LEADERSHIP COMPETENCIES FOR

EFFECTIVE GLOBAL INNOVATION TEAMS

by

Ross Haynes Messinger

A Dissertation Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Business Administration

University of Phoenix

June 2008

UMI Number: 3326217

Copyright 2008 by
Messinger, Ross Haynes

All rights reserved

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

    In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI®

LEADERSHIP COMPETENCIES FOR

EFFECTIVE GLOBAL INNOVATION TEAMS

by

Ross Haynes Messinger

June 2008

Approved:

James Goes, Ph.D., Committee Chairman
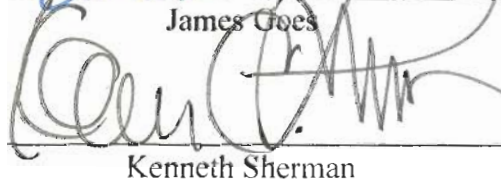
Kenneth Sherman, Ph.D., Committee Member

Bernard Kelleher, D.B.A., Committee Member

Accepted and Signed: _____   5/29/2008
                          James Goes   (month, day, year)

Accepted and Signed: _____   5/29/2008
                        Kenneth Sherman   (month, day, year)

Accepted and Signed: _____   5/29/2008
                        Bernard Kelleher   (month, day, year)

_____   6/23/2008
Dawn Iwamoto, Ed.D.   (month, day, year)
Dean, School of Advanced Studies
University of Phoenix

ABSTRACT

This study identified the leadership competencies for effective global innovation teams in large multinational corporations. A growing trend toward global product development further complicates the leadership of technically challenging research and development with the need to motivate highly skilled, creative, multi-cultural, and widely dispersed team members. The global innovation team leader must therefore develop a unique set of competencies that have not previously been identified. Using a qualitative, two-round Delphi methodology and an internet-based data collection tool, the study surveyed 36 experts in teams, leadership, innovation, and cross-cultural studies with 16 Asian, European, and North American nationalities. Results of the study consisted of a ranking of 20 cultural, technical, and social competencies in terms of importance. Cultural competencies were found to be the most important, followed by the technical and social competencies. The study found that a global innovation team leader should have a participative leadership style, exhibit an entrepreneurial spirit, have a genuine concern for others, and be self-managed. The global innovation team leader should excel in cultural competencies while demonstrating basic technical and social competencies. The competency model and its theoretical framework may guide leadership development in the corporate sector, and stimulate further research into the dynamic and complex subject of global innovation leadership.

DEDICATION

This dissertation is dedicated to my mother Rhona and father Robert, who
provided unequivocal support and love throughout my life.

ACKNOWLEDGMENTS

Sincere gratitude goes to my doctoral committee, which, as a high-performance team, provided invaluable support and guidance. The experience and commitment of my mentor, Dr. Jim Goes, was essential during the entire dissertation process, from laying the basic framework to obtaining final approvals. Dr. Ken Sherman found time, even on several business trips, to offer meticulous suggestions that improved overall integration. Dr. Bernie Kelleher, despite having joined the committee later in the process, quickly caught up and suggested numerous areas of improvement. Appreciation is extended to two members of my new community-of-practice related to this research. Dr. Eileen Sheridan-Wibbeke, as a multi-faceted role model, provided many suggestions based on her related and insightful research. Dr. Cristina Gibson offered encouragement and insight early in the dissertation process. I also acknowledge the survey participants from many parts of the world who enthusiastically responded to help make this research an exciting experience. Finally, special thanks go to my wonderful wife Gita, who encouraged me to pursue a doctoral degree and then provided essential daily support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

During this era of globalization, companies of all types and sizes are collaborating with globally dispersed networks of customers and suppliers to develop new products and services with the best available talent and facilities (Boutellier, Gassmann, & von Zedtwitz, 2000). Innovation teams, which are chartered to leverage these global resources, are increasingly composed of members from various cultural backgrounds (Hirshorn, 2002). The dynamic social exchange common to effective teams becomes more complex with multicultural work groups and even more so within teams chartered to develop innovative products (Zakaria, Amelinckx, & Wilemon, 2004). While operationally complex, global innovation teams (GITs) present a number of distinct advantages for their respective enterprises. Team member diversity can be the source of new ideas, and a global presence allows faster product adaptation to new markets. The dispersed structure of such work groups allows access to a flexible source of global talent (Barrett, 2000). With the proper communication tools, processes, and leadership, the potential for sustained innovation is dramatically improved (Orvis, 2004).

An effective GIT may require a unique form of leadership. Terms such as *authority, responsibility, delegation,* and *trust* can present widely variant meanings among different countries and regions of the world (Hofstede & Hofstede, 2005). Consequently, the leadership of a globally distributed, multicultural innovation team is also much more complex than that of a traditional team with members originating from the same geographical location, organization, and social culture (Barrett, 2000). The global innovation leader must therefore develop a unique set of competencies to motivate

highly skilled and creative team members with a diverse range of cultural values (Tubbs & Schulz, 2006).

This research study was based on the significant and pervasive trend toward globalized research and development (R&D). The study of such R&D was supported by a broad theoretical base with respect to leadership, innovation, teams, and societal culture. Challenges of leading GITs were identified, providing the rationale toward investigating the stated problem. A single research question was posed to guide the research study, and the theoretical basis of the study is summarized and synthesized to highlight the distinct gap for study. A qualitative Delphi method was justified as the preferred means to identify and prioritize leadership competencies that improve team innovation in large multinational companies (MNCs). Results of the two-round Delphi were presented and analyzed to identify the most important competencies of GIT leaders, and thus to answer the research question.

Background of the Problem

Globalization is a rapidly spreading trend as countries open their borders to economic trade and companies expand into global markets. Companies of all sizes, types, and industries use a rapidly increasing flow of ideas, goods, and people to interact on a global stage (Gassmann & von Zedtwitz, 1998; Boutellier et al., 2000). *Knowledge networks* of collaborating enterprises are allowing flexible use of resources and effective innovation, ensuring a long-term competitive advantage (European Commission Directorate-General for Enterprise, 2004). Global R&D activity is an increasingly important aspect of organizational competitiveness (Ambos & Schlegelmilch, 2004; Department of Trade and Industry, 2005). According to Drake, Sakkab, and Jonash

(2006), "Companies with the highest innovation ratings in the early 1990s had significantly outperformed the rest of the industry in terms of shareholder returns" (p. 38). R&D expenditure in the 1,000 largest companies in the world was reported at approximately $400 billion during 2004 (Department of Trade and Industry, 2005). An increasing share of that R&D activity is performed in foreign countries. For example, in the mid-1990s, "the internationalization of R&D had reached more than 50% in small countries such as the Netherlands and Switzerland, 30% in all of Europe, and about 10% in the United States" (Gassmann & von Zedtwitz, 2003, p. 243).

While the global economy offers vast market expansion opportunities, MNCs are cautious in deploying R&D capability due to the perceived risk. According to Ambos and Schlegelmilch (2004), "Cultural conflicts might inhibit the productivity of joint research [and] knowledge transfer might be particularly difficult in the case of international R&D" (p. 37). Globalization has introduced many new competitors within developing countries with lower cost products and maturing internal innovation capacity. Furthermore, innovation within MNCs tends to be incremental rather than radical, and innovation efficiency remains relatively low (Ettlie, 2006). These pervasive issues can "set the stage" for long-term business failure. Thus, the challenge is to develop effective management strategies to coordinate widely dispersed R&D activities (Boutellier et al., 2000).

The function and structure of teams has evolved from colocated factory teams; colocated information workers; dispersed virtual teams; and most recently, global virtual teams. However, Zakaria et al. (2004) noted that although a majority of teams are now virtual, "50 per cent [*sic*] of virtual teams would fail to meet either strategic or

operational objectives due to the inability to manage the distributed workforce implementation risks" (p. 17). Govindarajan and Gupta (2001) found that "only 18% considered their performance 'highly successful' and the remaining 82% fell short of their intended goals" (p. 63). Rationale identified for such low effectiveness were lack of trust, communication barriers, misalignment of goals between team members, inability to provide sufficient knowledge and skills, and undefined team objectives.

