# CULTURAL INTELLIGENCE AND ITS RELATIONSHIP WITH KEY PROJECT MANAGER COMPETENCIES

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# ABSTRACT

As organizations face increased challenges associated with globalization, developing the next leadership generation is an opportunity to create competitive advantage. Within the context of globalization, two key challenges stand for these organizations. The first challenge is the increase in cultural diversity. Cultural diversity has changed the landscape of international and domestic organizations resulting in a new global workforce with complex and dynamic challenges. The second major challenge associated with globalization is increased complexities imposed on leadership to lead strategic initiatives for organizations. This research brought these two key challenges together by examining the relationship of cultural intelligence (CQ) and key project manager competencies. A quantitative, correlational study was conducted to determine if relationships exist between CQ dimensions (cognitive, metacognitive, behavioral, and motivational) and key project manager competencies (communicating, leading, managing, cognitive ability, effectiveness, and professionalism). The sample participants were organizational leaders consisting of project managers associated with the Project Management Institute (PMI). The findings indicated a statistically significant relationship exists between CQ dimensions and project manager personal competencies. The results indicated a weak strength in Pearson's correlation coefficient implicating further research should be performed. Additionally, the findings indicated a statistically significant difference when comparing the CQ scores competency scores of project managers between those who had experience in multicultural workplace environments and those who did not. The results of this study are significant for global leaders as cultural diversity and demand for leadership competencies increases due to new globalization. A recommendation, based on these findings is organizations should develop cultural intelligence focused training and leadership competency development initiatives that

support increased project success. Finally, it is recommended that further research be explored supporting development of leadership in diverse organizations.

Keywords: cultural intelligence theory, leadership competency theory, project manager competencies

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# CHAPTER 1: INTRODUCTION

## Background of the Study

Globalization of the world economy has made organizational geographic boundaries nonexistent. Through an increasing set of challenges, globalization has created continuous change that impacts organizations (Casey, 2009). Complex global relationships and dynamic communications have increased the level of cultural interdependence in today's organizations (Earley, Ang, & Tan, 2006). Organizations are now comprised of culturally diverse environments both internationally and domestically (Ang & Van Dyne, 2008). Organizations' ability to experience change and respond accordingly has become a means for survival in today's globalized economy (Earley & Ang, 2003; Sherif, 2006).

Global leadership in today's organizations represents a unique and complex phenomenon as a result of challenges imposed by a globalized economy and workforce (Mendenhall, Osland, Bird, Oddou, Maznevski, Stevens, & Stahl, 2012). When compared to traditional leadership, global leadership offers increased valence, intensity, and complexity (Earley, Ang, & Tan, 2006; Mendenhall et al., 2012). Leaders now face complex environments and culturally diverse situations (Ang & Van Dyne, 2008; Earley & Ang, 2003; Müller, Spang, & Ozcan, 2009; Turner & Müller, 2005). Global leaders have become the single most critical success factor in creating competitive advantage for globalized organizations (Bartlett & Ghoshal, 2002; Earley & Ang, 2003; Sloan, Hazucha, & Van Katwyk, 2003). As a result, leadership development is essential for global organizations to lead strategic initiatives that differentiate themselves from their competitors. Through research and continued

explanation of leadership competencies, an empirical foundation has begun supporting the development of the next global leadership generation having the necessary cultural intelligence and leadership competencies capable of leading global organizations (Mendenhall et al., 2012).

In support of developing the next leadership generation, identification of specific challenges facing organizations may assist organizations' development opportunity. Gelfand, Imai, and Fehr (2008) expressed the need to develop cultural competencies across many contexts including individual, group, organizational, and national. However; research is lacking for practical application of cultural competencies due to CQ's relatively recent emergence (Gelfand, Imai, & Fehr, 2008). For organizations, Livermore (2009) posited that cultural intelligence is the difference between individuals and businesses that succeed or fail in the modern globalized, multicultural world. Historically, cultural challenges have particularly impacted expatriates and global organizations (Earley, Ang, & Tan, 2006). This trend has changed. Domestic organizations are now also impacted by globalization (Earley, Ang, & Tan, 2006). More specifically, cultural diversity has affected both international and domestic organizations with regard to how people communicate and interact socially (Ng & Earley, 2006). According to the Economist Intelligence Unit (EIU) (as cited in Ng, Van Dyne, & Ang, 2009; Mannor, 2008), cultural diversity will be the greatest challenge facing global organizations. Accordingly, this next generation of leadership must be prepared to address cultural diversity both internationally and domestically if organizations are to create and sustain a competitive advantage.

## Problem Statement

Many organizations are pursuing globalized business strategies (Bird & Osland, 2006; Mendenhall et al., 2012). Increasing the customer base, sustaining competitive advantage, and accessing new markets are perceived as being benefits of global business strategies (Bird & Osland, 2006). While this direction offers strategic benefits, complex and dynamic challenges have been introduced to organizations as a result. Increased organizational cultural diversity resulting in a changing work environment has affected how people interact within the workplace and has placed more demand for effective leadership (Ng & Earley, 2006).

Globalization has also introduced multicultural environments to organizational workforces (Flaherty, 2008). Organizational environments with cultural diversity require special skills and organizational teamwork in order to be productive (Flaherty, 2008). The importance of these multicultural environments is underscored by the attention given by global organizations and their relationship to business success in the global marketplace (Flaherty, 2008). Organizations must understand how to best integrate employees with culturally diverse backgrounds to better utilize their diverse talents (Earley & Ang, 2003). Research has suggested that improved understanding of cultural identities is critical for effective and productive multinational teams (Earley & Ang, 2003; Earley & Mosakowski, 2000). Organizations are dependent on these multicultural organizational workforces to remain competitive in a globalized competitive landscape.

Organizations are also facing new challenges working with global customers, engaging in multinational and culturally diverse teams, and finding leadership with the

capability to manage these complex environments (Law, Wong, & Song, 2004; Mannor, 2008). Traditional leaders having the technical knowledge of business operations paired with domestic leadership skills is no longer sufficient (Mannor, 2008). Organizations today require a new skill set for leadership, one that understands national, organizational, and individual cultures (Mannor, 2008; Mendenhall et al., 2012).

Research has suggested that leadership challenges associated with cultural understanding will be a significant challenge facing organizations during the current century (EIU, 2006; EIU 2007), yet current research at the macro level supporting this advancement in global leadership is lacking (Mannor, 2008). Twentieth century leadership studies focused on leadership traits and behaviors (Bass & Bass, 2008; Yukl, 2012). While leadership traits and behaviors are important, relevant theories describing those concepts have failed to address cultural abilities and how leadership applies cultural abilities in practice (Mannor, 2008).

The trend towards globalization, the increase in culturally diverse organizational teams, and the need for leadership competencies supporting culturally diverse environments have created challenges for organizations that need to create and sustain competitive advantage. Strategic organizational projects are increasingly being used as the means meet these challenging and changing demands in the global market place (Anantatmula, 2010; Chen & Kao, 2010). As a result of the increase in projects, the need for project managers used by organizations has risen accordingly (Ahsan, Ho, Khan, 2013). In support of organizations and their need for leadership capable of leading multicultural workforce environments, this research asked the

question whether cultural intelligence has a significant relationship with leadership competencies. The next section will further explain the purpose of this study and what this relationship will explain.

## Purpose of the Study

This study explained the relationship between CQ and leadership competencies of organizational project managers supporting organizational project manager effectiveness. The research problem addressed answered the question whether CQ scores relate to key project manager personal competencies. Accordingly, this study built on existing literature in two ways. First, it investigated whether CQ is associated with leadership competencies posited as being significant for organizational leadership leading multicultural workforce environments. Janssens and Cappellen (2008) have previously suggested that the global leaders (managers) require a particular set of CQ capabilities in order to effectively work with multiple cultures simultaneously. However; research had not been conducted within the content of project managers. Accordingly, the four dimensions of CQ—(a) cognitive CQ, (b) metacognitive CQ, (c) motivational CQ, and (d) behavioral CQ—were assessed along with their association with key project manager personal competencies.

The second way this study built on current literature will be to examine whether CQ is associated with project manager personal competencies posited as being significant for successfully working in project contexts. Geoghegan and Dulewicz (2008) posited that leadership competencies do play a significant role in influencing project success. Additionally, Dulewicz and Higgs (2000a, 200b) posited that emotional intelligence can explain variations in project manager effectiveness.

However; research had not been conducted to determine if cultural intelligence is associated with leadership competencies of project managers. Accordingly, the six dimensions of project manager personal competencies—(a) communicating, (b) leading, (c) managing, (d) cognitive ability, (e) effectiveness, and (f) professionalism—were assessed along with their association with cultural intelligence. The next section focuses on the axiological research position of this research.

**Axiology**

In describing the axiological position of this research study, it is important to understand the value of practical application CQ may provide in comparison with other intelligence concepts. Whereas the general intelligence quotient "g" provides a general aptitude measurement, g is claimed to be a fixed value offering limitations towards increasing its measure per individual (Sternberg & Detterman, 1986). EQ also has been suggested to be limited in its development capabilities per individual based on Clarke's (2010) recent research suggesting EQ is a relatively stable measure with limited potential for growth. In contrast to other intelligence concepts, CQ is an intelligence that can grow and develop over time when associated with positive culturally diverse experiences (Earley & Ang, 2003).

In describing axiological assumptions regarding leadership competencies, the purpose of this study was to further understand and support development of individual characteristics that lead to more effective leadership. Leadership competencies have been shown to be causally related to job performance (McClelland, 1973; Spencer & Spencer, 1993). This research study explained the relationship of leadership competencies with CQ to further understand and support development opportunities

related to leaders in culturally diverse situations. The next section defines terms used in this research and the following section further explains the theoretical foundation and framework for this research.

## Definitions

This section provides definitions of relevant terms within the context of this research to establish a common understanding of concepts applicable to cultural intelligence and project manager personal competencies.

*Behavioral CQ.* Behavioral CQ refers to outward manifestations or over actions when applied to culturally diverse situations (Ang, Van Dyne, Koh, Ng, Tepler, Tay, & Chandrasekar, 2007).

*Cognitive Ability*. Cognitive ability is defined as a project manager personal competency that applies an appropriate depth of perception, discernment, and judgment to effectively direct a project in a changing and evolving environment (PMI Standards Committee, 2007).

*Cognitive CQ.* Using Earley and Ang's (2003) definition, cognitive CQ refers to general cognitive skills that are used to create new specific conceptualizations of how to function and operate within a new culture as well as culture-specific knowledge.

*Competency.* Competency is defined as the underlying characteristic of an individual that is causally related to criterion-referenced effective performance (McClelland, 1973; Spencer & Spencer, 1993).

*Communicating*. Communicating is defined as a project manager personal competency that effectively exchanges accurate, appropriate, and relevant information with stakeholders using suitable methods (PMI Standards Committee, 2007).

*Cultural Intelligence* (CQ). CQ refers to an individual's ability to function effectively in culturally diverse situations in terms of cognition, metacognition, behavior, and motivation (Earley & Ang, 2003).

*Effectiveness*. Effectiveness is defined as a project manager personal competency that produces desired results by using appropriate resources, tools, and techniques in all project management activities (PMI Standards Committee, 2007).

*Global Leadership.* Using the definition of Mendenhall et al. (2012), global leadership is defined in this context as leadership that inspires a group of people to willingly pursue a positive vision in an effectively organized fashion while fostering individual and collective growth in a context characterized by significant levels of complexity, flow, and presence.

*Intelligence.* The definition of intelligence in this research study's context is derived from Gardner's (1996) multiple intelligence theory and Sternberg's (1984) triarchic theory of intelligence which differs itself from Spearman's general intelligence theory (1927). Based on this foundation, intelligence is defined as a multidimensional construct that focuses on specific content domains (cognitive, metacognitive, behavioral, and motivational) and includes environmental context.

*Leadership Competencies.* Leadership competencies refer to antecedents of leadership styles that are a set of related knowledge, skills, and personal characteristics (Bass & Bass, 2008; Parry, 1998). While research studies (Jokinen, 2005; Mendenhall

& Osland, 2002) have concluded there are many leadership competencies that could be considered as key leadership competencies, this research study will focus on personal competencies consisting of behaviors, attitudes, and core personality characteristics as described by the PMI Project Manager Competency Development Framework.

*Leading.* Leading is defined as a project manager personal competency that guides, inspires, and motivates team members and other project stakeholders to manage and overcome issues to effectively achieve project objectives (PMI Standards Committee, 2007).

*Managing*. Managing is defined as a project manager personal competency that effectively administers the project through deployment and use of human, financial, material, intellectual, and intangible resources (PMI Standards Committee, 2007).

*Metacognitive CQ.* Metacognitive CQ refers to an individual's control of cognition through processes used to acquire and understand knowledge (Ang, Van Dyne, Koh, Ng, Tepler, Tay, & Chandrasekar, 2007).

*Motivational CQ.* Motivational CQ refers to the mental capacity to direct and sustain one's energy in a culturally diverse situation and recognize that motivational capabilities are critical to problem solving (Ang, Van Dyne, Koh, Ng, Tepler, Tay, & Chandrasekar, 2007).

*Multicultural Environment*. Multicultural environment for this research is defined as any organizational work group characterized by cultural diversity (Earley, Ang, Tan, 2006).

*Professionalism*. Professionalism is defined as a project manager personal competency that conforms to an ethical behavior governed by responsibility, respect, fairness, and honesty in the practice of project management (PMI Standards Committee, 2007).

*Project Manager Personal Competencies*. Project manager personal competencies are defined as behaviors, attitudes, and core personality characteristics including communicating, leading, managing, cognitive ability, effectiveness, and professionalism that contribute to a person's ability to manage projects effectively (PMI Standards Committee, 2007).

## Theoretical Framework

Intelligence is a construct with wide variances in definition and measurement (Elenkov & Pimentel, 2003). Early definitions limited intelligence to the ability to reason and to present and solve problems (Ang & Van Dyne, 2008; Sternberg & Detterman, 1986). The psychometric general factor g provided an initial construct as a general intelligence quotient and established a basis for measurement (Spearman, 1927). This construct had limited practical use for by organizations, due to claims that g is a fixed intelligence quotient per individual (Sternberg & Detterman, 1986). New constructs, definitions, and measurements have since been formed offering new perspectives for applied practice (Ang & Van Dyne, 2008; Sternberg & Detterman, 1986).

Sternberg and Detterman (1986) posited there are four individual-level intelligences: metacognitive, cognitive, motivational, and behavioral intelligence. Additionally, Sternberg and Detterman's (1986) construct established intelligence as

having both mental and behavioral concepts as opposed to a single mental concept as in the case of Spearman's g. This multidimensional construct assisted in forming the concept of cultural intelligence. Earley and Ang (2003) developed the cultural intelligence construct to include both concepts of cognition (mental) and behavior in order to span both internal and external views.

Earley and Ang (2003) defined CQ as an individual's capability to function effectively in situations characterized by cultural diversity. CQ theory is drawn upon the multiple intelligence (MI) field of research (Gardner, 1983; Gardner, 1999; Gardner, 2006; Sternberg & Detterman, 1986). Gardner (2006) posited that multiple intelligences consist of computational capacities. MI suggests that individuals possess seven distinct intelligences: linguistic, musical, spatial, logical-mathematical, bodily kinesthetic, intrapersonal, and interpersonal (Gardner, 1999). In addition, the capacities of the distinct intelligences are known to vary by individual (Elenkov & Pimentel, 2003). With Sternberg and Detterman's (1986) framework in mind, Earley and Ang (2003) based CQ on four conceptualizations of intelligence: cognitive, metacognitive, motivational, and behavioral CQ.

The underlying objective of this research was to determine whether cultural intelligence has a relationship to leadership competencies. Leadership theories have been researched and categorized during the twentieth century (Mendenhall et al., 2012). In relating project manager competencies to leadership constructs, an investigation of leadership theories identified five primary schools of leadership theories: trait, behavioral or leadership style, contingency, visionary, and competency theory (Bass & Bass, 2008; Turner & Müller, 2006).

This research study chose leadership competency theory as the basis for the research model. Leadership competency theory has been posited to encompass all earlier schools of leadership theories (Turner & Müller, 2006). Turner & Müller (2006) posited that competence includes personal characteristics, knowledge, and skills encompassing both trait and leadership style theories. Additionally, leadership competency theory addresses competence profiles; which suggests that it encompasses both contingency and visionary leadership theory (Turner & Müller, 2006).

## Research Question

This research built on existing literature by further investigating the relationship that CQ may have with leadership competencies. The research question this study answered is *to what extent are key project manager personal competencies correlated with cultural intelligence for project managers?* In order to determine this, the study examined the relationship between two key constructs: cultural intelligence and leadership competencies for project managers. The results of the research question were determined through formal hypotheses testing. This testing was carried out through determination of whether a statistically significant relationship existed between the participant's CQ dimensions scores and project manager personal competencies scores.

## Significance of the Study

Global organizations are facing significant challenges associated with customer demands across cultures, managing cross-border teams, and finding leadership with the capability to manage these complex requirements (Law, Wong, & Song, 2004). Organizations must meet internal competing demands in order to meet

external customer requirements (Anantatmula, 2010; Chen & Kao, 2010). Strategic organizational projects are increasingly being used as the means for organizations to meet challenging and changing customer demands in the global market place (Anantatmula, 2010; Chen & Kao, 2010). In the context of globalization, these leaders now face culturally complex environments and diverse situations (Müller, Spang, & Ozcan, 2009; Turner & Müller, 2005).

Research on leadership competencies has provided increased understanding in the continued effort to develop successful leaders (Bass & Bass, 2008; Chin & Gaynier, 2006; Chin, Gu, & Tubbs, 2001; Pryor, Humphreys, Taneja, & Toombs, 2011). Due to continued poor project success rates, only recently has project management research looked past traditional measures of scope, schedule, and budget to focus on leadership as a means through which to improve project success (Anantatmula, 2010; Dulewicz & Higgs, 2005; Geoghegan & Dulewicz, 2008; Turner & Müller, 2005).

As more organizations rely on project managers to meet their strategic goals, organizations may need to understand how project manager leadership competencies are related to project managers working in multicultural environments. Project Management is a critical function of organizations in a competitive global market (Anantatmula, 2010). In order to determine the most effective organizational project managers, business leaders must understand the impact of CQ and its relationship to project manager competencies supporting increased project success (Ang & Van Dyne, 2008; Woerner, 2010). This research built upon existing organizational leadership research with a focus on project management. The results may assist in

further defining the leadership competencies related to project managers working in multicultural environments which, in turn, may result in improved project management effectiveness.

**Ontology of Cultural Intelligence**

The ontological perspective of this study was founded on the premise that CQ is relevant to organizations due to its relationship to the most valued organizational asset—human resources. With organizational strategic goals being focused on how best to utilize human resources, a better understanding of how culturally diverse workforces work together is appropriate and offers value to organizations.

CQ theory is founded on the premise that any culture has a specific set of cultural characteristics and, therefore, is individualistic (Elenkov & Pimentel, 2003). In addition, CQ theory further establishes that within cultures there are individuals possessing different cultural characteristics and is therefore collectivistic (Elenkov & Pimentel, 2003). Understanding an individual's cognition and behavioral actions within and across cultures is contingent on their experiences that shape their cultural intelligence (Earley & Ang, 2003; Elenkov & Pimentel, 2003).

CQ can be described as existent through identification of four distinct structural components: cognitive, metacognitive, motivational, and behavioral (Early& Ang, 2003). These four distinct components are qualitatively different in terms of capability, function, and measurement (Earley & Ang, 2003). CQ is defined as more state-like than trait-like in comparison with other intelligence theory constructs (Ang & Van Dyne, 2008). CQ being described as state-like is rooted in the notion that CQ is based on a set of capabilities that define an individual in terms of intelligence. In

contrast, personality traits define an individual in terms of what a person does based on situation or time (Ang & Van Dyne, 2008).

**Cultural Intelligence Opportunity**

CQ has shown promise in that individuals possessing high cultural intelligence may have increased abilities to work in multicultural settings (Ang &Van Dyne, 2008; Dzenowagis, 2010). Differences in project manager competencies have led researchers to determine that cultural differences do impact project completion (Bourgault & Drouin, 2010). The objective of this research was to further examine how cultural differences affect project manager competencies and project success. Specifically, this research sought to better understand the relationship between CQ and key project manager competencies and how those variables may be leveraged to improve project success. In an effort to advance project manager leadership development in the global context, this research effort specified CQ as the key variable to be studied. The decision to prioritize CQ was based on four conclusive chains of reason.

First, globalization has introduced a new set of variables that creates change which impacts organizations (Casey, 2009). Organizations' ability to experience change and respond accordingly positively affects survival in today's globalized economy (Sherif, 2006). Livermore (2009) posited that cultural intelligence is the difference between individuals and businesses that succeed or fail in the modern globalized, multicultural world. This research study offered additional insight into CQ from a new perspective, one relating to project managers. By assessing the CQ of

project managers, insight was obtained regarding how organizations' human resources can better perform in culturally diverse settings.

Second, CQ has shown relevance to leadership theory in global organizations due to the presence of cultural diversity (Janssens & Cappellen, 2008; Mannor, 2008). Janssens and Cappellen (2008) studied 45 global managers and concluded that cultural interactions require specific cultural capabilities. In addition, these capabilities of global managers were not limited to expatriates; rather they also demonstrated successful results in terms of individuals working domestically with culturally diverse teams and customers (Janssens & Cappellen, 2008). The significance suggests that these specific cultural capabilities of global managers may correlate to the four CQ components: cognitive, metacognitive, motivation, and behavior (Janssens & Cappellen, 2008).

