- From customer perspectives and as clients as equally diverse as the studied organization, client based relationship building is well needed, which will make clients feel at ease when dealing with project managers, data managers, and leadership teams. Team members need to know how to build trust with clients and with other team members,

along with learning certain words employees would use when dealing with clients. Saying hello and thank you in a client's language might help build such a relationship.

- Put training programs in place to help train team members on how to address and handle conflicts among their counterparts, and focus on the win-win approach, accompanied by focus on constructive dialogue, with presence of respect among individuals.
- Focus training to ensure all team members are aligned globally and all working toward the same goal in mind, which client, quality, and successful projects.
- Include cultural based activities to cover culture for the majority of nationalities of employees in project management, data management, and leadership teams, with focus on food, language, dress codes, jokes, games, and music.
- Provide collaboration based training that supports and strengthens the level of trust among virtual members.

Summary

The purpose of this study was to examine the relationship between cultural intelligence, effective communication, and project success among project management, data management, and leadership teams. Interpretation of the research findings revealed that there is a strong relationship between all three variables; they are inter-related and they directly support the two-dimensional model. It was clearly shown that the higher the CQ, the higher the level of PS; also, the higher the EC, the higher the level of PS. Reaching that maximum level of PS will be reflected on the organization's revenue as well as client-provider relationship and help build more alliances between the organization and other large pharmaceutical companies, help drive growth, and sustain strong relationships between virtual team members. The intention of this study was to identify areas that help deliver the most successful projects based on the cultural

intelligence and effective communication among both management and non-management virtual team members. The author's recommendation for future research includes focus on similar type of data in an environment between vendor provider and clients. Also, additional research is needed with focus on the individual elements in the 2-D model to examine the exact relationship between those areas and project success.

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APPENDICES

Appendix A-Demographic

1: Number of years of experience in Project Management:

a. less than 1 year
b. 1-3 years
c. 3-6 years
d. more than 6 years

2: Gender:

a. female
b. male

3: Business unit location you primarily work in:

a. USA
b. Europe
c. Singapore
d. China
e. Japan

3. Is English your primary language? Yes or No

If English is not your native language, please specify your native language:_____
How many languages do you speak fluently? _____

4. Your department:

a. Desktop Publishing
b. Administrative Coordinator
c. Quality Review Team
d. Calculation, Reflexes
e. Monitoring Center
f. Technical Administrator (ATA, TA, Sr TA)
g. Project Manager (PC, APM, PM, SrPM, Portfolio Manager)
h. Data Manager(ADM, DM, Sr DM)
h. Management level (Supervisor, Team Manager, Associate Director, Director, VP)

5. Do you manage people:

a. Yes
b. No

6. Please indicate the number of times you have travelled outside your country in the past ten years:

a. none
b. 1-5
c. 6-10
d. More than 10

Appendix B-Cultural Intelligence Survey

Read each statement and select the response that best describes your capabilities. Select the answer that BEST describes you AS YOU ARE RIGHT NOW (1= strongly agree; 2= agree; 3=disagree; 4= strongly disagree; 5=N/A)

Questionnaire Items

CQ-Meta-Cognitive:

1. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
2. I am conscious of the cultural knowledge I apply to cross-cultural interactions.
3. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
4. I check the accuracy of my cultural knowledge as I interact with people from different cultures.

CQ-Cognitive:

5. I know the legal and economic systems of other cultures.
6. I know the values and religious beliefs of other cultures.
7. I know the marriage system of other cultures.
8. I know the arts and crafts of other cultures.
9. I know the rules (e.g., grammar) of other languages.
10. I know the rules for expressing non-verbal behaviors in other cultures.

CQ-Motivation:

11. I enjoy interacting with people from different cultures.
12. I enjoy living in cultures that are unfamiliar to me.
13. I am confident that I can socialize with locals in a culture that is unfamiliar to me.
14. I am confident that I can get accustomed to the shopping conditions in a different culture.
15. I am sure I can deal with the stresses of adjusting to a culture that is new to me.

CQ-Behavior:

16. I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.
17. I change my non-verbal behavior when a cross-cultural situation requires it.
18. I use pause and silence differently to suit different cross-cultural situations.
19. I vary the rate of my speaking when a cross-cultural situation requires it.
20. I alter my facial expressions when a cross-cultural interaction requires it.

Appendix C-Communicator Competence Questionnaire (CCQ)

Questions 1-7 were taken from Monge, Backman, Dillard, and Eisenberg (1982). In this series of questions we would like you to describe how you and your counterpart [individual within the same functional group at another site/location] communicate.
Think about his/her behavior in general, rather than about specific situations.
Please answer questions using grade 1-5(1=strongly agree/SA, 2=agree/A, 3=Disagree, 4=Strongly disagree/D, 5=N/A)

	SA	A	D	SD	N/A
1. My counterpart has a good command of the language	☐	☐	☐	☐	☐
2. My counterpart is sensitive to others' needs of the moment	☐	☐	☐	☐	☐
3. My counterpart typically gets right to the point	☐	☐	☐	☐	☐
4. My counterpart pays attention to what I say to him or her	☐	☐	☐	☐	☐
5. My counterpart can deal with me effectively	☐	☐	☐	☐	☐
6. My counterpart is a good listener	☐	☐	☐	☐	☐
7. My counterpart's writing is difficult to understand	☐	☐	☐	☐	☐
8. My counterpart expresses his or her ideas clearly	☐	☐	☐	☐	☐
9. My counterpart is difficult to understand when he or she speaks	☐	☐	☐	☐	☐
10. My counterpart generally says the right things at the right time	☐	☐	☐	☐	☐
11. My counterpart is easy to talk to	☐	☐	☐	☐	☐
12. My counterpart usually responds to messages (memos, phone calls, reports, etc.) quickly	☐	☐	☐	☐	☐

Questions 13 &14 are open-ended questions and they are optional:

13. Please describe a situation where your project did not work very well in term of communication with your counterpart and provide specifics as to why?
14. Please describe a situation where your project did work very well in terms of communication with your counterpart and provide specifics as to why?