With the wide variation in cultural norms, values, and behavior throughout the world, business managers face difficulty developing the cultural competencies needed to avoid embarrassing social errors, failed joint ventures, or inefficient business operations. Hofstede (2001) cited various studies identifying the positive correlation between cultural distance (i.e., differences) of business partners and failure rate of joint ventures or other foreign direct investment. Because societal culture manifests in individual behavior and practices, ethnically diverse teams will exhibit the same cultural variation and propensity for failure unless specific team processes are implemented to minimize related issues. While charismatic, value-based, and team-oriented attributes are generally perceived within many cultures as contributing to effective leadership, many "leadership attributes are culturally contingent" (House, Hanges, Javidan, Dorfman, & Gupta, 2004, p. 40). Compared to traditional team leaders, innovation team leaders require specialized technical knowledge and skills to motivate highly skilled workers (Spencer & Spencer, 1993). Therefore, the practical challenge is the development of a diverse set of social, cultural, and technical skills for effective global innovation leadership. An additional academic challenge is the difficulty in applying various traditional leadership theories to this complex leadership construct (Yukl, 2006).

The research theme of this study was the analysis of leadership, societal culture, and innovation at a team (i.e., work group) level of analysis. A substantial body of research has addressed various combinations of these themes, but not all the themes simultaneously. Despite extensive related research, GIT leadership had yet to be defined with theory or model development (Ambos & Schlegelmilch, 2004; Govindarajan & Gupta, 2001; Hofstede, 2001; Spencer & Spencer, 1993). Zakaria et al. (2004) recommended "that future research be undertaken on global virtual team leadership" (p. 27). Global leadership is recognized as an enabling capability for MNCs (Kets de Vries & Florent-Treacy, 2003). The ability to manage the innovation process is critical for the effective use of R&D funds and timely market introduction of competitive products and services. Thus, this study contributed to the knowledge of leadership by developing a GIT leader competency model to improve the execution of complex, yet increasingly important, global R&D teams in large MNCs.

Statement of the Problem

Stability in corporate objectives, the workforce, and funding is typically needed to develop a robust "pipeline" of new competitive products and services to cultivate enduring competitive advantage (Kristensson & Norlander, 2003). However, the current business environment is characterized by constant change in technology, competition, markets, and resources (Avolio, Kahai, & Dodge, 2000). GITs represent a critical component of the global expansion of MNCs, but must be effectively managed to minimize a loss of effectiveness due to the aforementioned risks and challenges. Leaders are, in turn, an essential aspect of effective teams. Therefore, the general problem is the difficulty of leading GITs, which consist of globally dispersed, multicultural, and highly

skilled workers. The specific problem is the lack of understanding of the competencies required to lead effective GITs. These competencies must be identified as a first step toward the development of global innovation leaders (Chin, Gu, & Tubbs, 2001). Using an Internet-based Delphi method, the qualitative study surveyed experienced industrial and academic professionals to formulate a consensus on required competencies for effective GIT leadership.

Purpose of the Study

The purpose of this qualitative research study was to identify those leadership competencies that improve the effectiveness of GITs in large MNCs. The Delphi research method was determined to be appropriate for this study since the problem "does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis" (Linstone & Turoff, 2002, p. 4). An online survey design allowed cost-effective and equitable participation of expert participants who were located in various global locations (Turoff & Hiltz, 1996). A sufficient number of qualified industrial and academic experts in the fields of innovation, societal culture, leadership, and teams served as the study population. The expert panel identified the relative importance of selected competencies of GIT leaders.

Significance of the Study

The study filled a distinct gap within the literature. A plethora of studies exist on leadership, innovation, teams, and societal culture. This body of research has addressed various combinations of these themes, but not all simultaneously. Few studies have focused on the leadership of GITs. Schweiger, Atamer, and Calori (2003) identified

several competencies of global team leaders with limited reference to product development goals. Chevrier (2003) used a case study method to observe leader practices within two global innovation teams. Barczak and McDonough (2003a) identified several activities that leaders should promote in global innovation teams. Shane, Venkataraman, and MacMillan (1995) focused on effectiveness of innovation champions and their ability to promote new projects within global organizations. Nevertheless, according to Ambos and Schlegelmilch (2004), "Considerably less research exists when it comes to the management of these international[ly] dispersed R&D networks" (p. 38). Thus, a gap in knowledge exists with regard to competencies that manifest in the leadership of effective GITs. The study contributed to narrowing this knowledge gap by identifying those leader competencies that improve the effectiveness of GITs in large MNCs.

From an organizational standpoint, the results of the study may assist in the development of more effective leaders for GITs. The identified competencies can be used to improve the selection of GIT leaders, serve as a basis for a performance management system, identify potential leaders during succession planning, and chart career development (Spencer & Spencer, 1993). The selection of the best candidate for the difficult task of GIT leadership will improve leader productivity, lower turnover, and reduce learning time. A performance management system may use the GIT leader competency model to quantify desired goals or outcomes associated with each competency. The succession planning function may use the GIT leadership competency model to identify potential candidates in feeder, lower level, or related positions. The GIT leader competency model may improve the cost-effectiveness of career development and training by targeting specific areas of weakness.

The improvement of leader competence should, in turn, improve the effectiveness of GITs through enhanced worker trust (Barczak & McDonough, 2003b; Zolin, 2002); a more innovative mind-set (Bossink, 2004); increased creativity (Kratzer, Leenders, & van Engelen, 2004, 2006; Mumford, Scott, Gaddis, & Strange, 2002); and a greater sense of empowerment (Kirkman, Rosen, Tesluk, & Gibson, 2004). By supporting the development of new product knowledge, GIT leaders are key enablers of corporate survival because "coordination and integration of dispersed knowledge is vital to the success of the firm" (Ambos & Schlegelmilch, 2004, p. 38). Effective and innovative organizations contribute to the overall economic growth of communities and ultimately, the country.

Nature of the Study

This research identified those leadership competencies perceived to improve the effectiveness of GITs in large MNCs. A sequence of two surveys, completed by domain experts to identify and attempt to reach consensus on effective GIT leader skills and knowledge, adhered to the qualitative Delphi methodology. The study sample consisted of 36 experts with substantial academic and industrial experience in leadership, societal culture, innovation, and teams. Internet-based survey technology was used to solicit their responses and ensure equitable and convenient access for all respondents. Expert participants were identified by professional networking and from relevant published research. The ease with which the participants could provide survey responses online maximized the response rate throughout the two Delphi rounds (i.e., the two survey administrations). Study results were compared with existing competency models and used to identify applicable theory. Thus, the Delphi study answered the research question

by ranking a comprehensive list of leader competencies developed by Spencer and Spencer (1993) in terms of importance to the effectiveness of GITs.

According to Linstone and Turoff (2002), the Delphi method "may be characterized as a method for structuring a group communication process, so that the process is effective in allowing a group of individuals, as a whole, to deal with complex problems" (p. 3). Delphi is appropriate for a study "problem that does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis" (p. 4). The study was complex due to the nature of leadership, the social dynamics of teams, and the diverse context of global business operations. For these reasons, previous studies identifying and ranking leader competencies within various occupational contexts were also designed under the Delphi methodology (Hearnshaw, Harker, Cheater, Baker, & Grimshaw, 2001; Loo & Thorpe, 2004; Lopopolo, Schafer & Nosse, 2004; Satterlee, 1999; Seibert, 2004; Sheridan, 2005; Wright et al., 2005). The Delphi method minimizes constraints related to disclosure of corporate proprietary information, single-industry focus, instrument validity, number of study subjects, and logistics surrounding data generation. A Delphi study allows data collection from experts with a wealth of knowledge and skill using a logistically facile online data collection procedure. An online survey with asynchronous communication allows cost-effective and equitable participation by globally dispersed experts (Turoff & Hiltz, 1996). Anonymity prevents undue influence by any individual or minority group and minimizes cultural bias.

Other potential research methods were evaluated within the literature, but either did not satisfy the fundamental research objective of the study or presented major logistical constraints. A variety of quantitative (Allen, 2005; House et al., 2004);

qualitative (Bergrenn, 2004; Brewer, 2004; Chevrier, 2003; Schweiger et al., 2003); and

mixed (Barrett, 2000) methods have been applied in the study of global teams, leadership,

and team leadership. Constraints on the applicability of quantitative methods include a

large sample size and mediating effects of culture on U.S.-based instruments. The

majority of existing qualitative studies have employed the case study approach and

Delphi methods. However, case study would present further constraint with the necessity

of extensive travel to interview GIT leaders, limited generalizability, and reluctance by

corporations to provide access to proprietary corporate operations.