This research contributed towards further development of applied organizational leadership through increased understanding of CQ and its relationship to key project manager competencies. Bass and Bass (2008) posited that whatever education or training is necessary, leadership development depends first on identifying what needs improvement. This research identifid the relationship between CQ and key project manager competencies. The results may aid the identification of what could further assist in developing organizational project manager leadership.

Furthermore, CQ theory has only recently been studied in the leadership context and little supporting research is specifically in the project management context (Mannor, 2008). Mannor (2008) argued that leadership theory has primarily focused on traits, behaviors, and cognition over the past 100 years. Focus on leaders from a

global perspective regardless of rank in organization is a relatively recent research trend that offers room for additional research foci (Mannor, 2008). Additionally, focus on project manager leadership with regard to CQ is almost nonexistent. Therefore, CQ research with a focus on project manager leadership offered a new contribution to global leadership theory development and application.

Third, CQ has shown itself as a capability that can be developed (Ang & Van Dyne, 2008; Earley & Ang, 2003; Livermore, 2009*)*. Increased cultural awareness and a global mindset strengthen CQ, thereby offering an improved practical application opportunity for organizations (Ang & Van Dyne, 2008; Janssens & Cappellen, 2008). The opportunity for development of CQ is an important distinction compared with other competencies, such as IQ and EQ. It has been posited that both IQ and EQ are static and may not be further developed (Clarke, 2010; Sternberg & Detterman, 1986). Organizations may benefit from understanding the value that CQ development may offer the workforce. By better understanding the relationship CQ has with key project manager competencies, the opportunity to develop and improve CQ may be achieved.

Fourth, with CQ research being relatively recent, there remains considerable room for discussion, criticism, and further research development. Gelfand, Imai, and Fehr (2008) posited that future research must address both the antecedents and consequences of CQ. Based on the position that CQ is regarded as a capability that can be developed (Ang & Van Dyne, 2008; Earley & Ang, 2003; Livermore, 2009), Shannon and Begley (2008) stated the importance of examining the antecedents of CQ which may lead to predictive variables such as conscientiousness and language skills.

Antecedents of CQ may offer predictive variables for relating personality characteristics to higher CQ (Ang, Van Dyne, & Koh, 2006; Shannon & Begley, 2008). Ang, Van Dyne, and Koh (2006) assessed the personality characteristics and CQ of business undergraduate students at a large university in Singapore. The results suggested that some Big Five personality traits are predictive of the four CQ capabilities (Ang, Van Dyne, & Koh, 2006). Further supporting the importance of CQ antecedents, Shannon and Begley (2008) concluded that language skills, international work experience, and diversified social contracts demonstrated predictive relationships to the capabilities of CQ. These significant findings lend itself to future research that explores more complex models of association and predictability between personality traits and CQ. Significance of CQ antecedence also offers opportunity for continued contribution to CQ theory. The next section, Research Questions, narrows the focus of the research study by explicitly defining the research questions as hypotheses.

**Ontology of Project Manager Competencies**

An additional ontological perspective of the research study was founded on the premise that project manager competencies have relevance in organizations due to their relationship in meeting organizations' stakeholder requirements (PMI Standards Committee, 2007). With many global organizations' strategic initiatives being led by project managers in multicultural environments, a better understanding of how project manager competencies relate to cultural intelligence may support improved project effectiveness.

Within the project management context, competence can be defined as the demonstrated ability to perform activities that lead to expected results for

organizations (PMI Standards Committee, 2007). Project managers apply their knowledge, performance, and personal competencies through activities in an effort to increase the likelihood of delivering results that meet stakeholders'' requirements (PMI Standards Committee, 2007). Hogan and Hogan (2002) concluded that interpersonal competencies are essential to leadership.

Individual competencies exist and can be measured through a range of aptitude tests (Bass & Bass, 2008). However, researchers do not agree on what constitutes a comprehensive set of leadership competencies has not been reached (Bass & Bass, 2008). Bass and Bass (2008) posited that cognitive, social, emotional, and other competencies have been shown to be antecedents of both transactional and transformational leadership. In order to remain within the context of project management, the research study uses the PMI Project Manager Competency Framework (PMCD) based on the McClellend/McBer Job Competency Assessment (JCA). The PMI PMCD Framework posits that project manager competencies exist and can be categorized as one of three competency dimensions: knowledge, performance, and personal.

**Project Manager Competencies Opportunity**

Leadership competencies of project managers is a relevant opportunity for study based on previous research having shown positive results supporting advancement of project management (Geoghegan & Dulewicz, 2008; Turner & Müller, 2005; Turner, Müller, & Dulewicz, 2009). However, research has not been conducted to determine if a relationship exists between cultural intelligence and project manager competencies. Understanding project manager competencies and its

relationship with cultural intelligence may provide improved direction for project managers working in multicultural environments.

## Limitations

As with all studies, the research study had a defined and limited scope. The purpose of the study sought to contribute towards improved organizational project success by explaining the relationship of CQ with leadership competencies. The research questions identified narrowed this focus by addressing the relationship of cultural intelligence with key personal leadership competencies of project managers. While this narrow focus may offer insight for organizations in better understanding the relationship of the variables CQ and project manager personal competencies, it is limited in terms of other variables. Demographic variables such as nationality, culture, and ethnicity were limited at best due to the sample being mostly limited to Midwestern PMI Chapter members. While additional demographics could have offered further insight supporting improved generalizability, a global element for the research was addressed by the cultural dimensions of cognitive, metacognitive, motivational, and behavioral which are inherent to CQ.

Another limitation of the research study was due to the self-report survey design. The use of a self-report scale assumes that individuals will score their cultural intelligence and leadership competencies accurately. Research has shown that individuals can be overconfident when self-rating their capabilities (Dunning, Heath, & Suls, 2004). While the self-report CQS instrument and PMCD Framework has been proven valid and reliable (Ang & Van Dyne, 2008; Clarke, 2010; PMI Standards Committee, 2007; Shannon & Begley, 2008), supplementing this research study

through peer-assessment of the same variables may have further validated the study's findings. Additionally, this research study adopted a convenience sampling strategy due to the limited engagement opportunities with the identified population. Based on these limitations, this study was limited to self-reported survey design in an effort to be efficient with the limited population engagement opportunities and expedient with the participants' time.

Finally, the objective of the research was to better describe and explain project manager personal competencies based on the correlative relationship with CQ. Although a longitudinal study may have offered the opportunity to determine causal relationships between CQ and leadership competencies, the research study was limited to explanation of the relationship between the variables and descriptive analysis of the sampled population. The constraining factor here was the limited engagement opportunity with the population sample during the data collection phase and regard for overall research study duration.

## Assumptions

Assumptions that may have influenced the research study have been included in the following section. First, while all persons have their own values, belief systems, and personal experiences offering a basis for one's own judgment (Hofstede, 1980; Trompenaars, 1993), it is proposed that this bias was limited through the design and execution of a quantitative research study. With an established instrument offering validity and reliability across samples, time, countries, and methods (Ang, Van Dyne, & Tan, 2011), self-bias was controlled when measuring CQ of the identified research participants through use of the CQS instrument. Additionally, through the use of the

PMI PMCD Framework designed to measure project manager competencies, this bias was also limited by using a framework built upon the McClelland/McBer Job Competency Assessment (JCA) methodology. The JCA offered over 20 years of research through more than 286 studies positing it as valid and reliable (Spencer & Spencer, 1993). Using an established instrument and a proven framework, it was assumed that personal bias and judgment were controlled sufficiently in the study.

Second, the study focused on a project management population in an effort to minimize confounding variables. For this study, confounding variables were posited as project managers without training or professional project management experience. The PMI project manager members were used as the target population. By utilizing a project management focused population and a survey instrument designed to assess project management training and project management experience, it was assumed that influence of confounding variables was mitigated thereby maintaining integrity in correlation of the primary variables including CQ and project manager personal competencies.

Third, the research study adopted a positivist position. A positivist approach allowed for deductive testing of defined hypotheses which were developed from the epistemological positions on measuring cultural intelligence and leadership competency (Creswell, 2003). The epistemological position is founded on the presumption that both CQ and leadership competencies exist and can be measured objectively using the CQS instrument and the PMI PMCD Framework. Using a positivist approach had been performed in previous research studies providing significant results and contributions for both cultural intelligence and leadership

competency theories (Ang & Van Dyne, 2008; McClelland, 1973; Spencer & Spencer, 1993). It is also posited that the research design was appropriate based on its axiological foundation of CQ and leadership competency theory development (Ang & Van Dyne, 2008; Bass & Bass, 2008; McClelland, 1973; Spencer & Spencer, 1993). Finally, by utilizing a positivist approach, it was assumed that CQ and leadership competencies existed and could be observed while controlling researcher influence through a valid, reliable, and established instrument and framework.

Finally, a post-hoc statistical analysis performed without manipulation was conducted to assess whether causality existed between the variables CQ and project manager personal competencies. Causality was assessed based on the following hypothesis structure where *x* represented the specific CQ dimension (metacognitive, cognitive, motivational, and behavioral) and *y* represented the specific project manager personal competency (communicating, leading, managing, cognitive ability, effectiveness, professionalism). This post-hoc statistical analysis was used to determine if the variable project manager personal competency was influenced by the variable CQ.

$Ho^n$: The (*x*) CQ dimension scores of project managers will not have causality with the project manager personal competency of (*y*).

$Ha^n$: The (*x*) CQ dimension scores of project managers will have causality with the project manager personal competency of (*y*).

The next section, General Plan of Study, provides a brief overview of the research method.

## General Plan of Study

Using a logical chain of reasoning, a research question, purpose, theoretical perspective, and research design were linked together establishing this study's general plan of study. This research conformed to a scientific approach versus a heuristic evaluation of two key constructs: cultural intelligence and leadership competency. In accordance with this approach, the research was designed in an effort to answer the overarching research question: *to what extent can key project manager competencies be explained by cultural intelligence?* In order to answer this question, the research study measured the four CQ dimensions of cognitive CQ, metacognitive CQ, motivational CQ, and behavioral CQ as the first variable set. Project manager personal competencies including communicating, leading, managing, cognitive ability, effectiveness, and professionalism were measured as the second variable set.

**A** quantitative, explanatory research method using deductive reasoning based on assessment of CQ dimensions and project manager personal competencies was used to determine the relationship of the variables. This positivist approach is inherent to quantitative methods providing an epistemological foundation which assumes an objective reality, but posits that objective reality can only be known imperfectly. The use of a quantitative method minimized the need for subjective data evaluation providing improved conclusive data analysis.

This research looked to generalize towards a targeted group of organizational leaders, specifically project managers. In order to establish generalizability, representation of this target population as defined as individuals with a consistent project management methodology, project management training, and professional

project management experience. Based on these criteria, subjects from the Project Management Institute (PMI) were asked to participate in a strictly voluntary study.

In order to assess the project management population, the Cultural Intelligence Scale (CSQ) and PMCD Framework were posited as valid and reliable instruments that were used to measure the variables cultural intelligence and project manager personal competencies (Earley & Ang, 2003; McClelland, 1973; PMI Standards Committee, 2007; Spencer & Spencer, 1993; Van Dyne, Ang, & Koh, 2008). The results of the data analysis of cultural intelligence and leadership competencies of project managers were then generalized to similar populations such as organizational leaders other than project managers. The conclusive analysis was used to provide recommendations and practical application for global organizations. Figure 1.1 summarizes the design of this research study.

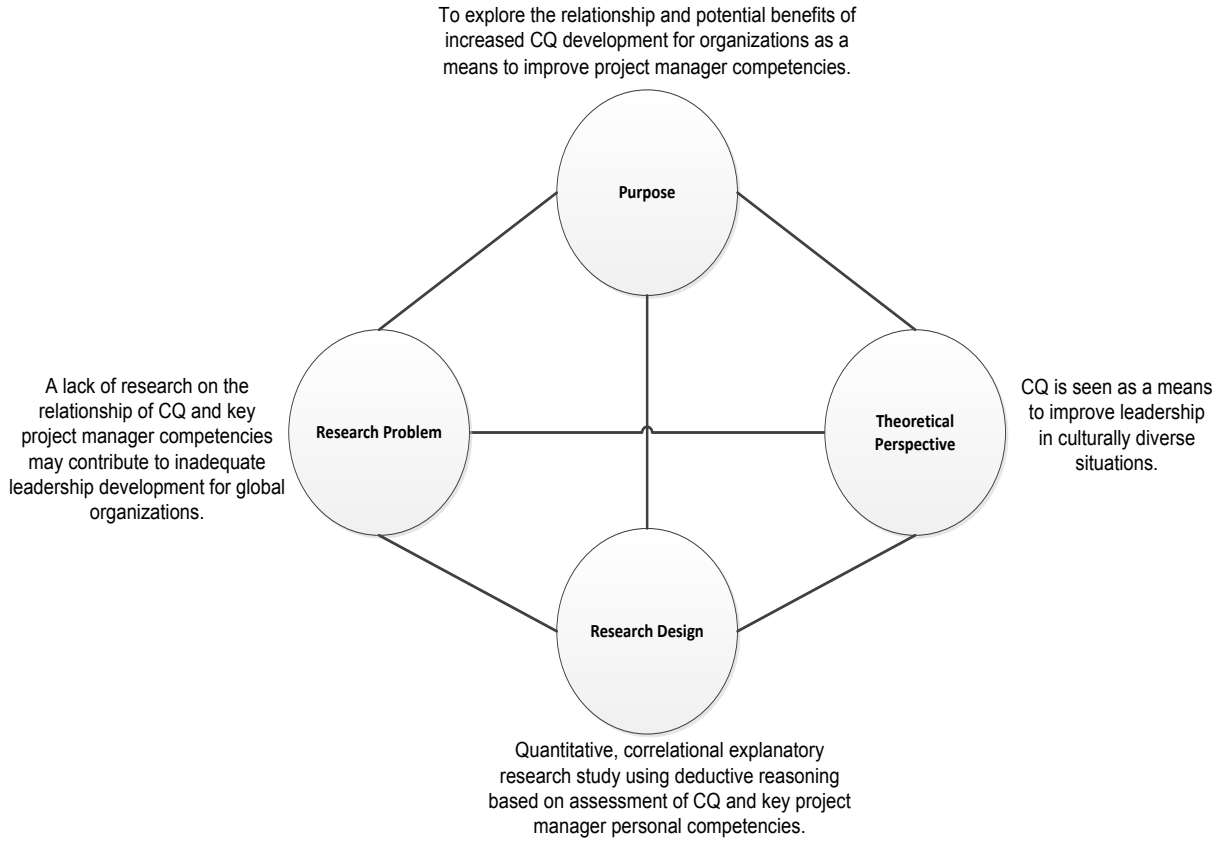


Figure 1.1. Research Design Summary

## Summary

For organizations, this research study provided new information regarding the relationship of CQ with key project manager competencies. It provided applicable relevant evidence further explaining the relationship of CQ and key project manager competencies in an effort to improve project success. Additionally, based on CQ resulting in a positive relationship to project managers' personal competencies, this research provided organizations with insight into the importance of cultural education and training. Organizations may be able to better understand the necessary individual leadership competencies supporting successful project management in their company

and work towards developing training programs that build global leaders to meet its strategic goals.

# CHAPTER 2: LITERATURE REVIEW

## Introduction

This chapter examines existing intelligence theory and leadership theory research literature which provides a foundation for the underlying concepts and theories supporting this research study proposal. This research literature was used to understand existing conclusions regarding the appropriateness for multiple intelligence theory and the practical application opportunity for leadership competency theory. This research literature also assisted in identifying the research gap, formulating the problem statement, developing the research purpose, and constructing the research hypotheses. The literature review provides a common understanding and framework from which the research methodology was designed.

A synthesized result set of relevant literature focusing on cultural intelligence and leadership competency theory is the focus of this literature review. The literature reviewed for intelligence theories begins with General Intelligence Theory and concludes with Multiple Intelligence Theory. The literature reviewed for cultural intelligence focuses on theoretical construct and practical implications as it applied to organizations. The literature reviewed for leadership competency theory includes a brief review of leadership definitions and relevant leadership theories. Additionally, the literature reviewed on leadership competency provides the basis for project management leadership competency discussion. A conclusion is presented that forms and justifies the research gap leading to the research design and method presented in Chapter 3.

## Background to Intelligence Theories

Measuring intelligence is a central element to understanding individual differences in the field of psychology (Gottfredson & Saklofske, 2009). Psychometric intelligence theories provide the foundation for insight into cognitive abilities. Efforts to explain psychology scientifically began in the nineteenth century with measurement of intelligence being a focus (Gardner, 1983). It was not until the twentieth century that intelligence factors were identified and scientifically measured (Spearman, 1927; Thurstone, 1924).

Spearman is widely recognized as the seminal author for general intelligence testing (Gottfredson & Saklofske, 2009; Sternberg & Detterman, 1986). Spearman's (1904, 1927) research explained intelligence as being the cognitive ability relating to the perception of the world and oneself by an individual. Spearman (1927) defined a person's total cognitive ability "as the instrument or organ at the disposal of any of his conative activities" (p.3). Spearman's (1904, 1927) research concluded that intelligence can be described by two factors: "g" and "s". G is defined as the general intelligence factor that is common and therefore universal. Being universal, it is g that has been determined to be measured objectively using acceptable instruments (Spearman, 1927). Additionally, Spearman (1927) posited that since g is only one factor for the measurement of ability, some additional factor must be existent. This additional factor s is defined as the specific intelligence factor that is not universal or common.

Spearman led seminal research in the field of psychology using factor analysis as the statistical method to explain intelligence factors. Spearman's (1904, 1927)

research using factor analysis posited that intelligence testing of individuals across unrelated subjects were positively correlated. This significant statistical relationship suggested there is a general intelligence related to cognitive performance (Spearman, 1927).

Thurstone (1924) posited there is a small primary set of mental faculties which are independent of one another and encompass a range of aptitudes. Whereas Spearman's g is measured by all tasks on an intelligence test, Thurstone suggested each mental faculty is measured by different tasks and described differently (Gardner, 1983; Thurstone, 1938). Thurstone (1938) posited seven different primary mental abilities (PMAs) that describe individual's intelligence: word fluency, verbal comprehension, spatial visualization, number facility, associative memory, reasoning, and perceptual speed. Describing each mental faculty differently establishes MI theory as a significant difference in understanding of a common or universal intelligence. MI theory compared with general intelligence theory has continued to be a debate in the psychological field of intelligence testing (Gardner, 1983).

Thurstone's contribution of PMAs led to more intelligence research that ultimately led to the theory of multiple intelligences (MI). MI theory posits the existence of a small set of human intellectual potentials of which all individuals are capable (Gardner, 1983). Gardner (1983, 1999) argued that there are multiple facets to an individual's intelligence which resulted in his development of MI theory. In essence, Gardner suggested that psychometric intelligence theories focusing on a single intelligence factor are limited at best. Gardner's (1983) MI theory suggested that an individual's intelligence is composed of eight distinct intelligences based on

abilities. Gardner's eight intelligences are categorized as bodily kinesthetic, logical mathematical, linguistic verbal, musical, interpersonal, intrapersonal, visual spatial, and naturalistic. Gardner's (1983, 1999) MI theory suggested that separate psychological cognitive processes are associated and handle the different intelligence factors. Accordingly, Gardner (1983, 1999) posited that each intelligence factor must be assessed contextually through instruments designed to measure each respective factor. In summary, Gardner (2006b) posits that each individual possesses multiple intelligence capacities and some can take advantage of these intelligences better than others.

Sternberg, agreeing that intelligence is comprised of more than a single intelligence factor, took MI theory in a new direction. Sternberg (1984) defined intelligence as a mental activity with purposive adaption, selection, and shaping towards real world environments relevant of an individual's life. Sternberg's significant contribution to psychology and intelligence theory is presented in his triarchic theory of intelligence. The triarchic theory of intelligence explained intelligence as a combination of three elements: analytical intelligence, creative intelligence, and practical intelligence which described the construct in a more cognitive approach than a psychometric approach (Sternberg, 1984, 1986).

Overall, intelligence is a research topic rich in history that continues to provide insight into psychology and human intelligence theories and constructs (Gottfredson & Saklofske, 2009). With much relevant research literature available on intelligence and intelligence testing, several common questions are presented to the reader. First, no single cohesive theoretical construct has been generally accepted for intelligence.

Whereas much research has been performed through intelligence testing to better understand intelligence, an accepted theoretical construct has not shown consilience nor has it been consistent (Gottfredson & Saklofske, 2009). This has resulted in continued efforts to define intelligence and determine accepted intelligence factors. Despite the continued debate, research trends towards multiple intelligence factors have shown promise over Spearman's original universal intelligence g factor (Gardner, 1984; Sternberg, 1984, 1986). That does not negate the empirical findings Spearman (1927) posited in which general intelligence has shown correlation across multiple processes by an individual. What continued research has shown is that additional cognitive abilities have been identified which can be measured independently (Gardner, 1983; Gottfredson & Saklofske, 2009; Sternberg, 1984; Sternberg & Detterman, 1986).

Second, this review of research literature has shown intelligence constructs and intelligence measures have been debated since their onset (Gardner, 1983; Gottfredson & Saklofske, 2009; Sternberg, 1984; Sternberg & Detterman, 1986). A continued debate addresses the question of whether research is assessing intelligence theory constructs or it is assessing the instrument used to measure intelligence (Gottfredson & Saklofske, 2009). This does not disprove the findings nor limit the significance that intelligence testing has brought forth to the academic community.

Finally, research suggests intelligence addresses both abilities and achievements (Gardner, 1983; Gottfredson & Saklofske, 2009; Sternberg, 1984; Sternberg & Detterman, 1986). Intelligence abilities are referred to as latent traits due to their causal relationship with individual behavior (Gottfredson & Saklofske, 2009).