Appendix D-Project Success

The following questions are from the Project Implementation Profile (PIP) Project performance subscale by Pinto, J.K., & Slevin, D.P. (1992). Project Implementation Profile. Tuxedo, NY:XICOM.

Select a project you are working on or have worked on with your counterpart [individual within the same functional group at another site/location] for the past 3-6 months and answer the following 12 questions based on how that project progressed.

Please answer questions using grade 1-5(1=strongly agree/SA, 2=agree/A, 3=Disagree, 4=strongly disagree/D, 5=N/A)

1. This project has/will come in on schedule.
2. This project has/will come in on budget.
3. The project that has been developed and works, (or if still being developed, looks as if it will work).
4. Given the study/project for which it was developed, this project seems to do the best job of solving that problem, i.e., it was the best choice among the alternatives.
5. The results of this project represent a definite improvement in performance over the way clients used to perform these activities.
6. The project will be/is used by its intended clients.
7. Important clients, directly affected by this project, will make use of it.
8. We are confident that non-technical start-up problems will be minimal, because the project is readily accepted by its intended users.
9. I am/was satisfied with the process by which this project is being/was completed.
10. This project has/will directly benefit the intended users: either through increasing efficiency or employee effectiveness.
11. Use of this project has/will directly lead to improved or more efficient decision making on performance for the clients.
12. This project will have a positive impact on those who make use of it.

Appendix E-Definitions of CQ (Thomas 2008, p 126)

Source	Definition of CQ	Constituent Elements	Outcomes/Applications
Earley, 2002; Earley & Ang, 2003	"…a person's capability to adapt effectively to new cultural context."	Cognitive/Metacognitive Motivational Behavioral	Global assignments success Diversity assignment Training methods
Thomas & Inkson, 2003	"…involves understanding the fundamentals of intercultural interaction, developing a mindful approach to intercultural interactions, and finally building adaptive skills and a repertoire of behavior so that one is effective in different intercultural situations."	Knowledge Mindfulness Behavioral Skills	Cross-cultural decision-making Cross cultural-communication Multi-cultural teams International career
Earley & Mosakowski, 2004	"…a seemingly natural ability to interpret someone's unfamiliar and ambiguous gestures in just the way that person's compatriots and colleagues would even to mirror them."	Cognitive Physical Emotional/Motivational	Appropriate behavior in new cultures
Earley & Peterson, 2004	"…reflects a person's capability to gather, interpret, and act upon three radically different cues to function effectively across cultural settings or in a multicultural situation."	Meta-cognitive/Cognitive Motivation Behavior	Intercultural training Multinational teams
Earley, Ang & Tan 2006	"…person's capability for successful adaptation to new cultural settings, unfamiliar settings attributable to cultural context."	Cultural, strategic thinking Motivation Behavior	Diversity assignments Global work assignments Global teams Global leadership
Thomas, 2006	"…the ability to interact effectively with people who are culturally different."	Knowledge Mindfulness behavior	Development assessment
Ang, et al., 2007	"…an individual's capability to function and manage effectively in culturally diverse setting."	Cognitive Meta-cognitive Motivation	Cultural judgment and decision making Cultural adaptation and performance

Appendix F-Email Invitation & Survey Procedures

Dear Project Management Team Member,

On behalf of project management and in order to continue to improve our working processes globally between all team members, we are asking for your support to complete the survey included in the attached link within two weeks from today's date. Your contribution to this survey is valuable and essential as we seek information to improve our delivery on all projects we perform within the project management department.

The survey consists of 4 sections; demographics (6 questions), Cultural Intelligence (20 questions), PIP (10 questions), and Communicator Competence Questionnaire (14 questions). The survey will take approximately 10-15 minutes to complete. Please note that your participation in the survey is voluntary, but, we would like to have 100% participation from all team members and their leaders who work in the various functions of the organization.

By clicking on the link below you will be taken to the online survey. There are no correct answers. Please choose the answer that you feel best describes you at the time you take the survey. If you have any questions please feel free to contact your HR department.

Appendix G-Informed Consent

Dear Management Team,

I am requesting your approval to allow members from the global project management team to participate in this survey intended for this research. They are requested to participate because they all work virtually and manage projects with their global counterparts in different units. This research will evaluate the importance of employees being culturally intelligent about other team members they work with and the effectiveness of communication in order to yield successful projects.

Participation in this study will involve them taking a survey of four parts, demographics, cultural intelligence, PIP, and effective communication. There are a total of 52 questions which will take approximately 10-15 to complete. All data and results obtained from this survey are entitled to further use and research by the organization if necessary.