Research Question

A single research question captures the purpose, nature, and theoretical

framework of the qualitative study: Which leadership competencies improve the

effectiveness of GITs in large MNCs? The model illustrated in Figure 1 was developed

for this dissertation to explain how the research question relates the three categories of

leader competencies to the effectiveness of GITs. Competency is a combination of

learned knowledge and skills resulting in a superior task outcome (Sheridan, 2005). As

defined in the study, competency has technical, social, and cultural components.

Technical competency refers to the knowledge of state-of-the-art technology and the

critical thinking skills for problem solving (Drucker, 1985; Brewer, 2004; Ettlie, 2006).

Social competency is knowledge of the organizational network and leadership skills that

manifest transformational leadership behavior (Goleman, Boyatzis, & McKee, 2002;

Prati, Douglas, Ferris, Ammeter, & Buckley, 2003). *Cultural competency* combines

knowledge of cultural norms and languages with skills such as the consistent persona of

patience and sensitivity (Bueno & Tubbs, 2004). While these three types of leadership

competencies are, to some degree, necessary for effective GITs, their absolute and

relative importance is unknown.
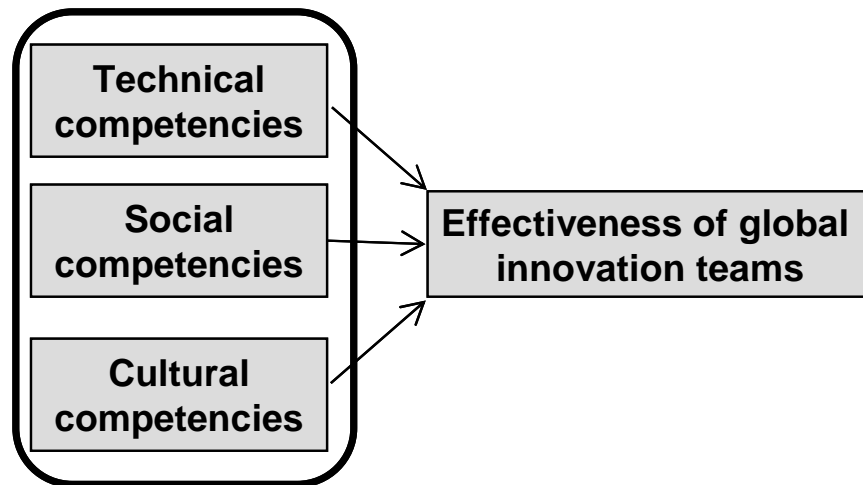
Figure 1. Conceptual model relates leader competencies to team effectiveness.

The effectiveness of GITs can be defined as a combination of related criteria.
Team effectiveness is traditionally identified as "technical quality, budget and cost
performance, meeting an assigned schedule, value to the company, and overall group
performance" (Keller, 1986, p. 718). Given sufficient knowledge sharing and trust,
innovation teams can provide an effective product introduction rate and market speed
(Barczak & McDonough, 2003b; Curral, Forrester, Dawson, & West, 2001). Global
teams offer their host MNCs increased global efficiency, local responsiveness, and
improved organizational learning (Snow, Davison, Snell, & Hambrick, 1996). Given the
diverse backgrounds and perspectives of their members, such teams can solve unique
problems, employ skills unavailable within a single location, respond to continuously

emerging and changing competitor threats, support large-scale and complex projects that cannot be completed within a single location, and work on numerous simultaneous projects supported by part-time team members for maximum resource utilization (Schweiger et al., 2003).

Theoretical Framework

The theoretical framework of the research was organized by its three major themes—leadership, societal culture, and innovation. Uniquely developed for this research study, the framework is depicted in Figure 2 as a Venn diagram to illustrate the interaction of the three themes to form the basis for global innovation leadership within a team context. In addition to the primary themes, the interacting themes of innovation and societal culture, leadership and innovation, and leadership and societal culture provide additional theoretical insight. The three competency categories of the conceptual model are directly related to the theoretical framework as shown in Figure 2. The technical, social, and cultural competencies relate to the primary themes of innovation, leadership, and societal culture, respectively. This study addressed the confluence of these themes, and if all three categories of competencies are needed for the leadership of GITs.

Leadership
*Social
competencies*

Leadership and
Innovation

Leadership and
Societal Culture

Innovation
*Technical
competencies*

Societal
Culture
*Cultural
competencies*

Innovation and
Societal Culture

Leadership, Innovation,
and Societal Culture
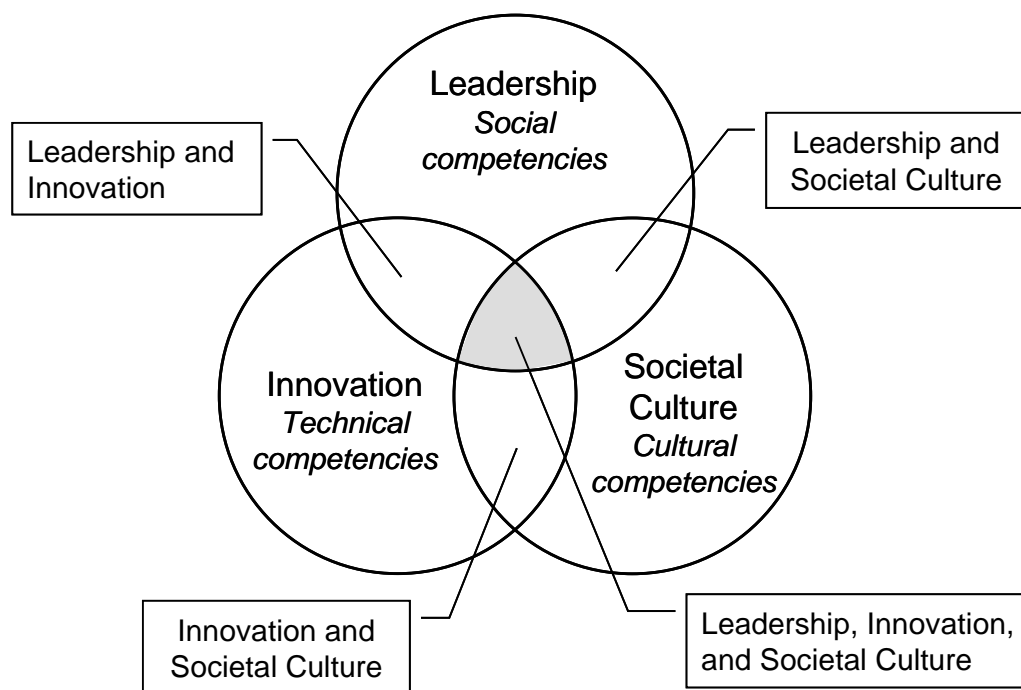
Figure 2. Theoretical framework of the study.

Transformational leadership theory may be associated with the social competency

category of the theoretical framework. Transformational leaders assist workers in

clarifying the importance of goals and the means to achieve them, transcending self-

interests for the good of the group, and developing their full capability (Bass & Riggio,

2006). Expounding upon the foundational work developed by Burns (1978), Bass

characterized transformational leadership as the following four overarching capabilities:

(a) idealized influence; (b) intellectual stimulation; (c) inspirational motivation; and (d)

individualized consideration. He found that transformational leadership was associated

with all four types of teams (i.e., traditional, innovation, global, and global innovation)

and may be effective in innovation teams spanning national boundaries (Bass, 1997). Complementing transformational leadership, transactional leadership uses an exchange of goods or benefits to achieve short-term results. Transactional leadership may have limited application within particular societal cultures.

Cultural intelligence theory may represent the cultural competencies of a leader within the theoretical framework. Cultural intelligence is a theoretical construct integrating cognitive, motivational, and behavioral dimensions (Earley & Ang, 2003). Cognitive abilities use knowledge to develop adaptation strategies for new cultural situations. Motivational attributes are also required to continue toward a goal while under the stress (i.e., "culture shock") of new cultural situations or following a failed cultural encounter. Behavioral cultural intelligence is related to the self-awareness and social aptitudes of emotional intelligence. These attributes are integrated to form cultural competency, which enables individuals to positively interact with peoples of all cultures with positive outcomes.