Achievements are outcomes that may be specific to context and culture (Gottfredson & Saklofske, 2009). The significance in this difference is that intelligence abilities have shown to be context independent and relatively stable between individuals whereas achievements may vary by circumstance (Gottfredson & Saklofske, 2009). The next section Cultural Intelligence Theory builds on the MI Theory of Intelligence through definition of the CQ construct and review of recent relevant CQ research which support this research study's purpose of identifying intelligence and leadership opportunities for organizations.

## Cultural Intelligence Theory

Cultural intelligence (CQ) was originally defined by Earley and Ang (2003) as a person's capability to adapt effectively to new cultural contexts. This definition and theoretical construct is an extension to the multiple intelligence theoretical foundation (Gardner, 1983; Gardner, 1999; Gardner, 2006a; Sternberg & Detterman, 1986). Gardner (1983) posited that individual intelligence development not only comes to learn based on consequences associated to individual acts and symbols but also based on interpretive schemes of culture. According to Gardner (1983), it is the immersion in the culture's world view that defines the "arena in which his several mature intelligences will be deployed in combination" (p. 298). Although CQ is relatively recent in terms of academic research, it has shown promising results such as improved information processing, decision making, and performance by leaders in culturally diverse situations present in global organizations (Alon & Higgs, 2005; Mannor, 2008).

Earley and Ang (2003) approached cultural intelligence in the same manner that Thurstone, Gardner, and Sternberg took to expand the theory of a single, general intelligence construct to new, relevant content domains. Social intelligence (Thorndike & Stein, 1937), emotional intelligence (Mayer & Salovey, 1993), and practical intelligence (Sternberg, Forsythe, Hedlund, Horvath, Wagner, Williams, Snook, & Grigorenko, 2000) represent recent intelligence constructs that are founded on the multiple intelligences theory. CQ is unique from these other forms of intelligence in that it requires the individual to switch between one cultural setting to another (Alon & Higgins, 2005; Earley & Ang, 2003). The next section provides the theoretical construct overview along with relevant research supporting the CQ multidimensional construct.

**Multidimensional Construct**

Earley and Ang (2003) developed CQ as a multidimensional intelligence construct founded on the theory of multiple intelligences by Sternberg and Detterman's (1986) multiple intelligence loci. The construct posits that CQ has four distinct intelligence loci comprising an individual's cultural intelligence. Defined as dimensions, each has their own mental or behavioral capabilities. The following sections describe each of the four CQ dimensions.

**Cognitive CQ.** Cognitive CQ refers to an individual's level of mental capability with regard to knowledge (Ang & Van Dyne, 2008). Knowledge of one's self, of social environment, of cultural environment, and of information handling represents the framework of cognition as it applies to CQ (Earley & Ang, 2003). Lohman's study of cognition measured cognitive intelligence in terms of mental

processes and speed used by an individual to learn, retrieve, and use knowledge (as cited in Earley & Ang, 2003, p. 34). Cognitive CQ takes a different approach to measuring cognition. Cognitive CQ measures an individual's cognition in terms of social and cultural recognition as an interpersonal skill or competency (Earley & Ang, 2003). Whereas social intelligence and emotional intelligence also take this similar divergence from traditional knowledge retrieval cognitive measurement, CQ continues to establish itself uniquely by focusing on culturally diverse scenarios (Earley & Ang, 2003; Elenkov & Pimentel, 2003).

**Metacognitive CQ.** Metacognitive CQ refers to an individual's level of capability to control one's cognitive learning processes (Ang & Van Dyne, 2008). Additionally, metacognitive CQ represents the level of conscious cultural awareness one has during cross-cultural interactions (Ang & Van Dyne, 2008). This level of conscious cultural awareness supports processes used to acquire, understand, and create new cultural understanding and knowledge (Ang & Van Dyne, 2008; Ng, Van Dyne, & Ang, 2012). Ang and Van Dyne (2008) define these metacognitive processes as planning, monitoring, and revising mental models of cultural norms with the ability to adapt prior and during culturally diverse interactions.

**Motivational CQ.** Motivational CQ refers to an individual's level of capability to direct and commit one's energy to problem solving in a particularly culturally diverse environment (Ang & Van Dyne, 2008). This dimension of CQ represents the individual's interest and drive to engage and interact in cross-cultural settings. Deci and Ryan (as cited in Ang & Van Dyne, 2008) argued that individuals

with high motivational CQ have intrinsic interest in cross-cultural situations and therefore direct more energy and commitment to those situations.

**Behavioral CQ.** Behavioral CQ refers to an individual's level of capability to display actual behavior or outwardly actions beyond one's cognitive processes (Ang & Van Dyne, 2008). Behavioral CQ specifies how an individual acts in culturally diverse settings. Lustig and Koester (as cited in Ang & Van Dyne, 2008) posited there are three identifiable behaviors represented by cultures: the specific range of behaviors enacted, the specific rules of when and how nonverbal range of behaviors are enacted, and the interpretations of specific behaviors that are enacted. Individuals with high behavioral CQ are able to adapt and adjust their actions accordingly to culturally diverse situations.

## Epistemology

Through understanding cultural relevance, CQ seeks to extend contemporary approaches to understanding intelligence (Earley & Ang, 2003). Forge (1987) posited that measuring intelligence is a prerequisite in giving it explanatory power. In order to establish CQ as an objective measure, Van Dyne, Ang, and Koh (2008) developed operational definitions for the four distinct dimensions of CQ: cognitive, metacognitive, behavioral, and motivational. Measuring CQ is the result of assessing an individual in terms of these four distinct CQ capabilities (Van Dyne, Ang, & Koh, 2008). A series of studies were executed which validated evidence of CQ being a clear, robust, and meaningful four-factor intelligence construct (Ang, Van Dyne, & Tan, 2011; Van Dyne, Ang, & Koh, 2008).

The development efforts of the CQ as a multidimensional intelligence construct also contributed additional knowledge and opportunity regarding future studies of CQ. In a study by Ang, Van Dyne, and Tan (2011), CQ was determined to have predictive validity in demonstrating relationships between CQ and intercultural effectiveness and performance. A three-day executive development program in Singapore served as an additional sample study supporting this position (Ang, Van Dyne, & Tan, 2011). Results from this study suggested that cognitive capabilities lead to improved judgment and decision making in culturally diverse situations (Ang, Van Dyne, & Tan, 2011). Additionally, metacognitive CQ and behavioral CQ predicted improved task performance in culturally diverse situations (Ang, Van Dyne, & Tan, 2011). These studies provide an epistemological position in understanding how CQ can be known, what knowledge it can predict, and establish criteria from which it can be measured. The next section provides recent research relating to cultural intelligence posited as being relevant to this research based on its association with leadership.

## Current Contributions Relating to Cultural Intelligence Research

Although CQ is a relatively new theoretical construct, research has shown promising results supporting its effectiveness with regard to leadership in culturally diverse global organizations (Dzenowagis, 2010). The following section reviews relevant CQ research that supports this connection.

### Multicultural Environment

As increasing globalization changes the landscape for organizations, increased cultural diversity from both an external customer base and an internal human resource

perspective has become more prevalent. The result of this increased globalization has generated a new type of workgroup known as the multinational team (MNT). Earley, Ang, and Tan (2006) noted that a key challenge facing organizations is how best to integrate and utilize talented human resources from diverse backgrounds. CQ has shown promise in that individuals possessing high cultural intelligence may have increased abilities to work in multicultural environments (Ang & Van Dyne, 2008; Dzenowagis, 2010).

According to Thomas and Inkson (as cited in Flaherty, 2008), organizational workgroup teams go through a five stage process of interactions before they begin to perform effectively. This process is characterized by first forming the team through early engagement. The next stage is characterized as storming in which each team member begins to understand each other and what leadership model will be used. The third stage is characterized as norming during which the team members agree to a common goal. The fourth stage is characterized as performing during which the team members begin to function as one unit. This stage creates productivity and effectiveness. The final stage is characterized as adjourning during which the team concludes the effort and disbands.

Flaherty (2008) argued that the increased presence of cultural diversity is a factor that potentially delays the five stage process of organizational team development. Flaherty's (2008) research sought to determine the effects of CQ on team dynamics in multicultural settings in an effort to determine whether increased CQ offered improved team member acceptance and integration in MNTs. Flaherty

conducted case study research using surveys and interviews based on a sample size of 51 individuals representing 27 nationalities and 6 MNTs.

The results of Flaherty's (2008) research showed positive correlation between CQ with acceptance and integration times of members of MNTs in multicultural workplace environments. Specifically, Flaherty (2008) posited that as motivational CQ increased, acceptance and integration times between MNT members increased. In other words, individuals who reported increased motivational CQ, described as an individual's level of capability to direct and commit one's energy to problem solving in a particularly culturally diverse environment (Ang & Van Dyne, 2008), also reported increased times of acceptance and integration within MNTs. Additionally, Flaherty (2008) posited that as cognitive CQ increased, acceptance and integration times between MNT members also increased. In other words, individuals who reported increased cognitive CQ, described as the level of mental capability in regards to knowledge (Ang & Van Dyne, 2008), also reported increased times of acceptance and integration within MNTs.

Ng and Earley (2006) posited that individuals with high CQ may adapt faster and more effectively in culturally diverse situations with the understanding that other variables may alter this relationship. Flaherty's (2008) research may seem to contradict this position due to increased times of MNT acceptance and integration correlating with increased CQ. However, Flaherty's (2008) research conclusions also demonstrated that while acceptance and integration times may have increased MNT members indicated relationships were better formed and longer lasting due to increased CQ. The implication that better relationships may be formed through

increased CQ of MNT members is significant due to the increase in multicultural environments within global organizations (Flaherty, 2008).

With the increase of multicultural environments in global organizations, understanding CQ and its relationship with to leadership has become increasingly important. Ang, and Tan (2006) posited that a key challenge for organizations will be to understand how best to integrate people in multicultural environments. Flaherty's (2008) study assisted by better describing CQ with its relationship to how people adjust to culturally diverse work teams in organizations. The next section Leadership Antecedent further addresses the need for leadership definition in culturally diverse organizations.

**Leadership Antecedent**

Due to the continued trend of globalization impacting organizations, traditional leadership techniques that focus on managing workforces and related strategies are no longer sufficient (Mannor, 2008). CQ has shown relevance to leadership theory in globalized environments due to the presence of cultural diversity (Janssens & Cappellen, 2008; Mannor, 2008).

Mannor (2008) mapped both the cognitive and metacognitive CQ dimensions to a category supporting information processing for leaders. Mannor (2008) used this CQ category to determine an individual's capability to engage in environmental information processing differentiating leaders from other managers. Mannor (2008) also grouped motivational and behavioral CQ dimensions as a new category supporting leadership decision making behaviors. This CQ category differentiated

leaders from other managers in their ability and comfort level to make decisions in culturally diverse situations.

Mannor (2008) posited that increasing dimensions of CQ may support improved information processing, decision making, and performance by leaders in culturally diverse situations in global organizations. Mannor's (2008) argument is predicated on the fact that traditional management techniques often fail to meet the dynamic, complex scenarios facing global leaders. According to Mannor (2008), leaders who lack these CQ capabilities may not be effective in supporting organizational processes and growth in globalized environments.

Janssens and Cappellen's (2008) research looked into the growing organizational need for global managers. Traditionally, expatriation was a common practice through which organizations placed individuals in global locations and culturally diverse situations. Today, individuals often remotely lead MNTs through the use of technology bridging the communication and logistics gaps. Leading MNTs from remote locations offers organizations quicker response times to complex global needs (Janssens & Cappellens, 2008). While this has assisted in reducing costs associated to relocation, it has also increased the need for leadership with CQ capabilities (Janssens & Cappellen, 2008).

Janssens and Cappellen (2008) reviewed interviews of 38 global managers to determine how successful managers deal with cultural diversity. According to Janssens and Cappellen (2008), global managers have short-term, high frequency cross cultural interactions which increases the importance of higher CQ. Janssens and Cappellen (2008) posited that global managers who possess an increased CQ are able

to approach these short-term but frequent culturally diverse interactions with greater openness, which allows for improved context specific interactions to occur. This increased context-specific interaction supports leadership's ability to improve relationships and become more productive respective to the assignment (Janssens & Cappellen, 2008). In other words, culturally diverse teams present scenarios where increased CQ capabilities are required; thereby further supporting the claim that CQ may be a necessary antecedent for global leadership.

**Applicability**

Using this research study's position that intelligence is comprised of multiple constructs, the CQ construct differs from others due to its opportunity for individuals to develop CQ supporting effective organizational leadership (Shannon & Begley, 2008). Shannon and Begley (2008) posited that, unlike personality, CQ is a capability that can be developed. According to Tan and Chua (as cited in Early & Ang, 2003), notable general intelligence theorists such as Terman, Goddard, Brand, Herrnstein, and Murray proposed that a significant portion of individual intelligence is attributed to genetic heredity. CQ, however, has shown that it can be developed over time and, thus, is not entirely genetic (Ang & Van Dyne, 2008; Earley & Ang, 2003).

Shannon and Begley's (2008) research sought to identify and validate development opportunities of CQ. Their research study identified four key hypotheses: language acquisition positively relates to cognitive CQ and behavioral CQ, international work experience positively relates to metacognitive, motivational, and behavioral CQ, diversity of social contracts positively relates to metacognitive, cognitive, and behavioral CQ, and overall self-rated CQ positively relates to overall

peer-rated CQ (Shannon & Begley, 2008). Their first data collection included 336 respondents. The results of the study posited that language acquisition and international work experiences predicted overall CQ values (Shannon & Begley, 2008). Shannon and Begley's (2008) findings supported the argument that multilingual individuals are capable of using language as a means to obtain CQ. Additionally, having international work experiences supported the argument that individuals having cultural experiences are more likely to be motivated to have increased CQ based on self-reported CQ evaluation (Shannon & Begley, 2008).

Shannon and Begley's (2008) second data collection involved 245 respondents. The results of the study posited that international work experience and social contact predicted peer-rated CQ values (Shannon & Begley, 2008). Their findings suggesting individuals having international work experiences and social interactions with culturally diverse individuals supported the argument that individuals having cultural experiences are more likely to be motivated to have increased CQ based on peer-reported CQ evaluation.

This research study posits intelligence as a multidimensional construct with CQ representing a unique opportunity for organizations to develop leaders working in multicultural settings. The next section Leadership Studies continues this literature review by examining theoretical constructs in leadership studies that also supports this study's purpose of identifying intelligence and leadership opportunities for organizations.

## Background to Leadership Studies

Leadership is a universal phenomenon that affects society in complex and dynamic ways (Bass & Bass, 2008; Mendenhall et al., 2012). There exist many challenges for leaders due to the complexities, paradigm shifts, globalization, and continuous change in the social and organizational environment. Leadership has been studied in an effort to define and improve leadership practices. Despite the general agreement that there is a need to understand and improve leadership practices, the dynamics and complexities present significant challenges that offer little widespread acceptance of existing leadership theories (Mendenhall et al., 2012). Even the very definition of leadership has confounded scholars and practitioners.

Scholarship reference suggests there is considerable research on leadership (Bass & Bass, 2008; Mendenhall et al., 2012). However, its practical understanding and explicit definition continues to confound scholars due to the complexities and dynamics associated with leadership (Yukl, 2012). Even more significant, when adding a global or multicultural element, accepted definitions become increasingly rare. Mendenhall et al. (2012) posited that the global context increases valence, intensity, and complexity when compared to domestic leadership.

Defining global leaders is the foundation for understanding and developing leadership theories that support improved organizational practices. Mendenhall et al. (2012) provided their conclusive definition as follows:

> Global leaders are individuals who effect significant positive change in organizations by building communities through the development of trust and the arrangement of organizational structures and processes in a context

> involving multiple cross-boundary stakeholders, multiple sources of external cross-boundary authority, and multiple cultures under conditions of temporal, geographical, and cultural complexity. (p.20)

While the definition of global leaders has begun to mature, the knowledge creation remains in its early stages. Although research conducted in the past few decades has helped to identify, define, and show progress in understanding leadership theories, establishing a prescribed leadership approach for organizations has not become a reality (Mendenhall et al., 2012). It is impossible to conceptualize a single leadership theory and promote development of applied practice without knowledge creation in the academic and organizational communities. The following sections further define leadership theoretical constructs relevant to this research supporting this study's purpose of identifying intelligence and leadership opportunities for organizations.

**Leadership Theories Classification**

Kerlinger (1979) defined a theory as "a set of interrelated constructs (variables), definitions, and proposals that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining natural phenomena" (p. 64). Accordingly, leadership theories attempt to explain the emergence, nature, and consequences of leadership (Bass & Bass, 2008). Leadership theories have proved useful in abstracting, generalizing, relating, selecting, explaining, synthesizing, and idealizing characterizations of leadership (Bass & Bass, 2008).

The development of leadership theories has facilitated research supporting increased understanding for improving applied practice. At the core of leadership

theories are the traits and competencies of the leader, the elements of the situation, the relationship between a leader and the follower, and the process used by the leader to influence the follower (Bass & Bass, 2008; Yukl, 2012). Accordingly, existing leadership theories differ in explaining the emergence of leadership, the characterization of leadership, and the antecedents and consequents of leadership. In order to provide a background to these leadership studies, this research used a previous categorization identified by Tyssen, Wald, and Spieth (2013) to classify previous leadership studies by context for analysis. These categories include person-oriented Leadership, situation-oriented leadership, and interaction-oriented leadership. The next sections provide a brief analysis of leadership theories in the context of these leadership categorizations

**Person-Oriented Leadership**

Person-oriented leadership theories focus on the characterization of the individual leader (Tyssen, Wald, & Spieth, 2013). The early twentieth century leadership studies focused on leadership traits. The purpose of these studies was to identify internal traits such as motives, values, skills, and abilities that assisted in explaining effective leaders. Trait leadership theory presumes that leaders have inherent traits which are related to successful leadership (Bass & Bass, 2008; Turner & Müller, 2005). While identification of traits offers improved understanding of leadership in general, it effectively suggested that leadership development cannot be performed and provides no direct path towards improving project management (Bass & Bass, 2008).

In addition to traits, leadership styles are within the context of person-oriented leadership studies. Bass and Bass (2008) posited that certain leadership traits are related to the leader's style. Leadership styles can be thought of as ways leaders pattern their interactive behavior with those they influence (Bass & Bass, 2008). Leadership styles have been broadly classified and generally accepted as theories supporting common leadership approaches (Bass & Bass, 2008). While studies assessing leadership styles (Fiedler, 1978; Hersey & Blanchard, 1974) indicated that leaders effective in both tasks and relations oriented leadership styles were rated higher by superiors and peers, contingency theorists (Fiedler, 1978; Fielder, Chemars, & Mahar, 1976; Tannenbaum & Schmidt, 1973) argue that situational variables play a key role in this determination.

**Situation-Oriented Leadership**

Situation-oriented leadership argues that leadership traits alone cannot explain the emergence of leadership and is therefore dependent on addressing the organizational context of the situation (Bass & Bass, 2008; Fielder, 1978; Tyssen, Wald, & Spieth, 2013). Taking the situation into context, this leadership theory posits that a leader's effectiveness is contingent on the demands imposed by the situation (Bass & Bass, 2008; Fielder, 1978). Fiedler, Chemers, and Hahar's (1976) study developed a method to match a leadership styles with an organizational situation. More recently, Müller and Tuner's (2007) study of organizational project managers suggested that different leadership styles are better suited certain project types.

**Interaction-Oriented Leadership**

Interaction-oriented leadership assesses leadership from a dyadic approach focusing on the relationship and influence between the leader and the follower (Bass & Bass, 2008; Tyssen, Wald, & Spieth, 2013). This leader/follower relationship is assessed through by determining how relationships emerge, how relationships stabilize over time, and which antecedents, qualities, and consequences can be distinguished (Bass & Bass, 2008; Tyssen, Wald, & Spieth, 2013). Bass and Bass (2008) suggested a transactional leader is one who works within an established framework in his or her relationship with the follower. In contrast, a transformational leadership is one who works to change the framework in his or her relationship with the follower (Bass and Bass, 2008). Transformational leaders have a focus on broader contexts, are externally facing, and have a focus on meeting challenges not previously addressed (Dulewicz & Higgs, 2005).

Recently, leadership studies have begun to combine the different leadership orientations and assess the complex interrelationships (Tyssen, Wald, & Spieth, 2013). Results have concluded the importance of person-oriented leadership traits on leadership effectiveness and shown an influence by both situation and interaction-oriented aspects (Clarke, 2010; Davis, 2011; Müller & Turner, 2010a). The next section will focus on a particular person-oriented leadership trait by describing leadership competencies and their importance relating to leadership opportunities for organizations.

## Leadership Competency Theory

Leadership competencies have been studied for decades in an effort to further assist organizations in improving leadership performance (Turner & Müller, 2005).

Parry (1998) defined competencies as a set of related knowledge, skills, and personal characteristics. Bass (as cited in Bass & Bass, 2008) posited that competencies can be thought of as antecedents to leadership styles. McClelland (1973) first proposed the significance of competencies as the critical identifier of superior performance in individuals. Although there is no general consensus regarding which competencies leaders should possess (Mendenhall et al., 2012), Bass (as cited in Bass & Bass, 2008) identified cognitive, social, emotional, communicating, and behavioral as being significant in several studies (Avolio, Howell, & Sosik, 1999; Kobasa, Maddi, & Kahn, 1982; Wofford & Goodwin, 1994).