By signing this letter you are agreeing to participate in this study. Participation is not a required obligation for members of the department. You can contact the supervising faculty member or myself at any time. Our contact information is provided below. Whereas research findings will be shared with the company, individual names will be kept confidential.

The Institutional Review Board at Indiana Tech reserves the right to access the signed consent form by the organization management team member. All material from this study will be kept in a locked file cabinet at the organization and at my home. Informed consent form and identifying information will be kept separate from the data. Records indicating project management team members' participation in this study will be confidentially destroyed after five years.

The results from this research will be published in my dissertation and may later be published in journal articles or other publications but will not reveal the organization name in

any of the publications. It will be referenced as a global central laboratory organization. The results of this study will be given to your company.

You have been provided with two copies of this form. Please sign them both, return one copy to me and keep the other one for your records. If you have any questions about your rights as a participating company you can contact the supervising faculty member or myself.

Sincerely,

Oula Zouhbi

Supervision Faculty
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Researcher
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I _____ give Oula Zouhbi the permission to use my research data for her research. I understand that participation in this study is voluntary

Printed Name Signature Date

Yes, please send me a copy of the summary of the findings.

Name-please print

Address

Appendix H-Qualitative Comments

Please describe a situation where your project did not work very well in terms of communication with your counterpart and provide specifics as to why?	Please describe a situation where your project did work very well in terms of communication with your counterpart and provide specifics as to why?
When communication is lacking projects don't work very well. Each has to be kept informed of local issues that could be escalated. There is nothing worse than being blindsided about a local issue that has escalated at the client and you were not aware.	Communication is key. My counterpart and I spoke on the phone every day, sometimes multiple times a day. In this instance the client could contact either of us as we were equally well informed and knew the issues each other were facing with the project.
My counterpart went from full time to part time or maternity leave...not there.	
There were a few instances where my counterpart got lost in a long thread of emails about a particular issue so action items were not followed up on. I learned that it is usually best if we address one item in one email thread, at a time.	When revising our procedure for revising SOPs, it was decided to have weekly conference calls instead of relying on email due to the large amount of discussion items. This helped resolve misunderstandings a lot faster than had it been through email.
Typically the greater difference the time zone the greater the challenges. Email is a slow and labor intensive way to communicate.	Once we met face-to-face, our working relationship really took off. We can now visualize each other and each other's surroundings (context).
Early on during my time here at CLS, my counterpart and I didn't have an understanding of one another. This meant that we talked at cross-purposes more likely as not. This potential impasse fed into several project delays. Meeting face to face allowed us to work through some of those misinterpretations and taught us both not to read more than was being stated.	We have, over the years, worked on several minor objectives. Having learned to understand where the other is coming from in terms of background and local social norms, has allowed us a higher degree of efficiency in our cross-Atlantic collaborations. Those efficiencies leading to better improvement opportunities.
When a form is used for a request that requires only basic information I tend to receive questions back on the request or requests for clarification. (ex. data revisions)	When I send requests to my counterpart I am very detailed in the action required and provide the reasoning for the request. (Ex. requests for startup orders, requests for sample shipments, etc.)
I worked on a project with a PM in China and the timelines were difficult because of the time zone difference.	I worked specifically with a Geneva team for a couple of years and really never had any issues. I did adjust my hours so that I came in at 6:30a.m. to help give us a little more time together but everything else worked fine.
There is an ongoing process improvement in which my counterpart is the lead for our team. The timelines have some urgency; however, follow-up has been lacking and when it takes place, there is no pressure to obtain a response quickly. Some of this is due to lack of follow-up as well as limited sense of urgency by my counterpart.	In our 1:1 conversations, my counterpart is quick to make a decision, open to feedback, willing to share and to challenge. This works very well in order to move items forward and remain on task/time.
When working with my Geneva counterpart the situation routinely works well. However, when working with Asia Pac, the situation does not always go well. Some of our counterparts in Asia Pac are not as fluent in English as our Geneva counterparts are.	When working with our counterparts in Geneva projects tend to work well as they are more fluent in English.
Only when a counterpart does not respond to questions relating to projects in a timely manner. My answers above pertain to most of the counterparts I've worked with.	