Entrepreneurship theory may represent the leader's technical competency component of the theoretical framework. Entrepreneurship was originally described by Schumpeter as a means of innovation by individuals (as cited in Lambooy, 2005). Schumpeter later added innovation by groups to account for larger R&D projects, globalization, and the routinization of R&D. According to Drucker (1985), innovation is typically a disciplined process of searching for and exploiting opportunities to create new wealth. Drucker described entrepreneurship as the individual behavior of adding value through innovation. Leaders are frequently associated with entrepreneurship, given their similarity as visionary change agents. In support of this relationship, Brewer (2004)

found that "transformational leader behaviors increase follower's creative and divergent thinking" (p. 28).

Culturally endorsed implicit leadership theory may represent the combination of cultural and social competencies in the theoretical framework. Culturally endorsed implicit leadership theory is a specific version of implicit motivation theory. It suggests that leader acceptance is dependent on congruence between leader behavior and culturally implicit norms (House et al., 2004). Phase 2 of the GLOBE study identified effective leader attributes that are contingent on national culture (House et al., 2004; Javidan, Dorfman, De Luque, & House, 2006). For example, assertive cultures develop trust through calculation of the motives and capabilities of other cultures. Individuals who have experienced unique successes or have developed unique skills are implicitly trusted and likely to be assigned leadership roles (House et al., 2004).

Innovation leadership may model the combination of social and technical competencies within the theoretical framework. Mumford et al. (2002) proposed a three-component innovation leadership style to describe how leaders "orchestrate expertise, people, and relationships in such a way as to bring new ideas into being" (p. 738). The idea generation component includes creating a climate conducive to creativity and corresponds to the intellectual stimulation dimension of transformational leadership. Idea structuring aligns innovative activity within an organizational context through management of processes and communication of goals and strategies. Idea promotion requires the skill of persuasion to obtain organizational support and resources for the innovation activity.

A model of the influence of societal culture on new product development may describe the combination of cultural and technical competencies. Cultural factors can both positively and negatively influence innovation team performance (Sivakumar & Nakata, 2003). Cultural heterogeneity can improve the quality of ideas and creativity but can also induce team member conflict and misunderstanding, which serve to reduce the overall effectiveness of the work group. Nakata and Sivakumar (1996) developed a model relating Hofstede's cultural dimensions with the initiation and implementation stages of the new product development (NPD) process. For example, individualism is associated with the early-phase creative aspects of innovation, while collectivism is more beneficial to the development phase. Sivakumar and Nakata (2003) refined their model to include cultural strength and heterogeneity factors to design NPD teams for projects combining early-stage and late-stage innovation processes.

Conceptually, global innovation leadership within a team context may be a combination of the three primary themes of leadership, innovation, and societal culture, and of the three interacting themes of leadership and societal culture, leadership and innovation, and innovation and societal culture. Thus, global innovation leadership may reflect aspects of transformational leadership style, culturally endorsed implicit leadership theory, cultural intelligence, entrepreneurship, the culture and new product development model, and innovation leadership. As described below, these theories can be related to the leadership competency model in this study. However, the interaction between leadership, societal culture, and innovation had yet to be defined by theory or model development. The study provided initial empirical data to describe this interaction, with the potential for future theory development integrating the three themes within a

team context. The primary and interacting themes of the theoretical framework are based

on a comprehensive set of established theories. As shown in Table 1, these theories may

be associated with the technical, social, and cultural competencies of GIT leaders. The

three primary themes of innovation, leadership, and societal culture directly relate to

technical, social, and cultural competencies, respectively. Interacting themes (i.e.,

innovation and societal culture, innovation and leadership, and leadership and societal

culture) are positioned between the primary themes and further contribute to the research

analysis.

Table 1

Mapping of Competency Categories, Research Themes, and Applicable Theory

Competency category	Research theme	Theory or model	Primary source
Technical	Innovation	Entrepreneurship	Drucker (1985)
	Innovation and leadership	Innovation leadership	Mumford et al. (2002)
Social	Leadership	Transformational leadership	Bass and Riggio (2006)
	Leadership and societal culture	Culturally endorsed implicit leadership	House et al. (2004)
Cultural	Societal culture	Cultural intelligence	Earley and Ang (2003)
	Innovation and societal culture	Culture and new product development	Nakata and Sivakumar (1996)

Definition of Terms

Terms that are either new or fundamentally important to the research require clarification or definition. The following terms are used in the study.

Innovation is a disciplined process of searching for and exploiting opportunities to create new wealth (Drucker, 1985). In this study, successful innovation requires both content and context components (Santos, Doz, & Williamson, 2004). Such content is the technology and knowledge that forms the basis for new products and services. The context component is customer and market knowledge. GITs can provide both technological content and market context by developing or adapting innovative products for various local markets.

Competency is "an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job situation" (Spencer and Spencer (1993, p. 9). In this study, knowledge and skill competencies are classified into technical, social, and cultural categories. Technical competency includes knowledge of state-of-the-art technology and developed analytic skills for effective problem solving. Social competency is knowledge of the organizational network and leadership skills that manifest in transformational leadership behavior. Cultural competency combines knowledge of cultural norms and languages with skills such as patience and sensitivity (Bueno & Tubbs, 2004).

Global innovation leadership refers to that style of leadership required in multinational innovation (or product development) teams consisting of members with diverse, culturally-based personal values and practices (Chevrier, 2003). Effective global

innovation leadership requires a broad set of competencies related to cultural acumen, technical expertise, and social teamwork.

Assumptions

The study assumed that the Delphi method is an appropriate and effective research design for identifying global innovation leadership competencies in large MNCs. The use of competencies in such studies was assumed to be a viable framework for modeling leadership, despite claims that a competency approach is reductionist, universalistic or generic, focused on current and past performance, centered on measurable behavior, and mechanistic (Bolden & Gosling, 2006).

The opinion of domain experts was assumed to reasonably represent current thought and practices in large MNCs with respect to GIT leadership. The expertise of the selected experts was assumed to be relevant to the general objective and specific themes of the study. The two assumptions related to the participating experts were based upon selection criteria requiring the expert panel to have extensive professional experience in one or more of the research themes and to collectively represent a variety of cultural backgrounds from the major economic regions of the world. The cultural diversity of the domain experts purposively represented the diversity found within MNCs and their GITs.

It was assumed that the research results are broadly generalizable because team leadership attributes are generally applicable across many cultures (House et al., 2004). The findings are also expected to be equally valid across all large MNCs, various industries, and other organizational types. The data presented in studies conducted by Hofstede (2001) on cultural dimensions and House et al. (2004) on leader prototypes were assumed to apply to an analysis of GIT leaders.

Numerous other variables can potentially influence team effectiveness. For example, the Barrett (2000) model included rewards, diversity, accountability, mediated communication, goal clarity, embedded knowledge and skills, leadership, and organizational support as independent variables affecting team effectiveness. The study focused exclusively on leadership as the independent variable and assumed that leadership has an influence on the other stated independent variables.

Limitations and Delimitations

Limitations of the study related to survey instrument validity, number of study participants, and the logistics of data generation. The validity of the study was limited by the qualitative nature of the Delphi methodology. Construct validity was assessed solely by a comparison of the results with those of similar research (Creswell, 2005). The external validity of the study was limited by the small number of participants within any given discipline and cultural background. The number of available experts was limited by the specific qualifications required by the study and the ability to solicit experts from countries outside the United States. The availability of experts was limited to those who could comprehend English. A focus on academic papers and practitioner reports that were written in English and authored by participants effectively controlled for English comprehension.

The scope of the study was delimited to innovation teams in large MNCs with members from multiple countries. Colocated or single-culture innovation teams were excluded, as were teams consisting of colocated multicultural members or those in relatively small companies that are otherwise quite innovative. The study also did not address traditional or global teams. The study was delimited to a typical innovation team

context and hence did not address situations of extremely short design cycles, intense competition, or unstable corporate cultures from recent mergers or acquisitions. The research focused on outcomes related to general team satisfaction such as perceived degree of success compared to planned outcomes, rather than quantifiable metrics such as the number of patents issued or papers written. The study was further delimited by participant demographics. The surveys were constructed in English to minimize concern associated with language barriers. The English-only delimitation had the effect of excluding expert participants within developing countries who do not speak English. Generalizability of the findings across nations and cultures was delimited by the cultural background of the selected experts.