Research on leadership has suggested that certain leadership competencies are related to the successful performance of a leader (Dulewicz & Higgs, 2005; Müller & Turner, 2010a; Turner & Müller, 2005). This relationship of leadership competency with improved project performance offers an explicit opportunity of applied practice for organizations. Turner and Müller (2005) postulated that different leadership competency profiles are appropriate for different project types in organizations. Dulewicz and Higgs (as cited in Turner & Müller, 2005) posited that different leadership competency profiles may perform better or worse depending on the project type.

Additionally, a significant conclusion of leadership competency studies is that a competency can be learned (Dulewicz & Higgs, 2005; McClelland, 1973; Müller & Turner, 2010a; Müller & Turner, 2010b; Parry, 1998). For organizations, this represents an opportunity to improve its leadership performance through improved development and better selection of appropriate project managers.

The leadership competency construct has shown opportunity for improved project performance based on its applicability towards organizational practice and capability of development within individuals. While the study of leadership competencies has provided insight into organizational performance improvement (Turner & Müller, 2005), the application to project management has been limited (Dulewicz & Higgs, 2005; Turner & Müller, 2005). The next section further explores leadership competencies within the context of project managers.

## Project Manager Competencies

Anantatmula (2010) stated that leadership in the project management context provides motivation and guidance for teams to realize the organizational goals. Research has shown that projects require specific leadership competencies from the project manager in order to increase project success (Anantatmula, 2008; Müller & Turner, 2007; Turner & Müller, 2006). Ahsan, Ho, and Khan (2013) posited that competencies including components of knowledge, skills, and abilities (KSAs) support improved project performance. McClelland and McBer (as cited in Spencer & Spencer, 1993) posited that the best way to identify knowledge, skills, and abilities (competencies) is to identify high performing individuals, study their behavior, and determine what distinguishes them from others.

McClelland (1973) posited that measuring for intelligence does not reflect practical application while measuring for competencies does. Leadership competencies are elements that are more easily measured for determining leadership effectiveness (McClelland, 1973). Additionally, leadership competencies associated to general intelligence (IQ), emotional intelligence (EQ), and managerial intelligence

(MQ) have shown a relationship to effective leadership (Dulewicz & Higgs, 2005). This relationship offers a mechanism by which research can be conducted to identify the most relevant leadership competencies and their association to project manager performance and project success. This determination may also prove to be the most useful to organizations in developing leadership.

**Project Manager Competency Development Framework**

The Project Manager Competency Development (PMCD) framework was designed by PMI to assess, plan, and manage professional development of project managers in order to increase the likelihood of delivering projects that meet stakeholders'' requirements (PMI Standards Committee, 2007). The PMCD framework was developed based on the McClelland/McBer Job Competency Assessment (JCA) methodology. Using a job-specific competency approach, this framework made no prior assumptions during its development as to what characteristics were needed to perform project management duties. The framework emphasizes criterion validity regarding what actually causes superior performance in project management (PMI Standards Committee, 2007; Spencer & Spencer, 1993). These results provide an epistemological contribution in understanding how project manager competencies can be known, what knowledge it can predict, and to provide an established framework from which it can be measured.

The PMCD framework identifies three competency areas specifically for project managers: knowledge, performance, and personal. The PMCD framework posits these competencies as individualized and transferrable across regions and industries (PMI Standards Committee, 2007). With research (Ahsan, Ho, & Khan,

2013, Dulewicz & Higgs, 2005; Turner & Müller, 2005) positing leadership competencies as critical for project success, this research study further examines what makes a competent project manager.

Knowledge competence represents the project manager's body of information about the application of processes, tools, and techniques required to perform project activities (PMI Standards Committee, 2007). PMI states that project manager knowledge competence can be demonstrated by passing an appropriately credentialed project manager assessment. Ahsan, Ho, and Khan (2013) posited that project manager knowledge competence is a prerequisite competency based on its association to many PMI knowledge areas including Project Time Management, Project Risk Management, Project Scope Management, and Project Human Resource Management.

Project manager performance competence represents the second PMCD framework dimension. Performance competencies are defined as how the project manager applies project management knowledge to meet the project requirements (PMI Standards Committee, 2007). PMI states that project manager performance competence can be demonstrated by assessing the project-related actions and outcomes. However; recent studies have suggested that associating project performance with project manager competencies may be too broad to conclusively determine the necessary project manager performance competencies (Dulewicz & Higgs, 2005; Pinto & Slevin, 1989; Turner & Müller, 2005; Turner & Müller, 2006). In Turner and Müller's (2006) study entitled *Choosing the Appropriate Project Managers*, the authors posited that leadership styles do affect project performance. The appropriate relationship of leadership style can be determined by the project type,

organization, and industry (Ahsan, Ho, & Khan, 2013; Turner & Müller, 2006). These results suggest that project manager performance competence is critical to project performance, but also can be influenced by other factors outside of the project manager's control and is therefore complex in nature to study.

Project manager personal competencies are defined as those behaviors, attitudes and core personality characteristics that contribute to a person's ability to manage projects successfully (PMI Standards Committee, 2007). PMI states that project manager performance competence can be demonstrated by assessing the project manager's behavior. Project manager personal competencies support leadership skills enabling effective interaction with others (PMI Standards Committee, 2007).

PMI (2007) structured personal competencies into six sub-units: communicating, leading, managing, cognitive ability, effectiveness, and professionalism. These sub-units are commonly referred to as "soft skills" in organizations. Research (Clarke, 2010; Davis, 2011; Geoghegan & Dulewicz, 2008) has shown that soft skills (personal competencies) are important project manager competencies that relate to project success. Davis (2011) measured the relationship of project manager's emotional intelligence with interpersonal competence. The results of Davis' (2011) study posited meaningful relationships with conflict management and problem solving; both representing project management competencies that support improved project success. In a different example, Clarke's (2010) study of 67 project managers posited that competencies such as empathy, teamwork, attentiveness, managing conflict, and consideration were associated to successful project outcomes.

This section defined project manager competencies as described by the PMCD framework. It highlighted the differences between knowledge, performance, and personal competencies and how they relate to project success. Project manager personal competence was distinguished due to its meaningful relationship with project manager's behavior, ability to be measured, and opportunity for applied practice in organizations supporting improved project performance. The next section further investigates relevant research supporting project manager personal competencies supporting this study's purpose of identifying intelligence and leadership competency opportunities for organizations.

## Current Contributions Relating to Leadership Competencies Research

Leadership research has recently become more focused on leadership competencies due to the competence school of leadership encompassing earlier schools such as trait theory and leadership styles (Turner &Müller, 2006). Research studies on leadership competencies have historically addressed two primary questions: 1) What capabilities do global leaders need to be effective? and 2) How can global leaders develop these characteristics? (Mendenhall et al., 2012). Recent research has shown that effective project leadership can lead to trust, openness, and team effectiveness in organizations (Anantatmula, 2010). In the context of project managers, a successful leader can be defined as one who influences project teams in a way that results in project success. The following section reviews relevant research on project manager competencies that support this study's purpose of identifying leadership opportunities for organizations.

In a study of 400 international project manager respondents, Müller and Turner (2010a) investigated the importance of project managers' leadership competencies related to achieving project success. Müller and Turner (2010a) argued that previous studies (Belbin, 1986; Briggs-Myers, 1987; Jugdev, Mathur, & Fung, 2011) did not focus on leadership capabilities in terms project performance, specifically in the project management context. Additionally, Müller and Turner (2010a) posited that project management studies had historically focused on process and techniques without addressing leadership styles. Based on this, their deductive explanatory study sought to identify which variances in project manager attitudes and variances in leadership competencies correlate with variances in project success.

Accordingly, Müller and Turner's (2010a) research model was operationalized using two key constructs previously validated: leadership dimensions and project success. Leadership dimensions were established as the independent variable using an instrument based on Dulewicz and Higgs (2005) leadership dimensions questionnaire (LDQ). Dulewicz and Higgs (2005) identified fifteen different leadership competencies relevant to project managers. These leadership competencies were developed from a "sense making" paradigm based on previous research (Goffee & Jones, 2000; Higgs & Rowland, 2001; Hogan & Hogan, 2001; Kouznes & Posner, 1998; Weick, 1995). The assessment of these fifteen leadership competencies was then used to explain project manager leadership performance (Müller & Turner, 2010a). The second construct used by Müller and Turner addressed project success based on Westerveld and Gaya-Walters' model (as cited in Turner & Müller, 2006). The study assessed project success using a ten-dimensional project success measure.

Using ANOVA and regression analysis, Müller & Turner (2010a) posited that leadership competencies correlated with project success measures. Specifically, variances in project management success were correlated to variances in leadership competencies. To summarize, difference in leadership competencies of project managers influenced aspects of project success (Müller & Turner, 2010a). The implications of this research is significant in that it places more importance on selection and training of project managers based on competencies as it will affect project success.

In a similar study, Geoghegan and Dulewicz (2008) studied the relationship between project manager's leadership competencies and project success. Geoghegan and Dulewicz (2008) used existing research to posit that leadership competence is a combination of leadership characteristics and competencies that support effective leadership. Their study sought to validate the hypothesis that there is a statistically significant relationship between leadership competencies and project success within the context of project managers.

Geoghegan and Dulewicz' (2008) study targeted 52 project managers from a financial company based out of the United Kingdom. This study utilized two previously validated research instruments: the leadership dimensions questionnaire (LDQ) developed by Dulewicz and Higgs (2005) and the project success questionnaire (PSQ) developed by Pinto and Slevin (1988). Using factor analysis and bivariate correlation between the leadership dimensions and project success measures, the results suggested there are correlations between leadership dimensions and project success factors (Geoghegan & Dulewicz, 2008). Specifically, leadership dimensions

including managing resources, empowering, developing, and motivation showed significant correlation with the project success factor of solving problems (Geoghegan & Dulewicz, 2008). Geoghegan and Dulewicz (2008) concluded that by improving specific leadership competencies, organizations might be able to improve leadership effectiveness that will result in increased project success.

Clarke's (2010) research study took a different direction by seeking to explain the relationship of emotional intelligence (EQ) to transformational leadership and key project manager competencies. Clarke (2010) reviewed relevant literature (Butler & Chinowsky, 2006; Leban & Zulauf, 2004; Müller & Turner, 2007; Sunindijo, Hadikusumo, & Ogunlana, 2007) which posited EQ within a project management context has been found to be significant when explaining transformational leadership and leadership effectiveness. Clarke's (2010) study examined both EQ and transformational leadership style and their relationship to project success. In summary, Clarke's (2010) study contributed new research by further explaining the relationship of EQ to behaviors identified as keys for success in the project management context.

Clarke's (2010) research study targeted 67 project managers from two organizations based out of the United Kingdom. This study utilized a combination of three research instruments. The MSCEIT V2.0 instrument developed by Mayer and Salovey (1997) was used to measure EQ. Clarke constructed an instrument to measure project manager competencies based on PMI's Project Manager Competency Development Framework (PMCD) (PMI Standards Committee, 2007). Project

managers' transformational leadership measures were collected using the multifactor leadership questionnaire form (MLQ-5X) developed by Bass and Avolio (2000).

Using bivariate correlation and regression analysis between the variables of EQ, project manager competencies, and transformational leadership, Clarke's (2010) results suggested there is a statistically significant relationship between EQ, a project manager's leadership competencies, and transformational leadership styles. Specifically, Clarke (2010) posited that the overall measure of EQ ability was associated with the project manager competency in managing conflict, while the individual EQ capability of using emotions to facilitate thinking was associated with the project manager competency of teamwork. Additionally, Clarke (2010) posited that the EQ capability of using emotions to facilitate thinking was associated with the transformational leadership dimension of idealized influence and individualized consideration. Clarke (2010) concluded that EQ capabilities further explain specific project managers' competencies and transformational leadership dimensions that can influence project performance.

Davis' (2011) study sought to further explain the relationship of EQ with project manager competencies. Specifically, Davis' (2011) research purpose was to determine whether a relationship existed between EQ and four interpersonal competencies common to project managers. Building on previous studies that examined the relationship of EQ and interpersonal competencies (Leban, 2003; Malek, 200; Mayer & Salovey, 2004; Schmid & Adams, 2008), Davis (2011) contributed new research by focusing on the project management context.

In the study of the relationship of EQ with project manager competencies, Davis (2011) utilized both qualitative and quantitative data collection methods to study a targeted sample of 75 project team participants from Deluxe Corporation and Minnesota's PMI chapter. This study used the Project Manager Interpersonal Competency Inventory (PMICI) developed by Davis (2009) to measure the response variable consisting of four interpersonal competencies. The independent variable of EQ was measured using both the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, Caruso, & Sitarenios, 2003) and emotional quotient inventory (EQ-i) (Bar-On, 2004) research instruments.

Using correlative analysis between the variables of interpersonal competencies and EQ, Davis (2011) posited there were mixed and faint relationships between EQ and the four interpersonal competencies as defined by PMICI. Davis (2011) concluded that although relationships were identified, such as project manager scores from the MSCEIT and the interpersonal competency of communication, based on the empirical evidence, the capabilities related to EQ may be more indirect than direct. Further supporting this, Davis (2011) posited that EQ abilities measured by the EQ-i showed more significant relationships to interpersonal competencies than those measured by MSCEIT. Specifically, Davis (2011) concluded that EQ abilities measured by EQ-i such as adaption, stress tolerance, optimism, flexibility, impulse control, and coping are more valuable in the project context than those measured by MSCEIT. Additionally, the project manager interpersonal competencies of conflict management and problem solving were shown to be statistically significant in association to both the MSCEIT and EQ-i (Davis, 2011). This finding continues the

theme that specific project manager competencies do relate to personal abilities; in the case of Davis' (2011) study, those measured by EQ-i.

## Literature Review Summary

The literature reviewed provided support for two relevant constructs: CQ and leadership competencies. The literature drew support from the MI theory of intelligences from which CQ was developed. It provided an explanation of the CQ construct starting with its definition being the capability of an individual to function effectively in situations characterized by cultural diversity (Ang & Van Dyne, 2008). The literature explained the four dimensions of CQ (cognitive, metacognitive, behavioral, and motivation) and how these dimensions have shown relevance towards effective leadership (Any & Van Dyne, 2008; Flaherty, 2008; Janssens & Cappellen, 2008; Mannor, 2008; Ng & Earley, 2006; Shannon & Begley, 2008).

Leadership studies and applied practice were presented as a critical response to the changing landscape facing organizations created by globalization. Considering that cultural diversity and change represent the most immediate effect of globalization on organizations (Earley, Ang, & Tan, 2006; Janssens & Cappellen, 2008; Mannor, 2008; Sherif, 2006), developing the next generation of leadership remains uncertain.

A brief review of leadership studies in the context of project managers revealed a consistent theme in that leadership competencies represented the most significant opportunity for organizations to develop the next generation of project management leadership (Dulewicz & Higgs, 2005; Müller & Turner, 2010a, Müller & Turner, 2010b). For organizations, the significance of leadership competency studies established that competencies can be developed and learned (Dulewicz & Higgs,

2005; McClelland, 1973; Müller & Turner, 2010a; Müller & Turner, 2010b; Parry, 1998). Research also posited that leadership competency has shown promise for improving project performance for project managers (Clarke, 2010; Davis, 2011; Dulewicz & Higgs, 2005; Müller & Turner, 2010a). Leadership competency research is relatively new and further explanation is necessary to support improved practical application in organizations.

The literature review of intelligence dimensions with project manager competencies further illustrated significant relationships between different intelligence constructs and leadership competencies (Clarke, 2010; Davis, 2011; Dulewicz & Higgs, 2005; Geoghegan & Dulewicz, 2008; Müller & Turner, 2010a). However; this research area is very limited and presented a gap regarding CQ and its relationship with project manager personal competencies.

In his book *Frames of Mind*, Gardner (1983) presented the question as to why researchers should continue to pursue the precarious understanding of intelligence. Gardner (1983) stated the following in response:

> Because there is a need for a better classification of human intellectual competences than we have now; because there is much recent evidence emerging from scientific research, cross-cultural observations, and educational study which stands in need of review and organization; and perhaps above all, because it seems within our grasp to come up with a list of intellectual strengths which will prove useful for a wide range of researchers and practitioners and will enable them (and us) to communicate more effectively about this curiously seductive entity called the intellect. (p.60)

Accordingly, CQ theory was determined to be appropriate for this study based on both theoretical and practical implications. CQ offers a parsimonious construct with its focus on four key capabilities: cognition, metacognition, motivation, and behavior. This parsimony provided a simple, defined construct explaining a limited set of phenomenon when compared to other constructs (Gelfand, Imai, & Fehr, 2008). While research supporting CQ theoretical implications do take into account international work experiences and diversity of social context, additional studies contributing to predictability regarding how, when, and why CQ dimensions exist still offer value (Shannon & Begley, 2008). Specifically, Shannon and Begley (2008) posited that additional studies of CQ may assist in determining CQ influence on leadership predictability. In this case, theoretical implications may result in improved understanding and selection of leadership for multinational organizations or for domestic organizations with the advent of increased cultural diversity.

Finally, this literature review summarized that effective project managers are differentiated from other leaders through identification of specific intelligence and competency dimensions (Ang & Van Dyne, 2008; Bass & Bass, 2008; Dulewicz & Higgs, 2005; Mendenhall et al., 2012; Müller & Turner, 2010a). However, no studies have been conducted to explain the relationship CQ has with leadership competency dimensions in the project management context. Despite the acknowledgement that cultural diversity and change represent the most continuous effects of globalization (Earley, Ang, & Tan, 2006; Janssens & Cappellen, 2008; Mannor, 2008; Sherif, 2006), research has failed to explain which leadership competencies are needed to be successful.

Scientific methods have provided empirical knowledge generation for scholars. Organizational leaders have put these theories and research results in practice. Understanding leadership theories remains in process and much work is still left. This study pursued an increased understanding and strategy for global organizations leading project based initiatives in culturally complex environments. It sought to better understand the relationship between CQ and project manager personal competencies which may lead to new opportunities for organizations to improve project manager leadership performance. It supported academic growth and practical application so that CQ research with a focus on project manager leadership lent itself as a specific opportunity for a new contribution towards CQ and leadership competency theory development with practical application to industry. The next chapter, Research Method, provides the detailed approach used by this study.

# CHAPTER 3: RESEARCH METHOD

## Introduction

The literature review in Chapter 2 presented the background along with recent, relevant research on cultural intelligence and leadership competency theory. It also exposed a gap in research by exposing a lack of empirical research and understanding by organizations regarding how the relationship between CQ and key project manager personal competencies may contribute to inadequate leadership development for global organizations. Through review of the literature, a chain of reasoning was formulated to support this proposed research design. Using Crotty's (1998) research design framework, the following four questions were addressed in this research study's design in order to establish a logical chain of reasoning:

1. What epistemology informs the research?
2. What theoretical perspective lies behind the methodology in questions?
3. What methodology, strategy, or plan of action that links methods to outcomes-governs this research study's choice and use of methods?
4. What methods, techniques, and procedures for data collection and data analysis does this research study propose to use?

Creswell (2005) stated that a well-developed research design is predicated on the identification of the problem statement through review of the relevant literature. For this research study, the research problem statement was identified as a lack of empirical research and understanding by organizations on how the relationship of CQ with key project manager competencies may contribute to inadequate leadership development for global organizations. Based on the identified research problem, the

research purpose was formalized to support the intended goal. Accordingly, this research design was developed in an effort to answer the overarching research question: *to what extent can key project manager personal competencies be explained by cultural intelligence*.

Chapter 3 provides the details to this research study's method based on the intended research purpose using Crotty's (1998) research design framework. Research questions and hypotheses supporting the research problem statement were defined in alignment with the research method. The research design, sample, instrumentation, data collection, and data analysis methods are also presented in detail.

## Research Question

Creswell (2005) posited that a research question inquires about the relationships among variables that the investigator seeks to know. In order to better explain the relationship between CQ and key project manager personal competencies, the following research question was developed.

> To what extent are CQ dimensions correlated with project manager personal competencies?

## Hypotheses

A quantitative hypothesis can be defined as the predictions the researcher makes about the expected relationships among variables (Creswell, 2005). The hypothesis structure addresses the two identified variables cultural intelligence and project manager personal competencies and determined if a statistically significant correlative relationship existed. *Hypothesis a* represented the predictor to determine to

what extent CQ dimensions correlate with project manager personal competencies. The following hypothesis structure used *a* to represent the specific CQ dimension (metacognitive, cognitive, motivational, and behavioral) and *b* to represent the specific project manager personal competency (communicating, leading, managing, cognitive ability, effectiveness, professionalism).

*Hypothesis a*

> $Ho^{n}$: The (*a*) CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of (*b*).
>
> $Ha^{n}$: The (a) CQ dimension scores of project managers will have a statistically significant correlation with the project manager personal competency of (*b*).

This hypothesis structure continued [$Ho^{a1}$ - $Ho^{a24}$ and $Ha^{a1}$ - $Ha^{a24}$] for each of the four CQ dimensions' (a) relationship with of each of the six project manager personal competencies (b). Figure 3.1 provides a graphical overview of the theoretical model used to develop the hypothesis statements.