My counterpart made a request over the phone for testing to be shipped from their site and tested by ours in response to a down test. The specifics (# of samples, test codes and TATs) were all changed once the samples were shipped. What was received for testing was far more than expected. The change in expectations was not communicated.	Each site was required to collect and compile production statistics. A spreadsheet was shared to indicate what statistics would be collected and how the data would be compiled. Project worked well because both sites worked off of the same spreadsheet minimizing the possibility of miss communication.
In rolling out a project that was mainly led in the US (but had a resource from Geneva), the benefits discussed and agreed upon by the core team seemed to miss the mark for the Geneva staff. Their concerns were much more to do with the integrity and health of the group as a whole, and less about individual impact, or impact to the business.	In communicating to the group about accomplishments that were made for our organization. The Geneva group was very much interested in what the group achieved and was appreciative that we did not recognize high contributors. That said, our Indy group felt like there were folks who contributed more than others and felt we missed the mark by not recognizing over-the-top contributions.
The language barrier contributed heavily in a process failure. We were discussing how to respond to a sponsor query and while my counterpart said they understood, the communication sent out showed they did not.	I really don't have a specific example. I have found that phone and email combination seems to work best for me.
We had a discussion about action items, and left the discussion with different understanding about who was taking each action item. We didn't feel this was a cultural issue, but rather we had discussed many topics and neither did a great job of documenting the discussion. Lesson learned!	Had a global conference call to discuss successes and areas for improvement on a project. We documented the discussion along the way and confirmed understanding (it was projected in a net meeting). Much more effective and required no follow up to confirm understanding.
I have not had situations like this.	One of my recent projects worked well because I set up telephone conferences with each of my counterparts, rather than sending them emails only.
Cross-cultural team (China, India, US, UK, Sweden) with various levels of English fluency and differing cultural expectations and management. Other country participants had a hard time understanding the accent and rate of speech of our Indian counter parts. Rate of speech is considered a sign of intelligence, so we had fast talkers. Also not easy for members from India to say "No" to something.	Same project as above. We were able to overcome the barriers through feedback, time and coaching when "No" was needed, but a "yes" was given instead which ended in a missed deliverable. The whole team had to find a "language" and "culture" that worked for us as a team. All members were willing to do this so we were able to be successful.
The counterpart I am thinking of was an admirable diplomat but tended to overly complicate explanations and extend text messages to verbose lengths. The U.S. based sponsor contacts tended to ignore the details embedded in messages and asked me to summarize and explain the same information creating duplicate work.	My counterpart was extremely successful at assuaging emotionally charged situations when involved in a teleconference. Numerous times, he calmed a tense situation and then I would cover the more technical portions of the situation.
Sometimes it is a challenge to get my message across. This could take multiple emails and this takes up too much time	
Although I was very responsive and timely in my e-mail responses, he would take weeks or months to get back to me after repeated questioning multiple times on multiple projects. The sponsor was frustrated and many times it had to be escalated to management.	Although I am the local on most of the studies, I have acted in a global capacity when needed due to time constraints that was later met with extreme gratitude on the part of the global PM on more than one occasion and study.

A GPM designed a study without input from the LPM. All client communication was directed to the GPM, and did not include the LPM. After database had been designed and the shipment of Start-Ups was being scheduled, GPM promised unrealistic delivery dates for my local area. When I told GPM that the dates could not be achieved, a telecom between the client, GPM and myself was arranged. The client asked how it came to arise that the target dates could not be met, and the GPM directed the question to me. In the spirit of teamwork and being supportive, I did not identify that the fault lay with the GPM ... which meant that my response sounded weak. After the call, the GPM discussed further with the client and generated a feeling that the problem lay with me. I believe that the GPM felt superior to myself, and felt a greater cultural affinity to the client than to myself. They could not understand that I would support them (i.e. not 'throw them under the bus') and felt quite happy to do it to me.	During the running of the study, there were a number of crises that required rapid resolution. At various times, my counterpart and/or I were required to work overtime to resolve the problems. We felt happy to perform the overtime and to support each other because a) we had taken time to get to know each other (and to understand capabilities, flexibility etc). b) We had built feeling of common ownership of the study.
I was working with a counterpart from the lab that did not speak English very well. I do not speak French very well at all so it made verbal communication difficult. We instead exchanged e-mails which helped a lot. I am one that likes interacting with others verbally so I wished I spoke more languages to help facilitate this.	In working with one of my PM counterparts, we were able to resolve a logistics situation with a site. It worked because we both had a basic understanding of the sites needs and were able to work together to communicate it to the parties that could ultimately fix the problem. We were able to fill in details for each other to help other parties solve the issue.
Verbal commitment did not always translate to actions. In some cases, I think it was because they didn't truly understand what was expected in terms of actions.	Assigning accountability and timelines in writing worked to ensure understanding of the verbal commitments in meetings.
A recent event of this is when my counterpart took action which involved my geographical region without informing me of this important change, nor the other departments it concerned (except for the lab, to get their buy-in on the expedited testing time). Therefore both myself and our investigator support team in Europe were giving wrong information to the sites (Dr's & Study Nurses), as well as to the client (EUR contact) versus what the Global Project Manager had informed the client. This looked very unprofessional to the sites and to the client and the client was quiet angry/upset with this situation and escalated the issue. I think this could have been avoided if the Global counterpart had been in more close/regular contact/communication with the other regional project managers/project coordinators.	The same example above has now improved as we are now more often in contact/communication and informing all when important changes occur which are instigated by the Global PM and especially if these involve/touch the other regions.
Timelines difficult to match with time zones differences; generated delays and frustration due to misunderstanding of time difference.	When all stakeholders are on the same page and flexible enough, all goes well (this is particularly true in terms of work life balance for APAC located people having to, most of the time, deal with late evening conf calls)
Certain GPM do not involve the regional PM in communication. This creates a poor management of the study for the regional aspect, especially if there is an issue which the LPM is not aware but has to be involved with the resolution. Also, poor and/or no response from GPM which leaves the regional PM frustrated as the latter could not proceed with any	GPM includes LPM in sponsor communications and provides updates of the study status to the regional contacts. Ditto for the LPM. This teamwork builds a strong working relationship and we can count on either party to reply/respond to sponsor as both PMs are well aware of the study status. Perfect teamwork!