Chapter Summary

The contextual basis of the research study was the pervasive trend toward globalization of business operations (Boutellier et al., 2000). In particular, the study responded to the growing trend of developing innovative products and services with a multinational workforce and global knowledge network (von Zedtwitz & Gassmann, 2002). Within this context, the problem is the challenge of leading globally distributed innovation teams (Ambos & Schlegelmilch, 2004). A qualitative Delphi methodology revealed GIT leader competencies based on expert opinion. A theoretical framework, with respect to leadership, innovation, and societal culture, supported the research problem and method. Study results provided evidence that can enhance GIT effectiveness in many MNCs.

As presented in Chapter 2, the literature review conducted for this study places the research within global, organizational, and team contexts. The relevant literature

addresses traditional, innovation, and global teams, as well as GITs. The literature is also presented in terms of the major themes of interest—leadership, innovation, and societal culture—and their interaction. The review clearly identifies a gap in the literature with respect to GITs and their leadership.

CHAPTER 2: REVIEW OF THE LITERATURE

Critical analysis of existing literature related to the research supported the practical and theoretical need for the study, which is identification of leadership competencies for effective GITs. The literature is presented from global, organizational, and team perspectives. Studies with a global perspective address the increasing importance of knowledge-based, multinational, and collaborative innovation strategies toward long-term organizational performance. At an organizational level, related studies include the concepts of learning, flexible networks, acceptance of cultural diversity, external collaboration, and management champions who support innovation teams. Existing research on teams has highlighted both the common and unique features of traditional, innovation, global, and global innovation teams. The study added to this body of knowledge by identifying the set of beneficial competencies of global innovation leaders within a team context.

A historical review of the literature was organized by the three major themes under study (i.e., leadership, societal culture, and innovation) and the four interacting themes (i.e., leadership and societal culture; leadership and innovation; innovation and societal culture; and leadership, innovation, and societal culture). A review of related findings to date encompassed the leadership competencies promoting team effectiveness. The review was organized under the team typology of the study—traditional, innovation, global, and global innovation teams. The leader competencies of each team type were categorized under social, technical, or cultural. The review was intended to find any studies related to leader competencies of global innovation teams. Although a large

amount of research exists on the leadership of traditional, global, and innovation teams, the literature review revealed a paucity of study on the leadership of GITs.

The focus of the leadership theme was on transformational leadership theory, which defines effective leadership in many situations around the world. The innovation theme highlighted entrepreneurship as a disciplined process of searching for and exploiting opportunities to create new wealth. Within the societal culture theme, cultural intelligence was reviewed as a relevant theoretical construct integrating cognitive, motivational, and behavioral dimensions. The interacting themes of leadership and societal culture, innovation and societal culture, and leadership and innovation were described using culturally endorsed implicit leadership theory, an innovation-culture model, and an innovation leadership model, respectively.

<div align="center">Title Searches, Articles, Research Documents, Journals</div>

The EBSCOhost and ProQuest online databases were used to locate the majority of peer-reviewed journal articles associated with the themes of innovation, societal culture, and leadership. The ScienceDirect and IEEE Xplore databases were useful for literature related to innovation and innovation teams. Related dissertations containing useful historical reviews and research methods were drawn from the ProQuest Digital Dissertations database. Other sources accessed via the Internet included the United Nations and European Commission for economic census data and the Academy of Management for journal articles and conference proceedings. Approximately 400 high-quality references were obtained. Of these, approximately 110 were cited within this study. Approximately 64% of the cited references were published within the preceding 5 years, with the majority of the remaining 36% either foundational or pivotal to the Delphi

technique. Literature related to team effectiveness was organized into a tabular format summarizing predictors of effective traditional, innovation, global, and global innovation teams. This organization enabled the identification of patterns in issues, models, and research methods. Literature related to the leadership of each team type was similarly tabulated and analyzed.

Research Context

This study of global innovation leadership was conducted within a context of the global economic environment, the large MNC, and teams performing innovation activities. The global context includes the trend toward knowledge-based innovation. The MNC is the context in which the team leader must champion for team resources and support. The team itself, consisting of culturally diverse knowledge workers, is the specific context for application of leadership competencies.

Global

R&D investment metrics illustrate the increasing importance of innovation for national development and societal well-being (Ettlie, 2006). R&D expenditures within the 1,000 largest companies of the world were reported at approximately $400 billion during 2004 (Department of Trade and Industry, 2005). A positive correlation can be drawn between R&D investment, company performance, and market capitalization. According to the Department of Trade and Industry, "The growth in market value for the portfolio of FTSE 100 companies with the highest R&D intensities was 69% over the last 8 years compared to 7% for the FTSE 100 index" (p. 17).

On a global level, knowledge-based innovation is replacing traditional technology-driven innovation. Social networks are now the most important ingredient for successful innovation (European Commission Directorate-General for Enterprise, 2004). Such globalized networks will include companies, research institutions, and governments—all collaborating to perform basic research, technology, and innovation (United Nations Educational, Scientific, and Cultural Organization, 2005). Global R&D teams may include participants from academia, governmental agencies, and intercompany arrangements as part of an open innovation strategy (Chesbrough, 2003). The study of GITs in this context is directly applicable to the optimization of innovation processes at the team level for a broad range of large MNCs.

Organizational

A *system* is an assemblage of parts with interdependent relationships (Scott, 2003). The technical core of an organizational system can be defined in terms of three dimensions—"complexity or diversity, uncertainty or unpredictability, and interdependence" (p. 233). GITs are characterized by a high degree of all three dimensions. Scott defined the *organization* as an open system that maintains itself through an exchange of resources with the environment. This open organizational form is a higher level construct of the open innovation paradigm (Chesbrough, 2003), which is an essential facet of globally dispersed innovation teams. Organizational structure, organizational culture, and cultural diversity are three contextual factors that significantly influence the implementation of global innovation. For example, the organizational structure of R&D units within MNCs is driven partially by the search for local resources, efficiencies, and synergies. To that end, Bartlett and Ghoshal (2002) proposed that a

transnational organizational form is emerging to build competitiveness, develop flexibility, legitimize diversity, manage complexity, and facilitate learning on a global scale. Bartlett and Ghoshal (2002) proposed an integrated network of globally dispersed business units that are collaborative, interdependent, and specialized. The network is used to implement transnational innovation that focuses on leveraging local resources or linking global business units.

To support innovation processes, organizational systems must exhibit flexibility, which is "the ability of a system to respond or react to a change with very little time, effort, cost or performance" (Malaviya & Wadhwa, 2005, p. 4). A corporate culture must accept risk, minimize administrative barriers, trust competence, and reward experimentation. As MNCs become more widely dispersed, the use of efficient intraorganizational collaboration between R&D units within MNCs will become necessary to ensure synergistic innovation capability. Autonomy, process formalization, group socialization, and communication can also positively affect innovative capability (Persaud, 2005). Organizational culture is derived from personnel characteristics, ethics, property rights, and organizational structure (Jones, 2007). Jones believed that "cultural values of innovation, quality, excellence, and uniqueness help a differentiator implement its chosen strategy, and they become a source of competitive strength" (p. 220). The ability of an organization to learn is another cornerstone of innovation capacity. According to Senge (1990), a learning organization should excel of five disciplines—personal mastery, team learning, mental models, building shared vision, and systems thinking.