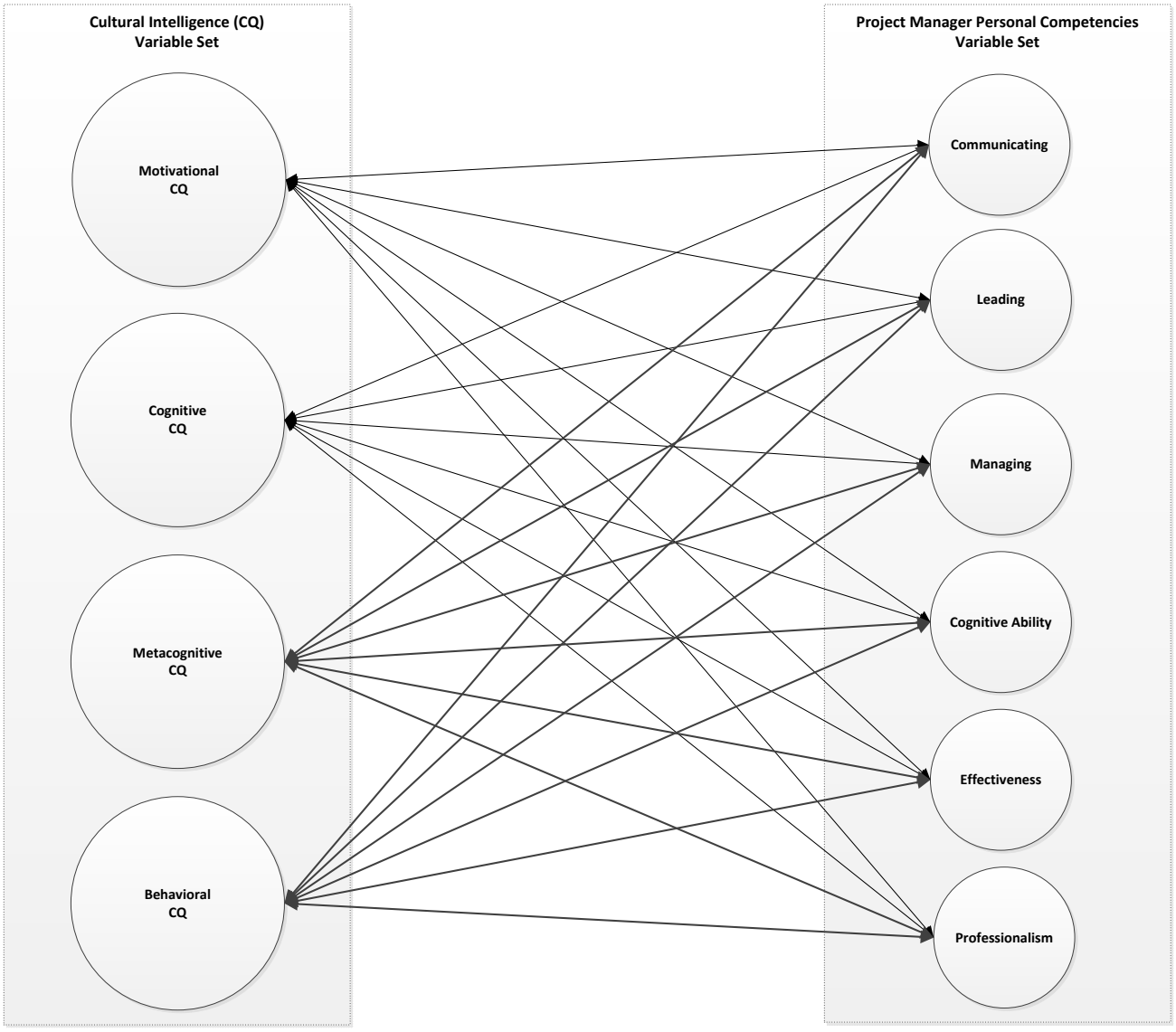


*Figure 3.1.* Theoretical Model for Hypotheses

## Research Design

In order to give explanatory power to the research question, Forge (1987) posited that a prerequisite is measuring the constructs involved. For this research study, two constructs were identified that support the research question. The first construct is cultural intelligence (CQ). Accordingly, the epistemological perspective

is founded on the premise that CQ can be measured objectively through use of the Cultural Intelligence Scale (CQS) instrument. Van Dyne, Ang, and Koh (2008) developed operational definitions for the four distinct dimensions of CQ. A series of studies were developed that looked at each dimension for development of an instrument able to measure the conceptualization of CQ (Ang, Van Dyne, & Tan, 2011). The results of these studies provided an epistemological position that CQ can be known, can explain what knowledge it seeks to predict, and can provide an established criteria from which it can be measured.

The second construct for this study is leadership competencies. Accordingly, the epistemological perspective was founded on the premise that leadership competencies can be measured objectively through use of an instrument based on the Project Manager Competency Development Framework (PMCD). The PMCD was developed based on the McClelland/McBer job competence assessment (JCA) (McClelland, 1973) methodology (PMI Standards Committee, 2007). McClelland's (1973) study posited that competencies can be measured, developed, and learned. The results of these studies provided an epistemological position that project manager personal competencies can be known, can explain what knowledge it seeks to predict, and can provide an established criteria from which it can be measured.

The theoretical perspective that governed this research design study was based on a positivist position. Creswell (2003) reasoned that a positivist position supports observation and measurement of objective reality. Based on intelligence and leadership theories relevant to this research study, a positivist design supported testing and validation so that practitioners can better explain these constructs in the world.

In choosing a method for this research study, a quantitative method provided the researcher with a controlled measurement in the absence of manipulation (Clarke-Carter, 2004). Creswell (2003) posited that inquiries associated to quantitative methods support positivist perspectives. Accordingly, for this study a quantitative research design approach allowed for deductive testing of defined hypotheses which were developed from the epistemological positions on measuring cultural intelligence and leadership competency constructs.

The data collected for quantitative studies is specified in advance of the study as opposed to emergent data in qualitative studies (Creswell, 2003). Accordingly, a survey instrument was used to collect the data representing the two identified variables: cultural intelligence and project manager personal competencies. The next section identifies the population and defines the criteria that were used as an appropriate sample.

## Sample

Project managers affiliated with the Project Management Institute (PMI) were referred to as project manager professionals and constituted an appropriate population for this research study. In order to reach this project management population, four relevant project management communities were identified that fit these requirements: the Project Management Institute (PMI), the Association of Project Management, the American Society for Advancement of Project Management, and the International Project Management Association (IPMA). With PMI being the predominant project management society readily available for this study, it was chosen as the appropriate target population. The proposed group of project manager professionals was defined

by meeting demographic criteria sufficiently indicating their appropriateness for participating in this research study. The demographic criteria are described in the following paragraph.

Participants first identified if they read and spoke English language fluently. This item was to ensure assessment integrity and understanding of the survey questionnaire with regard to each participant. The participant identified if they were a member of PMI and whether they possess a PMI certification. These items ensured a common understanding of project management vocabulary was understood reducing confounding variables. Participants also identified if training in project management had been received either academically or professionally, how many years a subject led or participated in organizational projects, and whether the participant had experience within multicultural workplace environments. Previous studies (Clarke, 2010; Müller & Turner, 2007) posited that prior project management training and experience will have familiarized participants with competencies associated to project managers. Additionally, CQ is posited as a capability that can be developed and increased based on previous experiences in culturally diverse scenarios. This suggested that measuring previous experience in multicultural environments is relevant to this study. In summary, characterizations of these participants were identified through key demographic variables as part of the survey instrument. Common research characterization items such as gender and age were not collected in this research due to no previous similar studies indicating any significance of these demographics (Clarke, 2010; Davis, 2011; Müller & Turner, 2007).

The Project Management Institute represents a global group which supported this study's assessment of CQ and leadership competencies of project managers with experience in multicultural workplace environments. This study was contained within this population providing a narrow focus for research with reduced risk of confounding variables. The population was approached through contact with PMI Chapter representatives and PMI-Registered PMPs LinkedIn website representatives. These representatives were identified through existing professional relationships or the "contact us" web page of the respective PMI groups chosen. Following initial contact with the PMI representative, an in-person or teleconference meeting was scheduled through which the study was explained discussing the research purpose and methodology. The IRB approval, informed consent letter, and survey instrument were presented to the PMI representative. Following acceptance, the survey was then communicated by the researcher and PMI representatives to the members of the respective PMI groups.

Convenience sampling was used as the approach which allowed respondents to voluntarily participate and not be randomly chosen. A convenience sampling strategy was used due to the limited engagement opportunities with the identified population and due to the population being limited to PMI members. The sample being limited to PMI members assisted this convenience sample by controlling the demographic to only those who have knowledge or experience in project management. As of the 2012 PMI Annual Report, PMI reported as having over 397,000 members and 534,000 credential holders in more than 190 countries. The formula to find an appropriate sample size was as follows (Anderson, Sweeney, & Williams, 2005):

$$\eta = ((Z\alpha/2)^2 * \sigma^2)/E^2$$

In this formula, $\eta$ was the required sample size, $Z\alpha/2$ is 1.96 representing a 95% confidence level, $\sigma$ was the population standard deviation, and E was the margin of error in the mean that is acceptable to the researcher. Using a margin of error of 0.378 obtained from a similar previous study assessing project managers (Davis, 2011), this formula yielded the following equation:

$$\eta = (1.96^2 * 1.67^2)/0.378^2$$

For this equation, the sample size required was $\eta = 75$. In order to minimize the margin of error, this research aimed to collect as many completed surveys as possible; but no less than 75, constituting the necessary data collection requirements. Other comparable studies had shown that a sample sizes of 52 (Geoghegan & Dulewicz, 2008), 67 (Clarke, 2010), 75 (Davis, 2011), and 89 (Dvir, Sadeh, & Malach-Pines, 2006) were sufficient in producing meaningful, generalizable results in regards to the project manager population.

## Instrumentation

In order to measure the relationship between the variables CQ and project manager personal competencies, the Cultural Intelligence Scale (CSQ) and PMCD Framework were posited as valid and reliable instruments (Earley & Ang, 2003; McClelland, 1973; PMI Standards Committee, 2007; Spencer & Spencer, 1993; Van Dyne, Ang, & Koh, 2008). A survey questionnaire format was selected as the most appropriate method of obtaining data in order for the researcher to contact a reasonably sized sample size within a limited timeframe. A survey questionnaire provided a structured and close-ended mechanism to collect quantitative research data

based on the specified data needs (Creswell, 2005). In order to determine the appropriate instrument, both variable sets were reviewed independently in the next sections providing validity and reliability regarding their selection.

**Cultural Intelligence Scale**

To measure CQ for this research study, literature was reviewed on intercultural competencies, cultural awareness, cultural decision making, multinational teams, leadership antecedents, and intelligence development opportunities (Ang, Van Dyne, Koh, Ng, Templer, Tay, & Chandrasekar, 2007; Chin & Gaynier, 2006; Flaherty, 2008; Hofstede, 1980; House, R.J., Hanges, P.J., Ruiz-quintanilla, S.A., Dorfman, P.W., Javidan, M., Dickson, M., Gupta, V., et al, 1999; Janssens & Cappellen, 2008; Javidan, Dorfman, Sully de Luque, & House, 2006; Mannor, 2008; Müller, Spang, & Ozcan, 2009). The research studies reviewed used a combination of qualitative, quantitative, and mixed methods research instruments to investigate cultural differences in leadership populations.

This research study used the Cultural Intelligence Scale (CQS) developed by Earley and Ang (2003) as the instrument to measure the variable CQ. The CQS is a valid and reliable survey instrument designed to measure an individual's ability to function effectively in culturally diverse situations (Ang et al., 2007; Earley & Ang, 2003; Van Dyne, Ang, & Koh, 2008). The CQS has been validated through multiple empirical research studies (Earley & Ang, 2003; Flaherty, 2008; Janssens & Cappellen, 2008; Mannor, 2008).

Van Dyne, Ang, and Koh (2008) developed a 53-item cultural intelligence scale (CQS) as the initial assessment instrument of CQ. Initial validation of the CQS

instrument was carried out by Van Dyne, Ang, and Koh (2008) through a study of 576 business school undergraduates in Singapore. The initial instrument consisted of 40 items which were reduced to 20 based on high psychometric properties following data analysis. As a result of the study, internal reliability measured using Cronbach's alpha exceeded 0.70 which is posited as strongly acceptable. Internal reliability between each of the four CQ dimensions also demonstrated strength in intercorrelations with cognitive CQ = 0.85, metacognitive CQ = 0.71, motivational CQ = 0.75, and behavioral CQ = 0.83.

The CQS instrument has been proven valid across samples through studying a non-overlapping sample of 447 undergraduate students in Singapore using the 20-item scale (Van Dyne, Ang, Koh, 2008). This study also resulted in high psychometric properties further supporting the CQS's ability to measure the four dimensions of CQ and confirming generalizability across samples (Van Dyne, Ang, Koh, 2008). In this study, internal reliability between each of the four CQ dimensions also demonstrated strength in intercorrelations with cognitive CQ = 0.84, metacognitive CQ = 0.77, motivational CQ = 0.77, and behavioral CQ = 0.84.

Finally, an additional study using 204 of Singapore undergraduates completing a CQ assessment twice; four months apart, provided validation of generalizability across time (Van Dyne, Ang, Koh, 2008). The results of the same sample demonstrated acceptable fit using non-normed fit index (NNFI) with a value of 0.94 and comparative fit index (CFI) with a value of 0.95.

CQ is a relatively new construct which has been argued that it needs further rigorous empirical inquiry (Berry & Ward, 2006). However; based on the CQS

design, testing, and validation in previous studies (Earley & Ang, 2003; Flaherty, 2008; Janssens & Cappellen, 2008; Mannor, 2008), it was the position of this research study that the CQS instrument was appropriate for measuring cultural intelligence due to previous psychometric scales exhibiting stable reliability and validity scores. The CQ dimensions and associated CQS items are presented in Table 3.1

*Table 3.1*

*CQ Dimensions and CQS Items*

| CQ Dimensions | CQS Items |
|---|---|
| Cognitive | COG1-COG6 |
| Metacognitive | MC1-MC4 |
| Motivational | MOT1-MOT5 |
| Behavioral | BEH1-BEH5 |

Note. Each CQ dimension and associated CQS items are defined by the CQS instrument.

**Project Manager Competency Development Framework**

Project manager personal competency was the second variable set for this study. Personal competencies are one of three key dimensions of competencies identified by PMI included in the Project Manager Competency Development (PMCD) Framework. The PMCD framework provides a generally accepted definition and framework for assessing key project manager competencies that are most likely to affect project success (PMI Standards Committee, 2007).

The PMCD was developed by PMI in an effort to define, assess, and further develop project manager competencies (PMI Standards Committee, 2007). The PMCD was developed based on the McClelland/McBer job competence assessment (JCA) methodology (McClelland, 1973). In alignment with Thorndike and Hagen's 1959 study (as cited in McClelland, 1973), McClelland posited that traditional aptitude

tests are not correlative with occupational success. McClelland (1973) argued that the best testing is criterion sampling. In short, in order to identify successful project manager competencies, any study should test project managers by questioning the very competencies that successful project managers must use in practice.

The JCA has been used in over 286 studies with results positing it as valid and reliable (Spencer & Spencer, 1993). Internal reliability refers to the consistency of responses (Creswell, 2003). Coefficients in similar study (Clarke, 2010) assessing project managers using the PMCD Framework provided acceptable scale validation using Cronbach's alpha as a measurement of internal reliability. In Clarke's (2010) study, Cronbach alpha measures of project manager competencies were: communication (alpha = 0.70), teamwork (alpha = 0.78), attentiveness (alpha = 0.68), and managing conflict (alpha = 0.86).

The PMCD Framework includes 25 items designed to measure six distinct leadership project manager personal competencies. Each of the six project manager personal competencies is represented by 3–5 performance criterions to be used for assessment. In order to assess the variable of project manager personal competency, this research study used the performance criteria established by the PMI PMCD Framework as the basis of assessment. Table 3.2 identifies the project manager personal competency variable set with each criterion per project manager personal competency unit.

*Table 3.2*

*Project Manager Personal Competencies Performance Criteria*

| PMCD Element | Performance Criteria | Dimension |
|---|---|---|
| 6.1 | Actively listens, understand and responds to stakeholders | Communicating |
| 6.2 | Maintains lines of communication | Communicating |
| 6.3 | Ensures quality of information | Communicating |
| 6.4 | Tailors communication to audience | Communicating |
| 7.1 | Creates a team environment that promotes high performance | Leading |
| 7.2 | Builds and maintains effective relationships | Leading |
| 7.3 | Motivates and mentors project team members | Leading |
| 7.4 | Takes accountability for delivering the project | Leading |
| 7.5 | Uses influencing skills when required | Leading |
| 8.1 | Builds and maintains the project team | Managing |
| 8.2 | Plans and manages for project success in organized manner | Managing |
| 8.3 | Resolves conflict involving project team or stakeholders | Managing |
| 9.1 | Takes a holistic view of project | Cognitive Ability |
| 9.2 | Effectively resolves issues and solves problems | Cognitive Ability |
| 9.3 | Uses appropriate project management tools and techniques | Cognitive Ability |

| | | |
|---|---|---|
| 9.4 | Seeks opportunities to improve project outcome | Cognitive Ability |
| 10.1 | Resolves project problems | Effectiveness |
| 10.2 | Maintains project stakeholder involvement, motivation, and support | Effectiveness |
| 10.3 | Changes at the required pace to meet project needs | Effectiveness |
| 10.4 | Uses assertiveness when necessary | Effectiveness |
| 11.1 | Demonstrates commitment to the project | Professionalism |
| 11.2 | Operates with integrity | Professionalism |
| 11.3 | Handles personal and team adversity in a suitable manner | Professionalism |
| 11.4 | Manages a diverse workforce | Professionalism |
| 11.5 | Resolves individual and organizational issues with objectivity | Professionalism |

Note. Project manager personal competency performance criteria are based on PMCD Framework.

## Data Collection

The data collection method was a combined resultant of presenting the questionnaire in person and online through an Internet based website to the participants. Two methods of survey enabled multiple options for PMI members to access and participate in the research survey resulting in an increased response rate. In total, 6 PMI Chapters and 1 online PMI community were accessed for the data collection. The 6 PMI Chapters included Washington DC, Chicago, Cincinnati, Indianapolis, and Ft. Wayne. The online PMI community included the PMI-

Registered PMPs LinkedIn group. Access to data collection was approved via email from each of the 6 PMI Chapter's presidents. For the Washington DC February Chapter event, access to voluntary participants was granted through networking with the chapter members during the event. For the other 5 PMI Chapters, the Chapter Presidents allowed for a brief presentation to be given explaining the research and requesting voluntary participation. Access to the PMI Registered PMPs LinkedIn group was granted via a request submitted to the group's moderator. The use of both an online and physical paper survey instrument facilitated the data collection process.

The Cultural Intelligence Scale (CQS) and Project Manager Competency Development (PMCD) Framework were combined with demographic items to form the 53 question survey. An informed consent form accompanied each physical survey and online survey indicating that all participants must be 18 years or older, the study was strictly voluntary and all participants would remain anonymous. Physical copies were laid on the chairs at each event's tables. Participants returned their completed survey to a predefined location. The surveys were collected by the researcher at the end of the evening and placed in a sealed binder. Online surveys were hosted using PsychData.com as the platform. Each completed survey was automatically stored in PsychData's online database and accessible only via the researcher protected by a password. At the closure date of data collection, each online survey was turned off to prevent any additional participants from taking the survey. The online survey data was downloaded to a secured storage location on the researcher's computer.

All completed surveys were reviewed for completeness and either included in the result set or excluded from the data results based on the following criteria:

1. All responses given were the same value for all survey items on the CQS and PMCD Framework. These were considered invalid responses and excluded from the data analysis to prevent skewing of the sample (Cole, 2008).
2. Any non-response for a CQS or PMCD Framework survey item will be interpreted as a participant who believed the survey item did not apply to him or her. In this case, the value will be left blank and interpreted by the statistical software tool as null for such responses. This value did not adversely affect the data results in any significant way.
3. Five or more total non-responses per individual sample for any CQS or PMCD Framework survey items will be interpreted as an incomplete survey sample and were excluded from the data analysis.

The exclusion criteria of the study reduced the "n" value from 239 to a final total of 216. Table 3.1 provides a breakdown of completed surveys per PMI Chapter or group comprising the sample size.

*Table 3.3*

*Demographic Results – Group Sample Population Data*

| Location | Population | Sample "N" | Response Rate (%) |
|---|---|---|---|
| Indianapolis, IN | 65 | 42 | 64.6 |
| Ft. Wayne, IN | 55 | 29 | 52.7 |
| Cincinnati, OH | 30 | 10 | 33.3 |
| Chicago, IL | 265 | 87 | 32.8 |
| Huntsville, AL | 20 | 4 | 20.0 |

| | | | |
|---|---|---|---|
| Washington, DC | 265 | 5 | 1.89 |
| LinkedIn | 76,395 | 39 | .051 |

Note. Population of PMI Chapters is based on approximate attendance count of members at February 2014 Chapter events.

The next section, Data Analysis, explains the statistical analysis processes used to generate the research results.

## Data Analysis

Once the data collection was completed, statistical data analysis was performed using Minitab 17 statistical software. The following section describes the data analysis techniques performed on the demographic data and each variable data collected.

For the demographic data collected, descriptive statistical analysis was performed. Descriptive statistics provided summarized information regarding the sample in terms of fluency in the English language, project manager experience, project manager training and certification, and experience with multicultural workplace environments. Finally, descriptive statistics supported determining whether any statistically significant differences existed between the demographic data sampled with the cultural intelligence and project manager personal competency variables.

For the cultural intelligence and project manager personal competency variables data collected, statistical correlation analysis was performed. This statistical analysis method was used to draw conclusions based on the previously identified research question: *To what extent are CQ dimensions correlated with project manager personal competencies?*

Researchers use correlation to explain the relationship between two or more variables (Clarke-Carter, 2004). For this research study, correlation analysis was used as the primary statistical analysis of the research question and supporting hypotheses that measured the relationship of CQ with project manager personal competencies. Correlation measured the strength of the overall relationships between the dimensions of both the cultural intelligence and project manager personal competency variables. In this research study, correlation was the method used to determine if a relationship existed between the four dimensions of cultural intelligence and the six dimensions of project manager personal competencies.