decisions/actions that have an impact on study management for the regional platform.	
There have been a few instances where working with people from the US on large-scale projects was tough due to issues related to different understandings of the influence of the cultural background. Namely, they considered cultural background largely irrelevant because different people even within the same culture are more variable than different cultures as a whole, while I was witnessing the impact of the cultural background due to the fact that the average or typical behavior still was noticeably different in each location.	Working with a different culture always brings an advantage for at least one aspect (usually several) of the project, on which their cultural background allows them to be more focused, more proficient and generally better suited to that specific aspect. This changes with every culture, but I have yet to see a project where this was not the case.
	Daily work is efficient with my counterparts
My counterpart didn't want to listen to my advises in order to streamline changes in mega trial study. This is creating a lot of extra work and efforts to other departments to make it work the way my counterpart wanted it. I had no room for negotiation.	I did provide some print screens and step by step instructions to my counterpart in order for them to better understand how to best handle the situation
When my counterpart uses slang or new expressions	When we use tools like net meeting to show exactly the needs
My counterpart is English speaking and sometimes uses expressions and specific words that I don't understand or don't fully understand which can create confusion, errors and/or delays.	My English speaking counterpart clearly explains what should be done in basic words, thus I can proceed quickly and in the appropriate way.
I have 8 counterparts, so it depends on the person. A bad example is when one of my colleagues started raising her voice during a meeting because she didn't want to change a process, even though I suggested a simple solution by the end. It's probably because she doesn't usually question herself.	I asked my colleagues for help with a project and half of them responded quickly and took the time to help with the project and used Lync to communicate effectively - messages and screen sharing.
Communication (especially written one) was not clear enough	Communication (both written and spoken) was very clear and easy to understand for a non English native speaker
Experience with Asian suppliers always saying "yes" but rarely changed their processes or conditions, driving to confusion and misunderstanding	Many of global projects I'm working on have good communication. Rules are: clear set up, be on time, have few personal exchanges as side bar but cover the whole agenda and keep minutes/reports complete and accurate. Never forget communication flows both sides. Call for feedback and participation.
Misunderstanding	organized
I had a tendency to come to meetings directly with a finalized solution. Even if I was saying to the audience the solution I was providing was a draft one and could be modified, people had the impression I was twisting their arms in order to get their approval. So they would rather reject what I was proposing as a whole.	For my last project, I made sure to list carefully upfront the departments and people who should be contacted and informed. I made regular updates to all and paid special attention to IT to ensure they were on board at the early stages. Thanks to that, I avoid to try to impose to IT a technical solution that they would not support afterwards.
Conf call with group in other location, they did not pay much attention to me and spoke while I was speaking or did not respond to my question.	Less people in the conf call has always allowed more room for the person calling in.

It is more difficult to have effective communication with Asia than the US.	Having very frequent calls help to build a relationship and improve effective communication (done with a Local PM in Asia)-
I was not really related to the culture difference, but only on to understand correctly the process, same as it happens with local counterpart.	We have had a problem with somebody, based in the same location that my counterpart, to setup and finalize a process. This person did not really understand the process during the call. My counterpart was also present and I thought it was because I was unclear that the person not understands me. When the call was finish, I've called my counterpart and we were both on the same wavelength, it was not a culture problem.
Cultural differences in the way that tasks are accepted vary. In working with India, for example, one has to explicitly test for understanding and not rely on a "Yes" - otherwise you rarely get what you have asked for	When we test assumptions and make sure that everyone has understood what is expected, this works well
Asian counterpart was in direct contact with European client. Client didn't understand that in some circumstances the Asian PM acknowledged a fact but didn't mean to agree with it. Discussion was escalated to me in order to clarify intentions and understanding.	This is the case for most of my projects. Keeping good channels of communication and knowing who is who in the matrix always helps.
I find that often people in general do not read their emails carefully or respond only partially to questions that need to be answered and that were specified clearly in the email.	
When I receive emails that typically do not include all the terms of the issues, I tend to pick-up the phone and explain myself directly to the person. The direct contact allows sometimes a better understanding of the issue and the people make more effort finding a result immediately on the phone instead of sending respectively hard emails.	The client managed to try to understand the issues and not to judge me on what happened. I found that the positive thinking of this particular client made me work more for him than for any other client. I was pleased to work at 200 % for this person. I did not fear his reactions and was able to make better results by proposing innovative solutions.
I have asked them to feedback on specific marketing wording we needed to use for our group. I had very few comments back from all groups (same location and other locations). The reason why was basically workload and priority setting.	I run a project cross countries (Japan, US, and Switzerland). We had to put in place a production line in Japan; the experts were in US; and I was the PM in Switzerland (time difference was better managed). We shared tips from each other's cultures and maintained a tight communication within the group with regular huddles. Action items and timelines were clearly stated and shared. Project went extremely well (on time, on budget and on target).
For the project I have in mind, this has not occurred	We called and emailed each other routinely over the course of a few weeks to solidify both the client's needs and our ideas on how to meet them. We understood each other well and were able to create a good plan of execution, regardless of any potential cultural, language or geographic barriers.
When things do not go well it is usually a miss-communication between us.	When we can divide and conquer, it makes it easier due to time differences, meetings, etc... Once our sections are completed, coming back together to tie it together.
This question is not possible to be answered; since I have MANY counterparts.	This question is not possible to be answered; since I have MANY counterparts.
never happened	Never happened. When I work with a new counterpart I take time to call that person and discuss how is best to work