Team

A typology of four types of project teams is shown in Figure 3. This original typology indicates that the team types are differentiated by their degree of technical and environmental complexity. Technical complexity refers to the sophistication, newness, and number of interacting technologies for which a team is responsible. Environmental complexity is associated with exposure to diverse global cultures and dynamic markets. Santos et al. (2004) used a similar two-dimensional construct (i.e., market knowledge versus product knowledge) to characterize knowledge transfer strategies and group design within organizations.
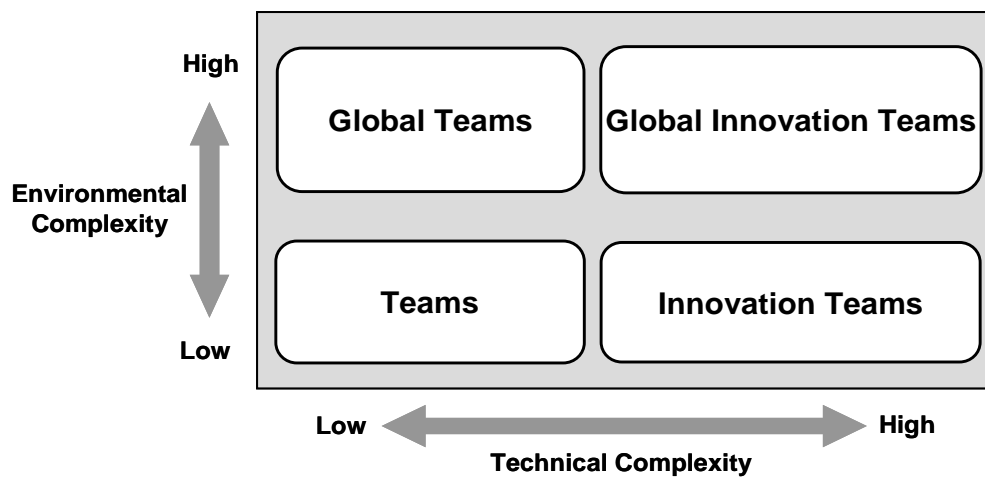
Figure 3. Team typology defined by technical and environmental complexities.

Traditional teams have relatively low technical and environmental complexity, given a mandate involving neither innovation nor global markets. By definition, innovation teams develop highly complex products and services with local team

members. Global teams operate from within a complex global environment; however, they do not develop complex technical products or services. GITs, which develop new products and services with global team members, operate under both high technical and environmental complexity. The study was conducted within the context of the GIT type. Specifically, the study identified which leader competencies improve the effectiveness of GITs in large MNCs.

Traditional Teams

Teams have become a prevalent and effective organizational unit for many work objectives and environments. Within the Cohen and Bailey (1997) typology, project teams have a limited time span, consist of multidisciplinary members, and are effective for high-performance developmental objectives. The most effective teams have a common goal and approach, have individually accountable members, and are committed to the growth of each team member (Katzenbach & Smith, 1993).

A virtual team is an interdependent group of people who work together across spatial and time boundaries using electronic collaboration technologies toward a shared goal (Lipnack & Stamps, 2000). Principal benefits of virtual teams include lower administrative costs, shorter cycle times, increased innovation, and leveraged learning. Virtuality is a continuum between extremes of physical separation, cultural differences, communication mode, task structure, and time-zone differences (Kratzer et al., 2006). Additional facets of a virtual team include the proportion of members in one location and the proportion of time each team member participates virtually (Kirkman & Mathieu, 2004). As such, most teams are virtual part of the time. Global teams are extremely

virtual and hence require comprehensive collaboration applications to ensure effective

coordination (Barczak & McDonough, 2003a; Pickering & Wynn, 2004).

Innovation Teams

Innovation teams are physically colocated; are assigned a R&D task type; and

typically work under high levels of goal uncertainty, time pressure, changing priorities,

and interdependency (Barczak & Wilemon, 2003). Common issues for innovation teams

include stress, conflict with other groups, and inadequate recognition. Predictors of

effective R&D team performance include communication and group cohesiveness (Bell

& Kozlowski, 2002; Keller, 1986). However, excessive communication and subgroup

formation can reduce team creativity (Kratzer et al., 2004). Functional diversity within

cross-functional groups positively affects group outcomes through increased

communication with external information sources (Keller, 2001). This conclusion

supports the use and benefit of diverse GITs as conduits of communication both internal

and external to the organization.

Global Teams

Global teams are dispersed (i.e., virtual) groups with multicultural members

located in various countries. According to McDonough and Cedrone (1998), their typical

objectives are to "1) develop products which meet a set of globally consistent needs, 2)

set global product standards for delivering against a set of global needs, or 3) bring

together globally-distributed technical assets" (p. 529). Snow et al. (1996) identified three

basic corporate objectives of transnational teams—global efficiency, local

responsiveness, and organizational learning. With these responsibilities, the transnational team becomes a strategic tool for expansion into global markets.

In addition to temporal and physical separation issues within virtual teams, global teams experience misalignment, low commitment, and misunderstanding. To mitigate these issues, Zakaria et al. (2004) suggested that all team members learn sufficient intercultural communication and behavioral competencies with cross-cultural training. Similarly, Henttonen and Blomqvist (2005) identified simple but effective team practices such as expressing concern for others; responding promptly; and finding common references such as corporate goals, humor, and storytelling. Trust building is particularly important due to the lack of traditional face-to-face socialization and the diverse cultural backgrounds of the team members. Antecedents of trust within global teams include a proactive orientation, a task (rather than procedural) focus, a positive communication tone, rotating leadership, substantial feedback, clearly defined goals, skilled time management, role specification, and frequent team interaction (Jarvenpaa, Knoll, & Leidner, 1998).

Global Innovation Teams

GITs have globally dispersed and multicultural members, and have a R&D task objective. While GITs may have features of traditional, innovation, and global teams, they will be largely self-managed, under intense goal-driven stress, and have numerous coordination constraints. One unique benefit of GITs is their ability to tap "local diversity as well as [support] central creativity" (Gassmann & von Zedtwitz, 2003, p. 260). This observation supports the two-dimensional team typology of this study. Local diversity is the environmental context dimension while central creativity is the technological content

dimension. Depending on the degree of autonomy, GITs can be decentralized and self-coordinating, act as a systems integrator of distinct work packages, have a core team with satellite team control, or can be formed as a centralized venture team for tight control of short-term, high-priority goals (Boutellier et al., 2000). The optimum design of a GIT is contingent on the type of innovation, type of knowledge, organizational context, and external linkages. According to Gassmann and von Zedtwitz (2003), the optimal organizational form for a dispersed innovation team is a work group with incremental innovation goals, explicit knowledge, autonomous work packages, and redundant resources. Similarly, Ambos and Schlegelmilch (2004) found that international R&D teams should be used primarily for capability-exploiting rather than capability-enhancing functions.

Research Context Summary

A global innovation strategy is becoming a competitive advantage as companies collaborate with a variety of R&D partners, leverage local capabilities, and quickly adapt products to local markets (Santos et al., 2004). GITs enable information gathering on a global scale as part of an open innovation strategy. Team members from diverse cultures provide a unique capability to adapt products and services to local markets and learn new approaches. Thus, GITs can exploit ideas and opportunities with high technical complexity and high environmental complexity. While GITs uniquely provide this organizational function, minimal research exists in the area of cross-cultural effects on the innovation process (Rank, Pace, & Frese, 2004). This study partly addressed the existing research gap by identifying which leadership competencies improve the effectiveness of GITs in large MNCs.

Historical Overview of the Research Themes

As noted earlier in Chapter 1, the themes of the study are leadership, societal culture, and innovation. The interaction between these themes are categorized as leadership and societal culture; innovation and societal culture; leadership and innovation; and leadership, societal culture, and innovation. This historical overview is organized by these three primary themes and four interaction themes.

Leadership

Leadership is an influential interaction process between leaders and team members that promotes the achievement of shared goals. The vast and multifaceted discipline of leadership study includes group leadership and the implications of the societal culture on leadership (Yukl, 2006). Leadership can be categorized into power-influence, behavioral, trait, and situational approaches. Situational leadership is applicable to GITs, given the many possible situations within which such teams operate. Behavioral approaches seek to identify and organize leader skills and competencies. Leadership behavior or characteristics especially relevant to leader effectiveness with GITs include trust, humility, vision, critical thinking, active listening, innovative mindset, demonstrated skill at team member development, appreciation for diversity, and self-discipline (Winston & Patterson, 2006). However, many studies have yielded conflicting or weak results due to the influence of many possible contextual or situational factors (Yukl, 2006). Additionally, many have been predominantly U.S.-centric with minimal attention to leadership within and between other countries and cultures.