Inferential statistical analysis allows for more sophisticated exploration of the interrelationships among a set of variables (Clarke-Carter, 2004). For this research study, a two sample t test was used as the technique to investigate differences in mean scores of the sample based. The purpose of two sample t test analysis determined if having experience within multicultural workplace environments resulted in a difference of mean CQ and project manager personal competency scores greater than the hypothesized difference.

## Summary

This research study was designed as a quantitative, explanatory research study using deductive assessments of CQ and project manager personal competencies. The PMI project management community served as the appropriate population relevant to this research study. The CQS instrument and the PMCD framework comprised the appropriate instrumentation that is valid and reliable in executing this research study. The survey instrument was administered using a standard informed consent form both

in-person and through a website in order to reach the sample. Data collection was performed by the researcher using data collection validation rules designed to ensure appropriate data integrity. Data analysis was conducted using Minitab, a generally accepted statistical analysis software application. Data analysis techniques consisted of descriptive statistics, correlation, and two sample t test statistical analyses used to assess the results of the hypotheses.

# CHAPTER 4: RESULTS

## Introduction

Twenty four hypotheses were tested to determine correlative relationships between the independent variable CQ and the dependent variable project manager personal competencies. This chapter describes the descriptive statistics of the sample and reports the results of the correlational statistical analysis performed on the data collected.

## Descriptive Statistics

This section explains the descriptive statistical analysis performed and describes the sample demographics used in the research study.

### Sample Demographics

Project managers affiliated with the Project Management Institute (PMI) were asked to voluntarily participate in the study. The project managers were engaged through direct contact with 6 US based PMI Chapters and the PMI Credential PMPs LinkedIn group. Overall, 239 participants completed the survey. Of the 239 completed surveys, 23 participants indicated they were not members of PMI and were therefore excluded from the results providing a sample size (n) equal to 216.

All 216 participants indicated they read and spoke English fluently. Of the 216 respondents, 211 participants indicated they had worked professionally as a leader of project teams. Additionally, 207 project managers indicated they had received academic or professional project management training. PMI certifications were held by 192 project managers of the total 216 survey participants. Finally, over 75% of the

sample reported having worked professionally in project teams for more than one year. Table 4.1 provides a summary of the participants' project management background.

*Table 4.1*

*Demographic Results – Sample Project Management Background*

| Item | Frequency | Percent (%) |
|---|---|---|
| English language fluency | 216 | 100 |
| Professional leadership experience | 211 | 97.7 |
| Academic or professional training | 207 | 95.8 |
| PMI certification holders | 192 | 88.9 |
| 10 or more years' experience in project teams | 101 | 46.8 |
| 6-10 years' experience in project teams | 38 | 17.6 |
| 1-5 years' experience in project teams | 23 | 10.6 |
| Less than 1 year experience in project teams | 1 | .463 |
| No experience in project teams | 53 | 24.5 |

Note. Percent based on sample size of n = 216.

The sample proved to be a culturally experienced population with 205 of the 216 participants reported having experience working within a multicultural workplace environment. Over 75% of the sample reported having worked in a multicultural workplace environment for more than one year. Table 4.2 provides a summary of the participants' multicultural experience.

*Table 4.2*

*Demographic Results – Sample Multicultural Workplace Experience*

| Item | Frequency | Percent (%) |
|---|---|---|
| Multicultural workplace experience | 205 | 94.9 |
| 10 or more years' experience in multicultural environment | 86 | 39.8 |
| 6-10 years' experience in multicultural environment | 51 | 23.6 |
| 1-5 years' experience in multicultural environment | 27 | 12.5 |
| Less than 1 year experience in multicultural environment | 5 | 2.31 |
| No experience in multicultural environment | 47 | 21.6 |

Note. Percent based on sample size of n = 216.

## Testing the Research Hypotheses

Correlation analysis was used to test the hypotheses and determine if a relationship existed between CQ and project manager personal competencies. Correlation provides a measure of relationship between two variables (Walk & Rupp, 2010). Both CQ and project manager personal competency variables are comprised of sub-dimensions. Correlation analysis facilitated the study of interrelationships among the individual sets of multiple independent and dependent variables.

Minitab 17 was used as the software to perform statistical analysis of the data collected. For categorical data, descriptive statistical analysis was performed. For correlation, the averages of each CQ and project manager personal competencies dimension were calculated and then analyzed using correlation analysis.

The following subsections analyze each of the 24 hypothesis statements. The hypothesis structure is identified below which used *a* to represent the specific CQ dimension (metacognitive, cognitive, motivational, and behavioral) and *b* to represent the specific project manager personal competency (communicating, leading, managing, cognitive ability, effectiveness, professionalism).

$Ho^n$: The (*a*) CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of (*b*).

$Ha^n$: The (a) CQ dimension scores of project managers will have a statistically significant correlation with the project manager personal competency of (*b*).

**Hypotheses H1-H6**

The H1 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of communicating. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.294 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of communicating.

The H2 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of leading. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.313 confirmed a positive, moderate relationship. Therefore, the null hypothesis is rejected

in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of leading.

The H3 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of managing. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.170 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of managing.

The H4 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of cognitive ability. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.284 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of cognitive ability.

The H5 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of effectiveness. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient

of 0.2888 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of effectiveness.

The H6 null hypothesis was: The motivational CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of professionalism. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.348 confirmed a positive, moderate relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the motivational CQ dimension scores of project managers are statistically related with the project manager personal competency of professionalism.

**Hypotheses H7-H12**

The H7 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of communicating. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.112 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the cognitive CQ dimension scores of project managers are not statistically related with the project manager personal competency of leading.

The H8 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager

personal competency of leading. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.215 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the cognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of leading.

The H9 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of managing. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.113 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the cognitive CQ dimension scores of project managers are not statistically related with the project manager personal competency of managing.

The H10 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of cognitive ability. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.172 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the cognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of cognitive ability.

The H11 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of effectiveness. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.023 confirmed a positive, yet very weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the cognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of effectiveness.

The H12 null hypothesis was: The cognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of professionalism. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.210 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the cognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of professionalism.

**Hypotheses H13-H18**

The H13 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of communicating. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of .242 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the metacognitive

CQ dimension scores of project managers are statistically related with the project manager personal competency of communicating.

The H14 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of leading. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of .257 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the metacognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of leading.

The H15 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of managing. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.131 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the metacognitive CQ dimension scores of project managers are not statistically related with the project manager personal competency of managing.

The H16 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of cognitive ability. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.239 confirmed a positive, yet weak relationship. Therefore, the null

hypothesis is rejected in favor of the Ha hypothesis indicating that the metacognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of cognitive ability.

The H17 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of effectiveness. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.142 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the metacognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of effectiveness.

The H18 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of professionalism. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.292 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the metacognitive CQ dimension scores of project managers are statistically related with the project manager personal competency of professionalism.

**Hypotheses H19-H24**

The H19 null hypothesis was: The behavioral CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of communicating. Table 4.4 provides confirmation that a

relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.156 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the behavioral CQ dimension scores of project managers are statistically related with the project manager personal competency of communicating.

The H20 null hypothesis was: The behavioral CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of leading. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.127 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the behavioral CQ dimension scores of project managers are not statistically related with the project manager personal competency of leading.

The H21 null hypothesis was: The behavioral CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of managing. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.092 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the behavioral CQ dimension scores of project managers are not statistically related with the project manager personal competency of managing.

The H22 null hypothesis was: The behavioral CQ dimension scores of project managers will not have a statistically significant correlation with the project manager

personal competency of cognitive ability. Table 4.4 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.220 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the behavioral CQ dimension scores of project managers are statistically related with the project manager personal competency of cognitive ability.

The H23 null hypothesis was: The behavioral CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of effectiveness. Table 4.4 provides confirmation that a relationship does not exist due to a p value greater than 0.05. The Pearson's correlation coefficient was 0.104 indicating a positive direction with very weak strength. Therefore, the null hypothesis is accepted indicating that the behavioral CQ dimension scores of project managers are not statistically related with the project manager personal competency of effectiveness.

The H24 null hypothesis was: The metacognitive CQ dimension scores of project managers will not have a statistically significant correlation with the project manager personal competency of professionalism. Table 4.3 provides confirmation that a relationship exists with a p value less than 0.05. The Pearson's correlation coefficient of 0.221 confirmed a positive, yet weak relationship. Therefore, the null hypothesis is rejected in favor of the Ha hypothesis indicating that the behavioral CQ dimension scores of project managers are statistically related with the project manager personal competency of professionalism.

*Table 4.3*

*Correlation Analysis –CQ Dimensions with Competencies*

| | | CQ_MOT | CQ_COG | CQ_MC | CQ_BEH |
|---|---|---|---|---|---|
| PM_COM | r | 0.294 | 0.112 | 0.242 | 0.156 |
| | p | *0.000 | 0.101 | *0.000 | *0.022 |
| PM_LEAD | r | 0.313 | 0.214 | 0.257 | 0.127 |
| | p | *0.000 | *0.001 | *0.000 | 0.062 |
| PM_MAN | r | 0.170 | 0.113 | 0.131 | 0.092 |
| | p | *0.012 | 0.099 | 0.055 | 0.180 |
| PM_COG | r | 0.284 | 0.172 | 0.239 | 0.220 |
| | p | *0.000 | *0.011 | *0.000 | *0.001 |
| PM_EFF | r | 0.288 | 0.155 | 0.142 | 0.104 |
| | p | *0.000 | *0.023 | *0.037 | 0.128 |
| PM_PROF | r | 0.348 | 0.210 | 0.292 | 0.221 |
| | p | *0.000 | *0.002 | *0.000 | *0.001 |

Note. Significant correlations indicated where *$p < 0.05$. r = Pearson's correlation coefficient. p = probability null value true if held at 95% confidence.

**Hypotheses Summary**

The purpose of this study was to assess both cultural intelligence and leadership competencies of organizational project managers. Using the model proposed in Chapter 3 (Figure 3.1), statistically significant relationships were found between CQ and project manager personal competencies. The tested model is presented in Figure 4.1.

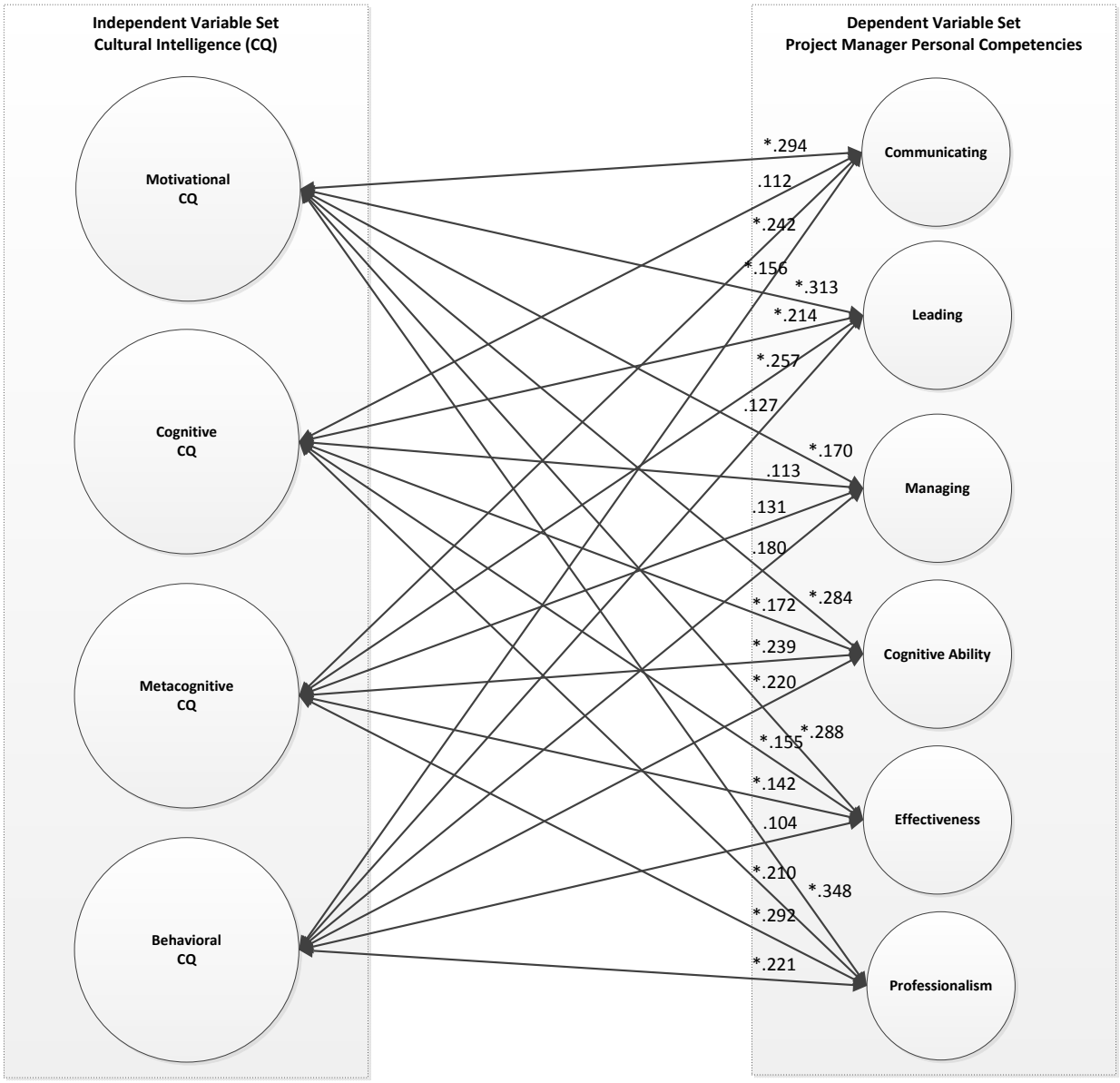


*Figure 4.1.* Tested Model for Hypotheses.

Figure 4.1 includes the Pearson's correlation coefficient with asterisks indicating which relationships were statistically significant based on a p value < 0.05.

## Additional Analyses

Inferential statistical analysis was used to investigate differences between the sample characteristics that affected CQ and project manager personal competencies. A two sample t test was used to examine the difference in mean scores of the sample. The purpose of two sample t test analysis was to determine if having experience within multicultural workplace environments resulted in a difference of mean CQ and project manager personal competency scores greater than the hypothesized difference.

In order to perform a two sample t test on the data collected, a grand average of CQ and project manager competencies scores were calculated and compared with the demographic item related to participant's experience within multicultural workplace environments. The grand average represented a simple weighted average of the CQ and project manager personal competencies results. This was deemed appropriate due to CQS being different by only one item per dimension and the PMCD Framework being different by no more than two items per dimension. In order to validate the use of a weighted average for conducting a two sample t test, principal component analysis was performed using Minitab 17. Principle component analysis assisted by explaining the maximum amount of variance with the fewest number of principal components. The principal component analysis of CQ indicated it was representative of the total population since the principal component analysis one (PC1) all had the same sign and were not close to zero. Principal component analysis one for project manager personal competencies (PC1) also indicated it was representative of the total population due to the results having the same sign and not being close to zero. The

table A.1 and A.2 respectively provide the results of the principal component analysis performed on CQ and project manager personal competencies.

Once principal component analysis validated the appropriateness for using a grand CQ and project manager personal competency average, the two sample t tests were performed to compare with the demographic item related to multicultural experience in a workplace environment. The results indicated project managers with experience in multicultural workplace environments ($M = 4.95$, $S = .867$, $N = 205$) scored higher on cultural intelligence assessment scores than project managers who did not have multicultural workplace experience ($M = 3.88$, $S = 1.20$, $N = 11$), $p < 0.01$. Table 4.4 provides the results of the two-sample t-test for CQ by multicultural experience.

*Table 4.4*

*Results of t-test for CQ Scores by Multicultural Experience*

| | Multicultural Experience | | | | | | 95% CI for Lower Bound Difference | t | df |
|---|---|---|---|---|---|---|---|---|---|
| | Yes | | | No | | | | | |
| | M | SD | n | M | SD | n | | | |
| CQ Scores | 4.955 | 0.867 | 205 | 3.88 | 1.20 | 11 | 0.410 | 2.93 | 10 |

Note. $p < 0.01$.

Similarly, results indicated project managers with experience in multicultural workplace environments ($M = 6.277$, $S = .443$, $N = 205$) scored higher on project manager personal competency assessment scores than project managers who did not have multicultural workplace experience ($M = 5.774$, $S = .531$, $N = 11$), $p < 0.01$.

Table 4.5 provides the results of the two-sample t-test for project manager personal competency scores by multicultural experience.

*Table 4.5*

*Results of t-test for PM Competency Scores by Multicultural Experience*

| | Multicultural Experience | | | | | | 95% CI for Lower Bound Difference | t | df |
|---|---|---|---|---|---|---|---|---|---|
| | Yes | | | No | | | | | |
| | M | SD | n | M | SD | n | | | |
| PM Scores | 6.277 | 0.433 | 205 | 5.744 | 0.531 | 11 | 0.207 | 3.08 | 10 |

Note. $p < 0.01$.

Finally, for further explanation purposes, canonical correlation was performed in order to analyze the interrelationships between the CQ and project manager personal competency variables. However; the results did not indicate any substantial findings. Therefore, the canonical correlation results were not included in the study's findings.

## Summary

The research study examined the relationship between CQ dimensions and project manager personal competencies. Chapter 4 provided the results of the statistical analyses performed on the data collected for this research study. The quantitative, correlational study had a sample size of 216 collected from 6 different US based Project Management Institute (PMI) Chapters and one online PMI-Registered PMPs LinkedIn group. Descriptive statistics of the demographics indicated the sampled organizational project managers were appropriately qualified by being

members of the PMI and having experience in both organizational project teams and multicultural workplace environments.

The research question and supporting 24 hypotheses that guided this study were statistically analyzed using correlation analysis. Each of the 4 CQ dimensions—motivational, cognitive, metacognitive, and behavioral were statistically related to at least one of the 6 project manager personal competency dimensions—communicating, leading, managing, cognitive ability, effectiveness, and professionalism. In summary, with the exception of H7, H9, H15, H20, H21, and H23, the remaining 18 null-hypotheses were rejected indicating a statistically significant correlation between CQ and project manager personal competencies. The next chapter, Discussion, Conclusions, and Recommendations provides a summary of the study, interpretation of the findings, and implications for future research and global research.

# CHAPTER 5: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

## Introduction

The purpose of this study was to examine the relationship between CQ and leadership competencies of organizational project managers supporting organizational project manager effectiveness. The research problem addressed whether CQ scores were related to key project manager personal competencies. This chapter presents the summary of the study, interpretation of the findings, explanation of the original contribution to scholarship, and recommendations for subsequent research and leadership implementation.

## Summary of the Study

This research study was designed as a quantitative, correlational research study using deductive assessments of cultural intelligence (CQ) and project manager personal competencies. The PMI project management community served as the appropriate population relevant to this research study based on the population's knowledge and experience with leadership in the project management context. CQ and its dimensions—cognitive, metacognitive, motivational, and behavioral were measured using the Cultural Intelligence Scale (CQS). Project manager personal competencies and its dimensions— communicating, leading, managing, cognitive ability, effectiveness, and professionalism were measured using the Project Manager Competency Development (PMCD) Framework. The CQS instrument and the PMCD Framework comprised the appropriate instrumentation based on previous studies indicating their appropriateness for measuring cultural intelligence and project

manager personal competencies. Both the CQS and PMCD Framework proved to be valid and reliable instruments as it was demonstrated in the Results chapter.

## Interpretation of the Findings

Twenty-four hypotheses were tested to determine if correlation between the CQ dimensions existed with the project manager personal competencies dimensions.

### Motivational CQ and Project Manager Personal Competencies (H1- H6)

Motivational CQ was defined as an individual's level of capability to direct and commit one's energy to problem solving in a particularly culturally diverse environment (Ang & Van Dyne, 2008). This dimension of CQ measured the individual's interest and initiative to engage and interact in cross-cultural settings.

Project manager personal competencies were defined as those behaviors, attitudes and core personality characteristics that contribute to a person's ability to manage projects successfully (PMI Standards Committee, 2007). Project manager personal competencies support leadership skills enabling effective interaction with others (PMI Standards Committee, 2007). PMI (2007) structured personal competencies into six dimensions: communicating, leading, managing, cognitive ability, effectiveness, and professionalism.

**Motivational CQ and communicating competency (H1).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of communicating. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that motivational CQ

is related and therefore relevant to effective project managers due to its positive association with the competency of communicating.

**Motivational CQ and leading competency (H2).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of leading. The result indicated a moderate strength in the relationship. The interpretation of this finding is that motivational CQ is related and therefore relevant to effective project managers due to its positive association with the competency of leading.

**Motivational CQ and managing competency (H3).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of managing. However; the result indicated a weak strength in the relationship. The correlation between motivational CQ and project managers' managing competency was the weakest of this subgroup. The interpretation of this finding is that motivational CQ is related and therefore relevant to effective project managers due to its positive association with the competency of managing.

**Motivational CQ and cognitive ability competency (H4).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of cognitive ability. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that motivational CQ

is related and therefore relevant to effective project managers due to its positive association with the competency of cognitive ability.

**Motivational CQ and effectiveness competency (H5).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of effectiveness. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that motivational CQ is related and therefore relevant to effective project managers due to its positive association with the competency of effectiveness.