	together for that person, what are my wishes... Works very well.
	While implementing a new process to a study for managing, a conference call was made and counterpart was unfamiliar with how to complete the task at hand. We went offline to walk through the steps for completing and now this is a task that has been transferred to the team in GVA to complete.
My counterpart will act as if she is listening to my ideas, but her actions prove otherwise. It's always a constant struggle to get anything accomplished because my counterpart's actions are always centered on what is best for her site and not what is best for all sites.	I've been in this department for over four years and I don't recall any global project that has worked well. The department accomplishes its tasks but not without a lot of stress and frustration amongst the global team.
Not enough face to face interaction or phone interactions	Face to face interactions, regular phone calls, ground rules to set values: respect, transparency, etc...to start with
I have not example.	All of my projects have worked out well because both I and my counterpart work really hard to make sure our communications are informative and easy to understand.
I was too direct when giving feedback	The communication improved after resolution of how feedback likes to be received.
N/A	Because my counterpart speaks French, and so do me, if I sense that a matter would be more easily solved in French than English, I pursue it in French.
N/A	Project to investigate an issue and provide recommendations for corrective action. Counterpart(s) were all aligned with the need to resolve the issue and there was a good cross-function of skills both technical and process to identify the root cause of the issue and come up with comprehensive actions.
Global Workload Management - due to time zone difference a day or more is often lost when needing clarification.	
I had a local in Geneva that just did not respond to emails when there was thinking involved. Then when it became urgent, I had to take action.	My other local who I am lucky to have on a majority of my studies always responds and we speak regularly on the phone. We also have a friendly relationship and it's not just work related.
N/A	My counterpart and I were required to align and work very closely together quickly. We took time to get to know each other, personally and professionally, as well as to gain a mutual understanding of our individual strengths and working styles. We then divided work accordingly. Taking the time to get to know each other also helped to minimize communication issues due to language or cultural differences.
When working with my counterpart creating a new SOP they would want to send me changes to make and after I make the changes I agree with they send it for more changes & I would make them again. This would happen multiple times and so I would say send me all the changes and I will complete it instead of doing this over & over.	When updating a process and discussing over a conference call this works out well as we can discuss the pros & cons of what each side wants to update/change. We've done this on multiple process improvements.

	Strong communication skills coupled with time-zone efficiencies (brainstorming what to do during on-hours, then asking for the work to be completed in off-hours)
What difficulties there are in verbal communication during meetings is confirmed via meeting minutes or emails so everyone understands and is in agreement.	Recently had a joint venture with us and Geneva and while the verbal was I believe somewhat difficult, the confirmations of ideas through emails let us come to agreements, along with both parties explaining the separate thoughts to our supervisors for even more translation.
I have never encountered this situation.	I have never encountered this situation.
I recently loaded a project for a project that had a PM from Asia Pac as the global lead, and we were definitely not on the same page with regard to timelines. It was difficult to understand her expectations, and I felt she was not the most congenial person I've ever had written communications with.	I had a very complex modification for a protocol in which the PM was located in Geneva. He responded quickly, and was extremely easy to communicate with. He was also polite, and gracious.
There have been times when there has not been a complete understanding of a problem or issue and it takes longer to clarify what is needed to complete the project/task	I have had several instances where when both sides take the time to be clear regarding what is needed before taking action. This is when projects seem to work better.
	Weekly meetings with shared responsibilities
When we have different expectations and do not realize we have different expectations. Then we have to stop and clarify expectations. After this, we move forward well.	most of the time my projects with colleagues work well
	The communication time required in understanding each other's ideas and needs, will shorten tremendously when we speak the common language (e.g. Mandarin with China counterpart).
global project but little communication from counterpart on updates/ progress therefore sometimes similar things are reinvented	
I was aligned with my counterpart on a project but when rediscussing it I provided some further thoughts that for me impacted the project's application and impact. My counterpart agreed to my points but for him it was not changing what we agreed upon before, but none of us double check that. I did not mention it was for me changing the impact and he did not mention that for him it did not. We both assumed we were thinking the same. We did not check further.	For projects it is really a force to be able to work on different time zones as when there is a lot to tackle you can share the work, work in parallel and make things advance almost 24h /24h. That happened to me several times when working on projects with my counterparts.
	We have a very good collaboration and communication, as well as mutual respect.
No examples yet. I have been working for less than three weeks at Covance	No examples yet. I have been working for less than three weeks at Covance
In my experience, projects and communication don't work very well if there is no buy in from the counterpart	Projects work well when the counterpart is involved and has a sense of ownership. Then usually communication works well.
not applicable to my position	not applicable to my position