Transformational and transactional leadership styles were conceptualized by Burns who believed that both styles are necessary, in varying degrees, for effective team interaction (Bass & Riggio, 2006). Bass characterized transformational leadership as presenting four overarching capabilities—idealized influence, intellectual stimulation, inspirational motivation, and individualized consideration. Bass suggested that the transformational leadership style augments transactional leadership. Transformational leaders achieve high performance by stressing the importance of the desired outcomes and encouraging subordinates to focus on team rather than individual goals. Transactional leadership uses an exchange of goods or benefits to achieve short-term results and may have limited application within particular autocratic cultures.

Bass (1997) found that the transformational style is a *variform functional universal,* which implies that the characteristics of transformational leaders can be used to identify leaders within various cultures. The transformational leadership style can also be applied effectively using information and communication technologies to promote trust in virtual teams (Avolio et al., 2000). In terms of innovation teams, the transformational leadership style may be more effective in a research, rather than a developmental, environment (Keller, 1992). Based on these findings, and by comparing many theories and models related to leadership, the transformational leadership style was expected to be applicable to GIT leadership.

Societal Culture

Hofstede (2001) developed a model based on value-belief theory for the study of societal cultures. Despite wide variation in cultural norms and practices, common (i.e., universal) issues across societal cultures are the relationship between the people and the

national authority, the general concept of self, and modes of conflict management (Hofstede & Hofstede, 2005). These issues are, in essence, dimensions of culture that became the basis for the five cultural dimensions developed by Hofstede—power distance, collectivism versus individualism, femininity versus masculinity, uncertainty avoidance, and long-term versus short-term orientation. Power distance refers to the degree of power inequality that is accepted by subordinates. In a work environment, collectivism is expressed by loyalty and teamwork while individualism is high when people want challenging work for personal satisfaction. People cooperate and share in feminine cultures, while those in masculine cultures compete. Uncertainty avoidance is high when rules are preferred and low when risk-taking and invention is acceptable. A long-term orientation denotes perseverance for future reward; short-term orientation is associated with a preference for early results and traditional practices. These dimensions are used to define the effects of societal culture on corporate governance, organizational behavior, and management theories. The wide variation in cultural characteristics requires that business managers, as well as team leaders, adapt to the complexities of their culture to avoid, at the minimum, embarrassing cultural insensitivities, or worse, failed negotiations resulting in lost business.

Cultural intelligence is a theoretical construct that integrates cognitive, motivational, and behavioral dimensions at an individual level of analysis (Earley & Ang, 2003). Cognitive abilities use knowledge to develop adaptation strategies for newly developed cultural situations. Motivational attributes are also needed to continue toward a goal while under the stress of new cultural situations (i.e., culture shock) or after a failed cultural encounter. Behavioral cultural intelligence is related to the self-awareness and

social aptitudes of emotional intelligence. These attributes are integrated to form cultural competency, which enables individuals to interact positively with peoples of all cultures with positive outcomes. The study investigated if cultural intelligence theory is associated with the culture competencies of GIT leadership.

Innovation

According to Drucker (1985), innovation is a disciplined process of searching for and exploiting opportunities to create new wealth. Opportunities for innovation within an organization include unexpected events, incongruities, process needs, and industry and market changes. External opportunities can be classified as demographic changes, changes in perception, and new knowledge. Salaman and Storey (2002) applied a similar construct, wherein innovation is not only the technology of products and services but also the search for new markets, customers, and applications. These two functions correspond to the complex environmental and technical dimensions that characterize teams, as illustrated earlier in Figure 3. GITs may provide a unique organizational function that combine both technical and environmental capabilities.

Entrepreneurship was originally described by Schumpeter as a means of innovation by individuals (Lambooy, 2005). Schumpeter later added innovation by groups to account for larger R&D projects, globalization, and the routinization of R&D. Drucker (1985) suggested that entrepreneurship is the individual behavior of adding value through innovation. Leaders are frequently associated with entrepreneurs, given their role as visionary change agents. Brewer (2004) found that "transformational leader behaviors increase follower's creative and divergent thinking" (p. 28). While entrepreneurship concerns individual or small company innovation, intrapreneurship

involves entrepreneurship within larger organizations such as MNCs (Kuratko, 2007). Entrepreneurs are quite similar to champions of innovation, who enthusiastically support disruptive ideas despite resistance within the organization (Howell & Higgins, 1990). To optimize innovation, champions must be willing to accept risk and be socially independent, politically astute, persistent, dedicated, and charismatic. An innovation leader is characterized by technical cognizance, political acumen, organizational experimentation, open communication, and risk-taking behavior (Jones, 1990). These entrepreneurial competencies generally complement the transformational leadership style within a global innovation environment. In essence, GIT leaders are the intrapreneurs of MNCs. The study investigated if entrepreneurship theory is associated with the technical competencies of GIT leadership.

Interaction

Leadership and Societal Culture

Societal culture affects organizational leadership, in terms of the distribution of power, goals and objectives, decision-making processes, organizational structure and procedures, reward systems, control processes, and the values of external organizations (Hofstede, 2001). For example, a short-term orientation relates to a preference for leisure time and a focus on quarterly profits. Cultures with long-term orientation emphasize learning, self-discipline, and development of personal networks (Hofstede & Hofstede, 2005). These effects, in turn, form the basis for implicit or prototypical leadership behavior within organizations.

Culturally endorsed implicit leadership theory is a specific version of implicit motivation theory that suggests leader acceptance is dependent on the congruence

between leader behavior and culturally implicit norms (House et al., 2004). The GLOBE study identified effective leader attributes that are contingent on national culture, as well as other attributes that are either universally endorsed or rejected (House et al., 2004; Javidan et al., 2006). For example, assertive cultures develop trust through calculation of the motives and capabilities of others. Within such societies, individuals who have experienced unique successes or have developed unique skills are implicitly trusted and likely to be assigned leadership roles (House et al., 2004). Charismatic styles are no longer universally endorsed without question due to past charismatic but brutal dictators. The very concept of leadership varies from high esteem to denigration. Leader attributes that are strongly endorsed include those that are transformational and team-oriented, both of which are key elements of this study (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999; House et al., 2004). The study investigated if culturally endorsed implicit leadership theory is associated with the social and cultural competencies of GIT leadership.

Societal Culture and Innovation

Due to increased globalization, research is increasingly centered on the effects of societal culture on innovation. Cultural factors can both positively and negatively influence innovation team performance (Sivakumar & Nakata, 2003). Cultural heterogeneity can improve the quality of ideas and creativity, but it can also induce the team conflict and misunderstanding that reduces effectiveness. Nakata and Sivakumar (1996) developed a model based on Hofstede's cultural dimensions for the initiation and implementation stages of the NPD process. For example, individualism is associated with the early-phase creative aspects of innovation, while collectivism introduces greater

benefit to the developmental phase of innovation. Similarly, cultures demonstrating low uncertainty avoidance are more prone to creative ideas, yet less likely to bring such ideas to fruition as valuable products and services (Hofstede & Hofstede, 2005). Sivakumar and Nakata (2003) refined their model to include cultural factor strength and a degree of heterogeneity to design NPD teams best suited for projects with combinations of early-stage and late-stage innovation processes. Culture also has a potential influence on *boundary spanning,* which is increasingly required in a global economy with more open innovation processes (Golden & Veiga, 2005). Pokay (2005) found that cultural distances within product development teams did not degrade team effectiveness. This contrary result is a positive finding for the realm of GITs. The study investigated if the culture-NPD model is associated with the technical and cultural competencies of GIT leadership.

Leadership and Innovation

Mumford et al. (2002) proposed a three-component innovation leadership style to describe the manner in which leaders "orchestrate expertise, people, and relationships in such a way as to bring new ideas into being" (p. 738). The idea generation component includes creating a climate conducive to creativity and corresponding to the intellectual-stimulation component of transformational leadership. Idea structuring aligns the innovative activity with an organizational context through management of processes and communication of goals and strategies. Idea promotion requires the skill of persuasion to obtain organizational support and resources for the innovation activity. Sternberg (2000) suggested a triarchic theory of intelligence composed of creative, analytic, and practical intelligences that is similar to the Mumford et al. (2002) model. Creative intelligence is necessary to conceive new ideas and effectuate novel connections (Sternberg, 2000).

Analytic intelligence is the ability to critically evaluate alternatives and is the basis for decision making. Practical intelligence enables the application of new ideas and the subsequent connection to practical problems. It also includes the capacity for communication and persuasion. While either the Mumford et al. or Sternberg models are viable, the study investigated if the Mumford et al. innovation leadership model is associated with the technical and social competencies of GIT leadership.