**Motivational CQ and professionalism competency (H6).** The data analysis provided a statistically significant result for a positive relationship between the motivational CQ dimension scores of project managers with the project manager personal competency of professionalism. The result indicated a moderate strength in the relationship. The correlation between motivational CQ and project managers' professional competency was the strongest of this subgroup. The interpretation of this finding is that motivational CQ is related and therefore relevant to effective project managers due to its positive association with the competency of professionalism.

**Cognitive CQ and Project Manager Personal Competencies (H7- H12)**

Cognitive CQ was defined as an individual's level of mental capability with regard to knowledge (Ang & Van Dyne, 2008). This dimension of CQ measured an individual's cognition in terms of social and cultural recognition as an interpersonal skill or competency (Earley & Ang, 2003).

**Cognitive CQ and communicating competency (H7).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the cognitive CQ dimension scores of project managers with the project manager personal competency of communicating. Additionally; the result indicated a weak strength in the relationship. The correlation between cognitive CQ and project managers' communicating competency was the weakest of this subgroup. The interpretation of this finding is that as a project manager's cognitive CQ increased, there was no relationship with the increase or decrease in their competency of communicating.

**Cognitive CQ and leading competency (H8).** The data analysis provided a statistically significant result for a positive relationship between the cognitive CQ dimension scores of project managers with the project manager personal competency of leading. However; the result indicated a weak strength in the relationship. The correlation between cognitive CQ and project managers' leading competency was the strongest of this subgroup. The interpretation of this finding is that cognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of leading.

**Cognitive CQ and managing competency (H9).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the cognitive CQ dimension scores of project managers with the project manager personal competency of managing. Additionally; the result indicated a weak strength in the relationship. The interpretation of this finding is that as a project

manager's cognitive CQ increased, there was no relationship with the increase or decrease in their competency of managing.

**Cognitive CQ and cognitive ability competency (H10).** The data analysis provided a statistically significant result for a positive relationship between the cognitive CQ dimension scores of project managers with the project manager personal competency of cognitive ability. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that cognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of cognitive ability.

**Cognitive CQ and effectiveness competency (H11).** The data analysis provided a statistically significant result for a positive relationship between the cognitive CQ dimension scores of project managers with the project manager personal competency of effectiveness. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that cognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of effectiveness.

**Cognitive CQ and professionalism competency (H12).** The data analysis provided a statistically significant result for a positive relationship between the cognitive CQ dimension scores of project managers with the project manager personal competency of professionalism. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that cognitive CQ is related and relevant to effective project managers due to its positive association with the competency of professionalism.

**Metacognitive CQ and Project Manager Personal Competencies (H13- H18)**

Metacognitive CQ was defined as an individual's level of capability to control one's cognitive learning processes (Ang & Van Dyne, 2008). This dimension of CQ measured the level of conscious cultural awareness one has during cross-cultural interactions (Ang & Van Dyne, 2008).

**Metacognitive CQ and communicating competency (H13).** The data analysis provided a statistically significant result for a positive relationship between the metacognitive CQ dimension scores of project managers with the project manager personal competency of communicating. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that metacognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of communicating.

**Metacognitive CQ and leading competency (H14).** The data analysis provided a statistically significant result for a positive relationship between the metacognitive CQ dimension scores of project managers with the project manager personal competency of leading. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that metacognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of leading.

**Metacognitive CQ and managing competency (H15).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the metacognitive CQ dimension scores of project managers with the project manager personal competency of managing. Additionally; the result

indicated a weak strength in the relationship. The correlation between metacognitive CQ and project managers' managing competency was the weakest of this subgroup. The interpretation of this finding is that as a project manager's metacognitive CQ increased, there was no relationship with the increase or decrease in their competency of managing.

**Metacognitive CQ and cognitive ability competency (H16).** The data analysis provided a statistically significant result for a positive relationship between the metacognitive CQ dimension scores of project managers with the project manager personal competency of cognitive ability. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that metacognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of cognitive ability.

**Metacognitive CQ and effectiveness competency (H17).** The data analysis provided a statistically significant result for a positive relationship between the metacognitive CQ dimension scores of project managers with the project manager personal competency of effectiveness. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that metacognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of effectiveness.

**Metacognitive CQ and professionalism competency (H18).** The data analysis provided a statistically significant result for a positive relationship between the metacognitive CQ dimension scores of project managers with the project manager personal competency of professionalism. However; the result indicated a weak

strength in the relationship. The correlation between metacognitive CQ and project managers' professionalism competency was the strongest of this subgroup. The interpretation of this finding is that metacognitive CQ is related and therefore relevant to effective project managers due to its positive association with the competency of professionalism.

**Behavioral CQ and Project Manager Personal Competencies (H19- H24)**

Behavioral CQ was defined as an individual's level of capability to display actual behavior or outwardly actions beyond one's cognitive processes (Ang & Van Dyne, 2008). Behavioral CQ measured how an individual acts in culturally diverse settings.

**Behavioral CQ and communicating competency (H19).** The data analysis provided a statistically significant result for a positive relationship between the behavioral CQ dimension scores of project managers with the project manager personal competency of communicating. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that behavioral CQ is related and therefore relevant to effective project managers due to its positive association with the competency of communicating.

**Behavioral CQ and leading competency (H20).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the behavioral CQ dimension scores of project managers with the project manager personal competency of leading. Additionally; the result indicated a weak strength in the relationship. The interpretation of this finding is that as a project

manager's behavioral CQ increased, there was no relationship with the increase or decrease in their competency of leading.

**Behavioral CQ and managing competency (H21).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the behavioral CQ dimension scores of project managers with the project manager personal competency of managing. Additionally; the result indicated a weak strength in the relationship. The correlation between behavioral CQ and project managers' managing competency was the weakest of this subgroup. The interpretation of this finding is that as a project manager's behavioral CQ increased, there was no relationship with the increase or decrease in their competency of managing.

**Behavioral CQ and cognitive ability competency (H22).** The data analysis provided a statistically significant result for a positive relationship between the behavioral CQ dimension scores of project managers with the project manager personal competency of cognitive ability. However; the result indicated a weak strength in the relationship. The interpretation of this finding is that behavioral CQ is related and therefore relevant to effective project managers due to its positive association with the competency of cognitive ability.

**Behavioral CQ and effectiveness competency (H23).** The data analysis confirmed the null hypothesis indicating that a statistically significant relationship does not exist between the behavioral CQ dimension scores of project managers with the project manager personal competency of effectiveness. Additionally; the result indicated a weak strength in the relationship. The interpretation of this finding is that

as a project manager's behavioral CQ increased, there was no relationship with the increase or decrease in their competency of effectiveness.

**Behavioral CQ and professionalism competency (H24).** The data analysis provided a statistically significant result for a positive relationship between the behavioral CQ dimension scores of project managers with the project manager personal competency of professionalism. However; the result indicated a weak strength in the relationship. The correlation between behavioral CQ and project managers' professionalism competency was the strongest of this subgroup. The interpretation of this finding is that behavioral CQ is related and therefore relevant to effective project managers due to its positive association with the competency of professionalism.

## Summary of Research Findings

In summary, the research findings concluded that CQ dimensions of motivation, cognition, metacognition, and behavior were correlated with project manager personal competencies including communicating, leading, managing, cognitive ability, effectiveness, and professionalism. The results provide an empirical foundation that both CQ and project manager personal competencies are relevant and meaningful to global organizations possessing multicultural workplace environments. The interpretation of these findings is concluded below.

First, a relationship between cultural intelligence and leadership competency does exist. Each of the four CQ dimensions had a statistically significant relationship with at least one of the six project manager personal competency dimensions. Additionally, all correlations were directionally positive. This finding

confirmed that as CQ scores of project managers increased, so did their project manager personal competency scores. The strength of all significant relationships was moderate or weak. This finding indicated that not much inference could be made in regards to predictive indicators when assessing CQ with project manager personal competencies.

Motivational CQ and the project manager personal competency dimensions of leading and professionalism had the strongest relationship of all variables measured. This finding underscored Flaherty's (2008) research which posited that increased motivational CQ resulted in improved acceptance and integration in multicultural environments. Motivational CQ had a statistically significant relationship with all six project manager personal competency dimensions including two with moderate strength (leading and professionalism). The implication is leaders working in a multicultural workplace environment, that had increased mental capacity to direct one's energy in a culturally diverse situation, also had increased levels of project manager competencies which have been posited as resulting in increased project success.

While all CQ dimensions related to at least one competency, the project manager personal competency dimension of managing had only one, very weak relationship with CQ motivation and no relationship with the CQ dimensions of cognition, metacognition, and behavior. This finding underscored previous research by Mannor (2008) who posited that increasing dimensions of CQ supported improved information processing, decision making, and performance by leaders in culturally diverse situations in global organizations; differentiating themselves from managers.

Additionally, Mannor (2008) argued that traditional management techniques often fail to meet the dynamic, complex scenarios facing global leaders. This study; based on the strong level of project manager experience of the sample, indicated that CQ had very little relationship to the project manager personal competency of managing. The implication furthers differentiates leaders from managers due to the Managing project manager competency being the least significant leadership competency compared with CQ.

Second, leaders who had more experience in multicultural workplace environments had higher CQ and leadership competency scores. Previous research posited that CQ (Ang & Van Dyne, 2008; Earley & Ang, 2003) and leadership competencies (Dulewicz & Higgs, 2005; McClelland, 1973; Müller & Turner, 2010a; Müller & Turner, 2010b; Parry, 1998) can be developed over time. This study underscored that both CQ and PM Competencies were increased with those who had experience in multicultural workplace environments. The implication is leaders who worked in a multicultural workplace environment, were able to increase their CQ and project manager personal competency levels; which have been posited as resulting in increased project success.

In summary, the research findings concluded that CQ dimensions of motivation, cognition, metacognition, and behavior were correlated with project manager personal competencies. The results provide an empirical foundation that both CQ and project manager personal competencies are relevant and meaningful to global organizations possessing multicultural workplace environments. These results

also provide support for organizations to address key challenge for leaders of strategic initiatives as discussed in the literature review.

## Explanation of the Original Contribution to Scholarship

The purpose of this study was to examine the relationship between CQ and leadership competencies of organizational project managers supporting organizational project manager effectiveness. The research problem addressed whether CQ scores were related to key project manager personal competencies. The findings confirmed there is a statistically significant correlation between CQ and project manager personal competencies. Accordingly, this study built on existing literature and contributed to new scholarship in two ways.

The first way this study contributed to new scholarship is it investigated whether CQ is associated with leadership competencies posited as being significant for organizational leaders in multicultural workforce environments. Ang, and Tan (2006) posited that a key challenge for organizations will be to understand how best to integrate people in multicultural environments. Anantatmula (2010) stated that leadership in the project management context provides motivation and guidance for teams to realize the organizational goals. With these two themes in mind, this study identified a new relationship between CQ and leadership competencies that contribute towards effective project management. The research findings indicated a positive overall correlative relationship between the CQ average and project manager personal competency average. Furthermore, each CQ dimension—motivational, cognitive, metacognitive, and behavioral exhibited a statistically significant relationship to one or more of the project manager personal competencies of communicating, leading,

managing, cognitive ability, effectiveness, or professionalism. This relationship is a new contribution to scholarship and applicable practioners in the field of organizational global leadership.

The second way this study contributed to new scholarship is it reinforced the importance of cultural intelligence and leadership competencies for organizational leaders working in multicultural workplace environments. Calculated through a two-sample t-test, the research findings indicated a statistically significant relationship between project managers' CQ scores and their experience working in a multicultural workplace environment. The sample had statistically significant increased CQ scores if they had experience working in a multicultural workplace environment than those who did not have experience. Additionally, calculated through two-sample t-test, the research findings also indicated a statistically significant increase in project managers' personal competency scores if had experience working in a multicultural workplace environment than those who did not have experience. The findings revealed that both cultural intelligence and leadership competencies were positively influenced by project managers working in multicultural workplace environments.

This study also supported previous claims (Mannor, 2008) that CQ is a differentiator in leaders from managers. In three of the four CQ dimensions correlation with leadership competencies, the project manager personal competency of managing had no statistically significant relationship. Additionally, the managing competency was the weakest strength relationship in the one CQ dimension which was found related. Mannor (2008) argued that traditional management techniques often fail to meet the dynamic, complex scenarios facing global leaders. Mannor (2008)

also posited leaders lacking CQ capabilities may not be effective in supporting organizational processes and growth in globalized environments. This study offers contributing support for Mannor's claim by providing empirical support that CQ and the leadership competency of managing are unrelated. Therefore, this study further differentiates leaders from managers.

In summary, this section presented a descriptive narrative of the findings indicating several new, original contributions to scholarship. Based on the proposed hypotheses model (Figure 3.1), the tested hypotheses model (Figure 4.1), Figure 5.1 presents the revised hypotheses model based on the findings.

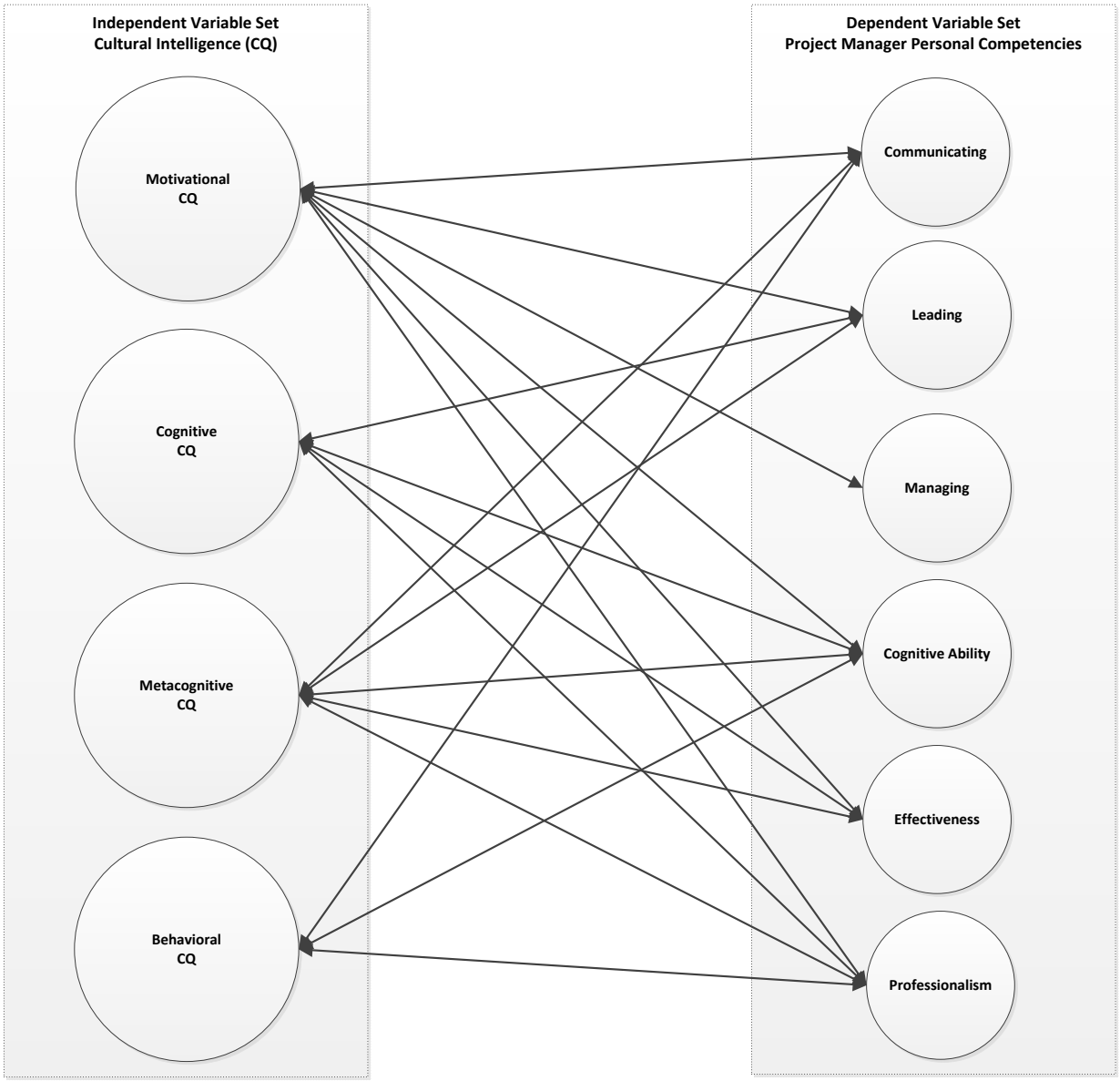


*Figure 5.1.* Revised Model for Hypotheses

## Implications for Future Research

This study focused on the relationship between two theoretical constructs; CQ and leadership competencies, of a specific leadership population. The research findings indicated a relationship between the two variables for project managers. While both the CQS and PMCD Framework scales proved valid and reliable, future

research may consider executing a similar study on a similar population using different instruments to assess CQ and leadership competencies. This potential study could offer additional insight and empirical evidence further validating the relationship and providing more analysis of the strength of the relationship from different instrument scales' perspectives.

Second, this study's sample was highly experienced both from a cultural and leadership experience perspective. The sample had a high percentage (94.9%) of project managers having experience in multicultural workplace environments. Over 63% of the sample indicated they had 6 or more years of experience in culturally diverse environments. Over 64% of the sample indicated they had 6 or more years of experience in project teams. Future research may consider executing a similar study on a population having less experience both from a cultural and leadership perspective. This potential study could offer additional insight and empirical evidence further to understand the relationship between CQ and leadership competencies of those with less experience both culturally and professionally. This would also further examine the finding of experience in multicultural workplace environments relating to increased CQ and leadership competency scores.

Finally, it would be appropriate to further examine the statistically significant findings from this research study in order to drawn more conclusive understandings about the relationship between cultural intelligence and leadership competencies as they relate and affect project management effectiveness. Through examination of this research study's findings, the CQ dimension of motivation had a statistically significant relationship with all six dimensions of project manager personal

competencies. The other three CQ dimensions were lacking a statistically significant relationship with one of more project manager personal competency dimensions. Accordingly, a proposed model for future research would narrow in on the relationship between Motivational CQ and its relationship to project manager personal competencies. Additionally, it is recommended that due to the narrowing of the research, an additional factor be included measuring project success factors. This potential research study could bring together a conclusive chain of reasoning to further validate this research study's findings and continue to assist global organizations in understanding how motivational cultural intelligence and leadership competencies determine project success. Figure 5.2 presents the synthesized research model for future research consideration.

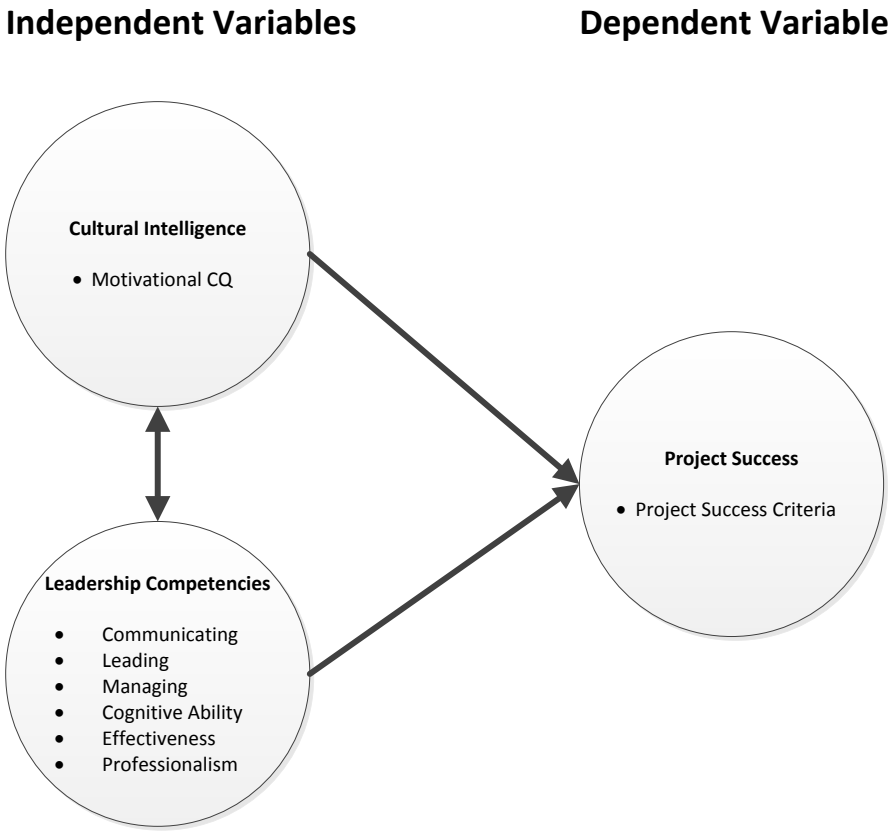

*Figure 5.2* Synthesized Research Model

## Implications for Global Leaders and Global Organizations

This study contributes toward improving project manager leadership effectiveness by identification of relevant and significant characteristics that are posited to influence project success. First, organizations are facing increased culturally complex environments placing more demand on leadership. This research provided conclusive results indicating that a relationship between cultural intelligence and leadership competency exists. Identification of this relationship allows organizations to understand the significance of these two theoretical constructs as they relate to organizational leaders who directly affect their strategic initiatives and ultimately determine project success. Additionally, this study took an applied practice perspective by specifying intelligence dimensions and leadership competencies relevant to challenges imposed by cultural diversity. Through empirical evidence of new relationships supporting increased project management effectiveness with a relationship to cultural intelligence, organizations have practical knowledge supporting the development of leaders.