Japan - Counterparts in Japan are very subtle with their comments and/or remarks. As such, it is important to understand this fact to get an accurate indication on the severity of an issue. China, Japan and Geneva - As English may not be the first language, the grammar and vocal may sometimes be confusing and clarification is required to ensure accuracy of message and required actions.	
Sometimes global meetings that are led by counterparts overseas tend to be less efficient due to the difficulty to hear/understand accents over the phone. This is due to the telephone system just as much as it is due to heavy (mostly French) accents.	It's great to be a part of a global company where support can be given throughout different parts of the day, due to time differences. Sometimes this works as a disadvantage, but many times questions that I pose to Geneva or Singapore counterparts are answered well before I even get in the office the next day.
I requested a specific task to be performed with the words I thought were correct but at the end they were not the correct ones and the action was not completely as it should have been.	When I am able to speak in front of the people and can draw some schemes. It is easier when we can explain and see people faces.
An option of neither agree nor disagree should be added to address this component of the survey. The change in counterpart communication comes in during the transition of the study. Studies are handed off via a check list however, communication of key issues occurring with the study are not shared and often leaving the new PM faced with the change of trying to figure out how issues occurred with little support which results in longer research time and delays resolutions for the client.	
I had a project once where my counterpart wasn't responsive and did not show ownership. Communication was difficult and things were not always done on time	(Different counterpart than the one described above) We are both on the same line of thought. There is no need for numerous calls or discussions before taking action, we each know what has to be done and we trust each other to do what is best for the project.
When Local PMs are unresponsive as a result of heavy workload or when expectations are not clear.	When Local PMs are very communicative and also not afraid to call when email is not getting the job done.
I have had several projects that were late due to my counterpart not having the same sense of urgency for a project. I had to absorb the additional work to ensure project timelines were met.	On multiple projects, my counterpart was able to relate to a study team member who was in a different country, due to cultural similarities. They were able to more effectively communicate with this other person than I was.
Hard to understand during global meeting, could not get the final conclusion at the end of the meeting nor be able to record precise meeting minute	People cross sites are well trained to perform investigation etc effectively
I experienced a problem with one of my clients in terms of communication. We were on the phone and he started to make non-pleasant comments about Russian people without knowing that I'm Russian. I was hesitating whether or not I should tell him, I was hoping he will stop it. But he continued and continued and I was lost about how I should react. He's the client and I didn't want to make him feel guilty. But at the end of our call I told him "By the way, I'm Russian". It was a silence during one minute and then he told "Anyway, I was not speaking about you, hope you understand". Not even I'm sorry or I apologies. I didn't appreciate it at all. Starting from this	I have a very good communication with one of my counterparts in US and all our projects are working very well. This person is always attentive to my needs, to the issues that I'm facing. She's always very helpful and I have the impression that she's doing that with all her pleasure. I'm doing the same for her and she always knows how to encourage me, she always has a good word for me. This is a pleasure to work with this person and I'm prioritizing all her requests / e-mails / questions. Even if sometimes we are speaking about personal things, we are not discussing our cultural background which is very different. We are just

moment we are communicating by e-mail. And when I was supposed to transition one of my studies to another team member I choose this client.	working and communicating together paying attention to each other. That's it.
I typically prefer to communicate with my counterpart via email because though they are speaking English the accent is so strong that I do not understand much of full sentences when spoken. I tend to ask yes/no questions when needed. Though email communication is sufficient, it would be easier/faster to be able to supplement email with live discussion on the telephone.	Handled it via email and requested brief responses
I am not a project manager. I am a supervisor.	
Our dept work very well together, we truly a global team.	Training my counterpart on specific processes within our dept.

Appendix I-Literature Review

Authors/Year	Title	Boundary Issues	Methodology	# of participants	Fields	Results	Gaps
Avolio et al./2009	A meta-analytic review of leadership impact research: experimental and quasi-experimental studies	Leadership Follower motivation, thinking, behaviors, and performance	Quantitative	12 doctoral associates-18 research, total of 13,656 participants	Leadership Intervention/ leadership development	Leadership intervention impact is greater on behavioral vs. emotional or cognitive change	More research needed for leadership studies that are rolled out from top management down to the bottom
Piccoli, G. et al./2004	Virtual Teams: Team control structure, work processes, and team effectiveness	Management Behavioral Control	Quantitative	201	Virtual Team effectiveness based on behavioral control Self directed Virtual teams vs. virtual teams	"The results indicate that the most satisfied team members were in virtual with effective coordination and communication. Members of self-directed virtual teams report higher individual satisfaction with the team and project, while different control structures had no significant impact on virtual team performance."	Future research should investigate how these findings generalize to organizational workers, rather than just looking at students
Cox, T. H. & Blake, S./1991	Managing cultural diversity: Implications for organizational competitiveness	Managing diversity and organizational competitiveness based on: Cost, resource, acquisition, marketing, creativity, problem-	Audits & Review of existing research	NA	Cultural Differences & Managing Diversity	"Reaching the competitive edge could be a result of organization ability to attract, retain, and motivate people from divers cultural	Additional work is needed on the "value-in-diversity" issues. Organizations should look into building

		solving, and organization flexibility				background."	commitment and promote action for managing diversity efforts
Yang, J. T./2007	Knowledge sharing: Investigating appropriate leadership roles and collaborative culture	Organization culture focus on collaboration and types of leadership roles significantly affect leadership sharing	Quantitative	1200 employees-works in international tourist brand name hotels in Taiwan	Investigating appropriate leadership roles and collaborative culture	Strong and positive relationship between a collaborative culture and the effectiveness of knowledge sharing Leaders should not over monitor staffs Foster an environment conductive to KS	Are findings for this hotel in other parts of the world similar to Taiwan's findings? Another one should be KS and practices varies according to local business practice and national culture. More research on influencing KS, knowledge acquisition & org learning
Parvis L./2005	Diversity and effective leadership in multicultural workplaces	Culture Diversity	Theoretical inquiry	NA	Effective Leadership and cultural diversity management in workplace	Leaders/managers would require training in: Mentoring & coaching needed to achieve delivery, positive, productive, and beneficial procedures on diversity with focus on self-awareness, understanding, communication, listening and learning about other cultures	NA
Ang, S., et al./2006	Personality correlates of the four-factor model of	Big 5 personalities and 4-CQ model	Quantitative	Week 1-1,465 Week 6-338	CQ	Openness to experience is a crucial personality	More research on personality and CQ,