Second, the results of this study indicated that leaders with high CQ working in multicultural workplace environments also have high scores on project manager personal competencies that contribute towards improved project effectiveness. This finding built upon previous research positing that CQ (Ang & Van Dyne, 2008; Earley & Ang, 2003) and leadership competencies (Dulewicz & Higgs, 2005; McClelland, 1973; Müller & Turner, 2010a; Müller & Turner, 2010b; Parry, 1998) can be developed over time. The implication for future global leaders is that empirical

evidence has shown leaders can develop the necessary intelligence and competencies required for leading global organizations through experiential learning.

It is this researcher's recommendation based on this research study's findings that organizations invest in their human resources through cultural intelligence and leadership competency development initiatives. This study has practical application to organizations due to both CQ and leadership competencies being capable of development by individuals. Now, with this new additional empirical evidence indicating a relationship between these two constructs; and with both constructs being posited as related to leadership success, it is fundamental that organizations impart cultural training and specific leadership competency training within their organizational training initiatives. This training should include experiential based learning as this study provided empirical evidence indicating experience leading teams in culturally diverse scenarios was associated to both cultural intelligence and leadership competencies. Figure 5.3 provides a recommended experiential based CQ/Project Manager Competency Development model for global organizations. This will ensure that the next generation of leadership is capable in meeting global complex challenges with the necessary intelligence and leadership to be successful.

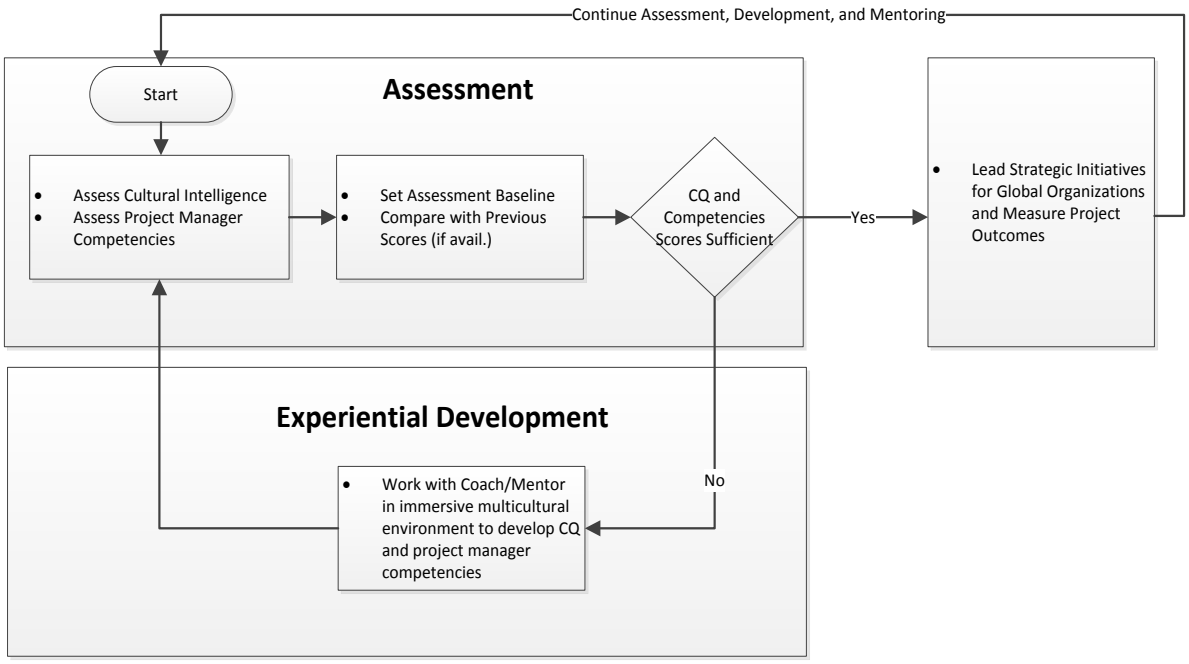


*Figure 5.3* Experiential Based CQ/PM Competency Development Model

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# APPENDIX A: INFORMED CONSENT FORM

Dear Participant,

This research study in Global Leadership is being conducted by Kurt Bender, a doctoral student at Indiana Institute of Technology. The purpose of the study is to determine to what extent key project manager competencies can be explained by cultural intelligence.

You will be asked to complete a survey which will take approximately 10 minutes. Your participation in this survey is completely voluntary and anonymous. You may withdraw from participating in this study at any time without risk of penalty or loss of benefit to yourself. The results of the research study may be published but your name will not be used and your responses will remain anonymous.

If you are interested in the results of this research, please respond with your name and email address for inclusion.

Thank you,

Kurt Bender
Doctoral Candidate
Indiana Institute of Technology
kabender01@indianatech.net

By participating in this survey, I acknowledge that I understand the nature of the study, any potential risks to me as a participant, and that my identity will be kept confidential. Participation in the survey indicates that I am over the age of 18 and that I give my permission to voluntarily serve as a participant in the study. (paper)

If you are 18 years or older and have read and understand the above statements, please click the "Continue" button below to indicate your consent to participate in this study and begin the survey. (online)

# APPENDIX B: PERMISSION TO USE CQS INSTRUMENT

August 28, 2013

Cultural Intelligence Center, LLC
5337 Panda Bear Circle
East Lansing, MI 48823

Dear Cultural Intelligence Center, LLC:

I am a doctoral student from Indiana Institute of Technology. I am preparing to conduct my dissertation research tentatively titled *Cultural Intelligence and Its Relationship to Key Project Manager Competencies*. This research will be conducted under the direction of my dissertation committee chaired by Dr. Steve Dusseau.

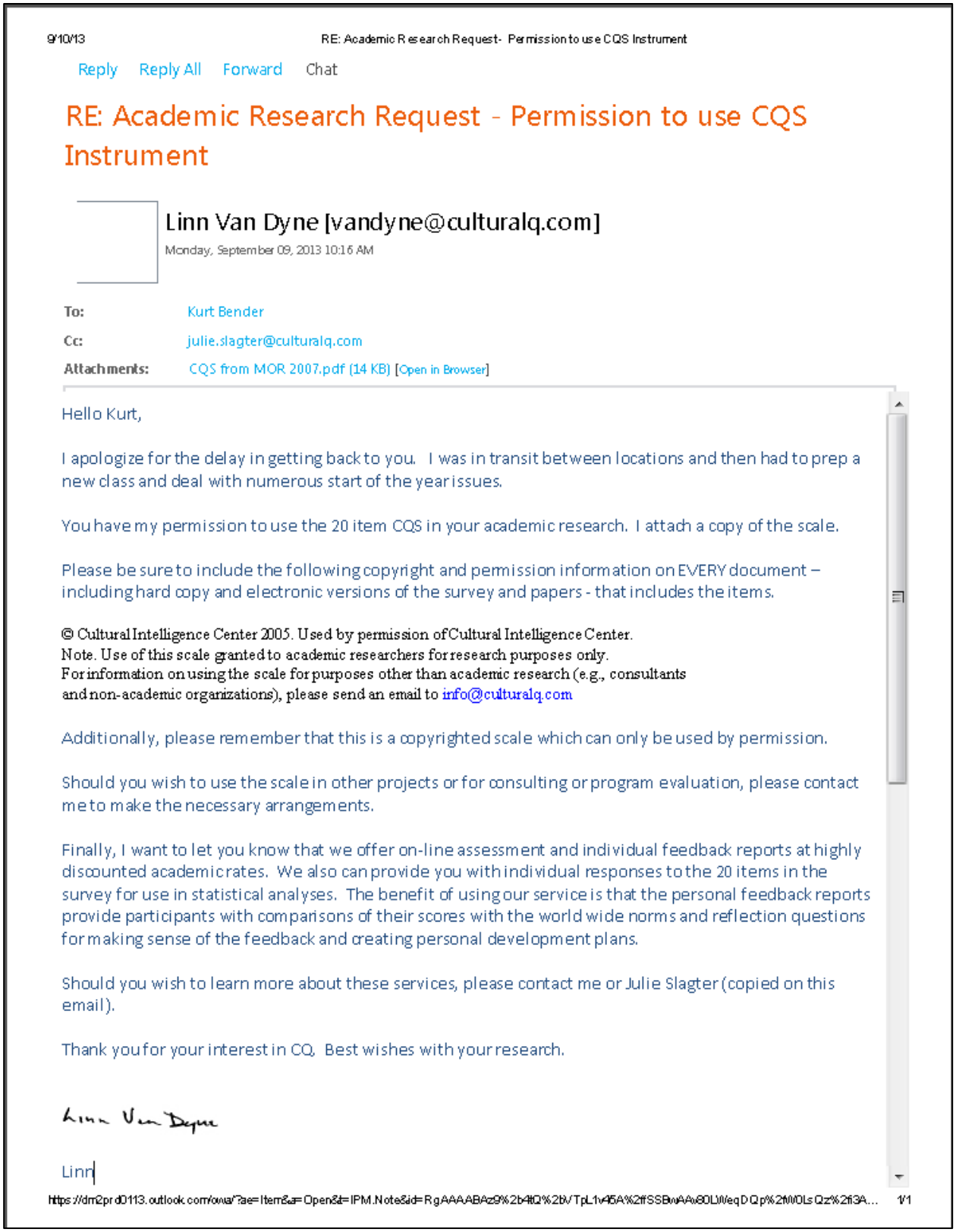
I would like your permission to use the CQS instrument in my research study. I would like to use and print your survey under the following conditions:

- I will only use this survey for my research study and will not sell or use it with any compensated or curriculum development activities
- I will include the copyright statement on all copies of the instrument
- I will provide the results of my research study report making use of the CQS instrument to your attention following completion

Providing these are acceptable terms, please indicate so by signing one copy of this letter and returning it to me through postal mail or a scanned copy via email.

Sincerely,

Kurt Bender
Doctoral Candidate
kabender01@indianatech.net
13132 Denton Hl
Ft. Wayne, IN 46845



9/10/13 RE: Academic Research Request- Permission to use CQS Instrument

Reply Reply All Forward Chat

# RE: Academic Research Request - Permission to use CQS Instrument

**Linn Van Dyne [vandyne@culturalq.com]**

Monday, September 09, 2013 10:16 AM

**To:** Kurt Bender

**Cc:** julie.slagter@culturalq.com

**Attachments:** CQS from MOR 2007.pdf (14 KB) [Open in Browser]

Hello Kurt,

I apologize for the delay in getting back to you. I was in transit between locations and then had to prep a new class and deal with numerous start of the year issues.

You have my permission to use the 20 item CQS in your academic research. I attach a copy of the scale.

Please be sure to include the following copyright and permission information on EVERY document – including hard copy and electronic versions of the survey and papers - that includes the items.

© Cultural Intelligence Center 2005. Used by permission of Cultural Intelligence Center.
Note. Use of this scale granted to academic researchers for research purposes only.
For information on using the scale for purposes other than academic research (e.g., consultants and non-academic organizations), please send an email to info@culturalq.com

Additionally, please remember that this is a copyrighted scale which can only be used by permission.

Should you wish to use the scale in other projects or for consulting or program evaluation, please contact me to make the necessary arrangements.

Finally, I want to let you know that we offer on-line assessment and individual feedback reports at highly discounted academic rates. We also can provide you with individual responses to the 20 items in the survey for use in statistical analyses. The benefit of using our service is that the personal feedback reports provide participants with comparisons of their scores with the world wide norms and reflection questions for making sense of the feedback and creating personal development plans.

Should you wish to learn more about these services, please contact me or Julie Slagter (copied on this email).

Thank you for your interest in CQ. Best wishes with your research.

Linn Van Dyne

Linn

https://dm2prd0113.outlook.com/owa/?ae=Item&a=Open&t=IPM.Note&id=RgAAAABAz9%2b4tQ%2bVTpL1v45A%2ffSSBwAAv80LJWeqDQp%2fWl0LsQz%2fi3A... 1/1

# APPENDIX C: PERMISSION TO USE PMI PMCD FRAMEWORK

August 28, 2013

Project Management Institute, Inc.
14 Campus Boulevard
Newtown Square, PA 19073-3299 USA

Dear Project Management Institute:

I am a doctoral student from Indiana Institute of Technology. I am preparing to conduct my dissertation research tentatively titled *Cultural Intelligence and Its Relationship with Key Project Manager Competencies*. This research will be conducted under the direction of my dissertation committee chaired by Dr. Steve Dusseau.

As an academic researcher and a Project Management Professional (PMP)®, I would like your permission to use the Project Manager Competency Development (PMCD) Framework as the basis for project manager competencies when developing this research study. My use would strictly be in alignment with the purpose stated in the PMCD Framework 2nd ed.; that being to assess project managers (p.1). Specifically, I would like to use and print information related to the PMCD Framework under the following conditions:

- I will only use the PMCD Framework information for my research study and will not sell or use it with any compensated or curriculum development activities
- I will include the copyright statement on all copies of my research study
- I will cite the PMI Standards Committee for use of all PMCD Framework information within my documentation
- I will provide the results of my research study report to your attention following completion if requested

Providing these are acceptable terms, please indicate so by signing one copy of this letter and returning it to me through postal mail or a scanned copy via email.

Sincerely,

Kurt Bender
Doctoral Candidate
kabender01@indianatech.net
13132 Denton Hl
Ft. Wayne, IN 46845

Project Management Institute

September 4, 2013

Kurt Bender
13132 Denton H1
Ft. Wayne, IN 46845

**Publication:** *Project Manager Competency Development Framework*

Dear Client:

Your request for permission from Project Management Institute, Inc. ("PMI") to reference *Project Manager Competency Development Framework* (the "Material") is hereby granted. The Material will be referenced in dissertation research (the "Work").

1. Permission to reference the Material is granted only for use in the one edition of the Work and shall expire two (2) years from the date of this letter. Use in any subsequent edition(s) of the Work or for a longer period of time must be requested separately.

2. Permitted use is limited to the initial edition described above, and does not include the right to grant others permission to photocopy or otherwise reproduce the Material except for versions of the Work created by non-profit organizations for use by visually or physically handicapped persons.

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7. You must maintain accurate contact information on-file with PMI for your Permission to remain valid.

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By signing below, you acknowledge that you have both read and understood the terms and conditions under which permission to use the PMI copyrighted Material specified above has been granted and agree to abide by these terms and conditions set forth above.

(Print Name) Kurt A. Bender (Date) 9/12/2013

(Signature) [signature] (Title) Doctoral Student

14 Campus Blvd | Newtown Square, PA 19073-3299 USA | tel: +1 610 356 4600 | fax: +1 610 356 4647 | PMI.org

APPENDIX D: NIH CERTIFICATE OF COMPLETION

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Kurt Bender** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 11/17/2012

Certification Number: 1051111

APPENDIX E: IRB APPROVAL LETTER

INDIANATECH

Fort Wayne, Indiana

August 12, 2013

Mr. Kurt Bender,

Your IRB application for the project titled "Cultural Intelligence and Its Relationship to Key Project Manager Competencies" **has been approved**, as submitted, by the Institutional Review Board of Indiana Tech. This research project, as submitted, **is exempt** from further human subjects review by the IRB Committee of Indiana Tech. Please note the following limitations of this approval for exempt status for this IRB application.

This approval of the IRB Committee of Indiana Tech extends only to the research plan as outlined in this specific IRB. This approval extends only to those aspects of this research project as presented in this specific IRB application including issues related but not limited to selected subjects, intervention procedures, risks and/or benefits to the subjects, confidentiality, information provided to the subjects and related consent forms, issues of privacy, and potential conflicts of interest. This approval does not extend 1) to any exempt research interventions or activities not outlined within or beyond the scope of this specific application, 2) nor to any non-exempt issues which have not been presented in this specific IRB application, nor to non-exempt issues which might develop during or as a result of this research project, nor to any further research projects proposed by the investigator and/or co-investigator of record for this IRB application.

If "substantive" changes are made to this research plan an amended application needs to be submitted to the IRB Committee of the University.

Speaking for the IRB committee I thank you for submitting your Application to the IRB Committee and wish you the best in your research project.

Dr. James B. Schaffer
Full Professor
IRB Committee, Indiana Tech
Chairperson

# APPENDIX F: SURVEY INSTRUMENT

## Cultural Intelligence Scale (CQS) – Self-Report[a]

Read each statement and select the response that best describes your capabilities. Select the answer that BEST describes you AS YOU REALLY ARE (1=strongly disagree; 7=strongly agree)

1. I enjoy interacting with people from different cultures.
2. I am confident that I can socialize with locals in a culture that is unfamiliar to me.
3. I am sure I can deal with the stresses of adjusting to a culture that is new to me.
4. I enjoy living in cultures that are unfamiliar to me.
5. I am confident that I can get accustomed to the shopping conditions in a different culture.
6. I know the legal and economic systems of other cultures.
7. I know the rules (e.g., vocabulary, grammar) of other languages.
8. I know the cultural values and religious beliefs of other cultures.
9. I know the marriage systems of other cultures.
10. I know the arts and crafts of other cultures.
11. I know the rules for expressing non-verbal behaviors in other cultures.
12. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
13. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
14. I am conscious of the cultural knowledge I apply to cross-cultural interactions.

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

[a] © Cultural Intelligence Center 2013. (*To be*) Used by permission of Cultural Intelligence Center.
Note. Use of this scale granted to academic researchers for research purposes only. For information on using the scale for purposes other than academic research (e.g., consultants and non-academic organizations), please email info@culturalq.com.

**Project Manager Personal Competency Scale – Self-Report**

Read each statement and select the response that best describes your capabilities. Select the answer that BEST describes you AS YOU REALLY ARE (1=strongly disagree; 7=strongly agree)

1. I actively listen, understand, and respond to stakeholders.
2. I maintain lines of communication.
3. I ensure quality of information.
4. I tailor communication to the audience.
5. I create a team environment that promotes high performance.
6. I build and maintain effective relationships.
7. I motivate and mentor project team members.
8. I take accountability for delivering the project.

9. I use influencing skills when required.
10. I build and maintain the project team.
11. I plan and manage for project success in an organized manner.
12. I resolve conflicts involving project team or stakeholders.
13. I take a holistic view of the project.
14. I effectively resolve issues and solve problems.
15. I use appropriate project management tools and techniques.
16. I seek opportunities to improve project outcomes.
17. I resolve project problems.
18. I maintain project stakeholder involvement, motivation, and support.
19. I change at the required pace to meet project needs.
20. I use assertiveness when necessary.
21. I demonstrate commitment to the project.
22. I operate with integrity.
23. I handle personal and team adversity in a suitable manner.
24. I manage a diverse workforce.
25. I resolve individual and organizational issues with objectivity.

**Demographic Scale – Self-Report**

Read each statement and select the response that best describes your demographic.

1. Do you speak and read English language fluently?

   Yes; No

2. Are you a member of the Project Management Institute (PMI)?

   Yes; No

3. Have you worked professionally as a leader of project teams?

   Yes; No

4. Have you received any academic or professional project management training?

   Yes; No

5. Do you hold a PMI certification?

   Yes; No

6. Do you have experience working within a multicultural workplace environment?

   Yes; No

7. How many years have you worked in a multicultural workplace environment?

   None; Less than 1 year; 1-5 years; 6-10 years; 10 or more years

8. How many years have you participated in organizational project teams?

   None; Less than 1 year; 1-5 years; 6-10 years; 10 or more years

# APPENDIX G: CQ PRINCIPAL COMPONENT ANALYSIS

*Table A.1*

*Eigenalysis of the CQ Correlation Matrix*

| | CQ_MOT | CQ_COG | CQ_MC | CQ_BEH |
|---|---|---|---|---|
| Eigenvalue | 2.706 | 0.575 | 0.435 | 0.284 |
| Proportion | 0.676 | 0.144 | 0.109 | 0.071 |
| Cumulative | 0.676 | 0.820 | 0.929 | 1.000 |

*Table A.2*

*Principal Component Analysis – Cultural Intelligence Dimensions*

| | PC1 | PC2 | PC3 | PC4 |
|---|---|---|---|---|
| CQ_MOT | 0.474 | 0.642 | -0.591 | 0.118 |
| CQ_COG | 0.511 | 0.181 | 0.699 | 0.466 |
| CQ_MC | 0.541 | -0.090 | 0.173 | -0.818 |
| CQ_BEH | 0.471 | -0.740 | -0.363 | 0.316 |

# APPENDIX H: PM COMPETENCY PRINCIPAL COMPONENT ANALYSIS

*Table A.3*

*Eigenalysis of the PM Competency Correlation Matrix*

| | PM_COM | PM_LEAD | PM_MAN | PM_COG | PM_EFF | PM_PROF |
|---|---|---|---|---|---|---|
| Eigenvalue | 4.151 | 0.5137 | 0.4203 | 0.3835 | 0.2879 | 0.2436 |
| Proportion | 0.692 | 0.086 | 0.07 | 0.064 | 0.048 | 0.041 |
| Cumulative | 0.692 | 0.777 | 0.847 | 0.911 | 0.959 | 1.000 |

*Table A.4*

*Principal Component Analysis – PM Personal Competency Dimensions*

| | PC1 | PC2 | PC3 | PC4 |
|---|---|---|---|---|
| PM_COM | 0.394 | -0.572 | -0.082 | 0.633 |
| PM_LEAD | 0.418 | -0.368 | 0.39 | -0.204 |
| PM_MAN | 0.423 | -0.063 | 0.316 | -0.515 |
| PM_COG | 0.409 | 0.058 | -0.631 | -0.382 |
| PM_EFF | 0.415 | 0.304 | -0.408 | 0.204 |
| PM_PROF | 0.388 | 0.661 | 0.42 | 0.325 |