	cultural intelligence	Conscientiousness Agreeableness Emotional Stability Extraversion Openness to Experience		business undergraduates		characteristics that is related to a person's capability to function effectively in diverse cultural settings	with special emphasis on openness to experience and adaptive performance
Balogh, A., Gaál, Z., & Szabó, L. /2011	Relationship between organizational culture and cultural intelligence	CQ competence	quantitative, they used the Cameron and Quinn OCAI questionnaire (Organizational Culture Assessment Instrument).	University of Pannonia, Hungary	Examining CQ and corporate culture Students wants to work abroad	"We found that the majority of students would prefer to be employed in a Clan-type corporate culture. We also identified a correlation between their preferred corporate cultural and their cultural intelligence and its components. Students with a high degree of cultural intelligence would like to work in an adhocracy. Adhocracy puts an emphasis on dynamism, being adventurous, and creativity. 80% prefer to work in a clan org culture. Clan is similar to a family"	No focus on importance of communication Adhocracy as an innovation oriented, flexible culture type reacts to changes in the environment almost instantly. Thus people with high cultural intelligence, who are able to meet the requirements of this organizational culture type, are also attracted to it. Similarly, students with low cultural intelligence prefer Hierarchical organizations that value stability, predictability and control.
Boek, G. W. & Ki, Y. G. /2002	Breaking the myths of rewards	Individuals Knowledge sharing behaviors	Quantitative	467 employees	social exchange theory, self-efficacy, and theory of reasoned action	"show that expected associations and contribution are the major determinants of the individual's attitude	The reward system for knowledge management may need to be reexamined.

						toward knowledge sharing. Expected rewards, believed by many as the most important motivating factor for knowledge sharing, are not significantly related to the attitude toward knowledge sharing. As expected, positive attitude toward knowledge sharing is found to lead to positive intention to share knowledge and, finally, to actual knowledge sharing behaviors."	Incentives (what are called "extrinsic motivators") do not seem to alter the attitude that underlies our knowledge sharing behavior. They do not create an enduring commitment to any action. Rather, incentives merely- and temporarily- change what we do (Kohn, 1993)
Holton, J. A. /2001	Building trust and collaboration in a virtual team	virtual relationship in global environment	Qualitative	6 members virtual team	Virtual teams, trust, collaboration, team building, virtual communication	"standard team building tools can be used to enhance collaboration and trust in a virtual team Identifying and applying appropriate team building strategies for a virtual environment will not only enhance organizational effectiveness but will also impact positively on the quality of working life for virtual team members."	"face-to-face interaction will continue to play a very important role in our work relationships regardless of how virtual our environment may become. Certainly, a wise leader will always employ a face-to-face meeting to resolve a serious team crisis or conflict, even if this face-to-face

							opportunity must, by necessity of geography, employ a virtual medium like videoconferencing."
Mahalingam, A. /2005	Understanding and mitigating institutional costs on global projects	Challenges in collaboration	Qualitative	4 matched global projects	Conflict & resolution in global Project-India & Taiwan	Conflicts occur due to differences in national institutions	
Orr, Ryan J. (2005)	Unforeseen conditions and costs on global projects: Learning to cope with unfamiliar institutions, embeddedness and emergent uncertainty	Differences & similarities managers should see across in alien markets	Quantitative & Qualitative	23 Vignettes	Global projects-Cost, knowledge, country leaning curve	"With increasing embededdness in an alien market context, firms face greater level of uncertainty; which affects their strategic planning, decision making such as entry mode, staffing and centralization of control. As referred to by Chandler as "general internationalization knowledge". Org needs to increase the supply of local knowledge."	NA
Piccoli, G., Powell, A., & Ives, B. (2004).	Virtual teams: Team control structure, work processes, and team effectiveness	Virtual team effectiveness	Quantitative	51 student teams	Self directed virtual teams with virtual teams with behavioral controls. Team performance, coordination effectiveness, or communication	"The results indicate that the most satisfied team members were in virtual teams with effective coordination and communication. Members of self-directed virtual teams report higher individual satisfaction with the	"Future researchers to create and test management control schemes for virtual teams that explicitly account for the characteristics and challenges of the virtual environment."

					effectiveness	team and project, while different control structures had no significant impact on virtual team performance."	
Qureshi, E., Liu, M., & Vogel, D. (2006).	The effects of electronic collaboration in distributed project management	Communication Shared understanding Collaboration Coordination Time zone differences	Quantitative	21 distributed virtual teams from two universities, the Netherland and Hong Kong	Response/delays Productivity Involvement Learning adaptation	The analysis uncovers "effects" in the way in which distributed projects are managed. These effects relate to coordination, communication and adaptation to distributed electronic work environments. Following an analysis of these electronic collaboration "effects", a model for distributed project management is presented. should be carried out as the influence of the electronic collaboration effects may vary according to the nature and function of the distributed project.	Many opportunities remain for continued research as we explore the complexities of these effects and their extended implications.