Leadership, Societal Culture, and Innovation

Substantial research has addressed the three primary themes of leadership, societal culture, and innovation individually, and the three interacting themes of innovation and societal culture, innovation and leadership, and leadership and societal culture. However, a pronounced gap was found in existing literature related to the theoretical and empirical knowledge of all three primary themes acting simultaneously within a team context. Shane et al. (1995) conducted one of the few research studies indirectly related to leadership, societal culture, and innovation. These researchers investigated the influence of societal culture on the methods preferred by champions of innovation to overcome organizational resistance. While Shane et al. did not study leaders per se, leaders can be classified as champions of innovations due to their idea promotion competencies (Mumford et al., 2002). Shane et al. found that more collectivist societies prefer champions who appeal to the various functions of the organization. Societies with higher uncertainty avoidance prefer champions that change organizational rules and norms. High power distance societies will more likely use champions to mitigate resistance to innovation by appealing to management.

Research Themes Summary

The three research themes of leadership, culture, and innovation can be integrated to develop new knowledge of GIT leadership. The three interacting themes of innovation and societal culture, innovation and leadership, and leadership and societal culture also contribute to an integrated theoretical framework. The transformational leadership style supports team effectiveness through individual consideration of team members and encourages the achievement of high-level goals. Successful innovation requires idea generation, structuring, and promotion to transform ideas into practical products and services. Within a cross-cultural environment, cultural intelligence integrates cognitive, motivational, and behavioral dimensions to enable leaders to interact with peoples of all cultures with positive outcomes. Thus, transformational leadership behavior, an innovation leadership style, and cultural intelligence, are necessary components to the effective leadership of GITs. The review of current literature identified many leader competencies that correspond with the above theories and models. This correspondence was shown above in Table 1. For example, technical competencies are related to entrepreneurship as defined by Drucker (1985). The study contributed to a clearer understanding of appropriate GIT leadership by identifying beneficial competencies within the social, technical, and cultural realms.

Current Findings of the Leadership Competencies Literature

A review of literature on leadership competencies is organized under the team typology presented in the study—traditional, innovation, global, and global innovation teams. All team types are individually addressed to identify both common and unique leader competencies. The particular focus of the study is the leadership of GITs, the most

complex type within the team typology. As such, many of the leadership roles and

competencies identified for traditional, innovation, and global team leaders are expected

to be also required for leaders of GITs. Figure 4 illustrates a conceptual mapping of the

three competency categories under the four team types. Effective leadership of traditional

teams is primarily defined by social competencies. Innovation team leaders require

technical competencies in addition to the social competencies of traditional team leaders.

Global teams, with their complex multicultural context, require leaders with both social

and cultural competencies. GITs are the most complex type, so their leaders are expected

to possess a combination of social, technical, and cultural competencies. The

competencies are identified in the following literature review of the leadership of each of

the team types.
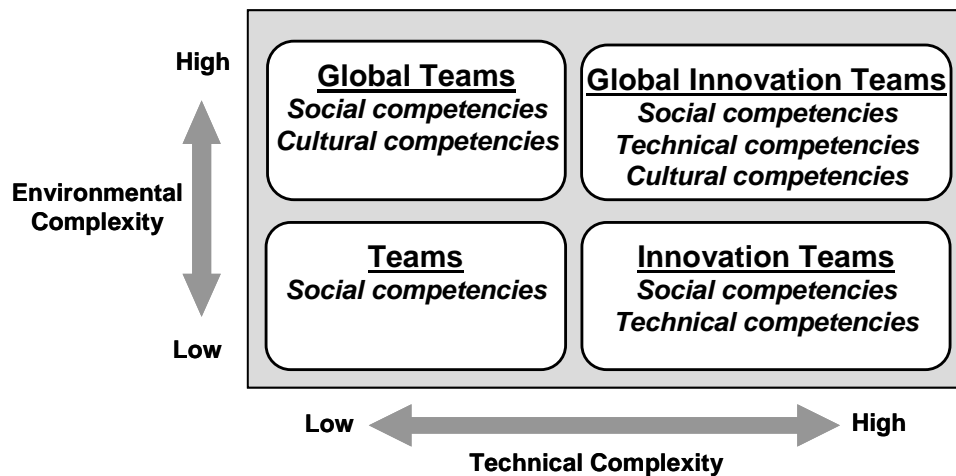
Figure 4. Mapping of social, technical, and cultural competencies onto team typology.

Traditional Teams

According to Zaccaro, Rittman, and Marks (2001), team leaders "are primarily responsible for defining team goals and for developing and structuring the team to accomplish these missions" (p. 452). They have four primary functions—(a) conducting information searches and structuring, (b) applying information in problem solving, (c) managing personnel resources, and (d) managing material resources. Leadership roles affect the cognitive, motivational, affective, and coordination processes that lead teams toward accomplishment of their goals. According to Druskat and Wheeler (2004), the most distinctive attribute of the team leader is his or her ability (i.e., competency) to manage "the boundary between the team and the larger organization" (p. 65).

Virtual team leadership requires the same competencies as leaders of colocated teams, including effective visionary communication, team member development, boundary spanning, and process facilitation. However, given the dispersed nature of a virtual team, the leader must also maintain exceptional focus on the "development and shaping of team processes, monitoring and management of ongoing team performance," and monitoring of external conditions within dispersed locations (Bell & Kozlowski, 2002, p. 17). Leaders must also maintain the pivotal focus on building trust between dispersed team members and exhibit consistent fairness to all members (Jarvenpaa & Tanriverdi, 2003; Switzer, 2000). They must be capable of maintaining a network with internal and external stakeholders, which are frequently as dispersed as the team members.

The ability to delegate leadership functions among dispersed team members is also a prerequisite corresponding to the leadership of self-directed work teams. Effective

leaders will leverage the networks of individual team members, sequence from lower risk to higher risk tasks, facilitate electronic communication, and "level" the electronic "playing field" (McDonough & Cedrone, 1998). Leaders must also cultivate executive and organizational credibility for long-term support (Kerber & Buono, 2004).

These competencies broadly describe the leader of effective traditional teams, which are characterized by relatively low environmental and technical complexities. These competencies essentially define the social competency category in the study's leadership effectiveness model. Some of these competencies may also be necessary for leaders of the more complex team types.

Innovation Teams

Leaders can promote team innovation by first demonstrating many of the same competencies of traditional team leadership such as developing commitment, encouraging information sharing, facilitating internal and external interaction, and focusing on continuous learning (Jassawalla & Sashittal, 2000). However, innovation teams require leader competencies beyond those typically evidenced in effective traditional teams. Such leaders will influence team processes including creativity enhancement, increased collaboration, accelerated innovation, and a willingness to learn and adapt. In essence, a transformational leadership style supports innovation team processes and predicts improved innovation, quality, and performance (Sivasubramaniam, Murry, Avolio, & Jung, 2002).

Because innovation teams develop ideas that may threaten the established organization, their leadership must be capable of developing and maintaining management support, and protecting the team from competing constituencies (Jassawalla

& Sashittal, 2000). The high task uncertainty common to R&D environments requires such leaders to clearly define strategic goals and operate with flexible plans (Kim, Min, & Cha, 1999). This flexibility is in even greater demand as the leadership role changes over time, often beginning as a strategic planner and builder before morphing into a boundary spanner. Communication of ideas is also essential within innovation teams, allowing leaders to effectively manage team processes that support open discussion and critical evaluation of ideas among team members, management, and external stakeholders (Hirst & Mann, 2004).

Gassmann and von Zedtwitz (2003) identified beneficial leadership styles for four types of virtual innovation teams. Teams with decentralized self-organization require low-level control and coordination. The system integrator type requires extensive interface management by leaders with strong interpersonal skills, which is especially relevant for multicultural teams. The core team, as a system architect type, requires competent and trusted team members and a traditional project manager with close linkage to a high-level steering committee. A centralized venture team is best served by a high-level project manager with full decision-making authority.

The described competencies broadly define the leader of effective innovation teams, which are characterized by relatively low environmental and high technical complexity. The competencies are essential constituents of the social and technical categories as defined in the study's leadership effectiveness model. These leadership competencies are complementary to those required in leaders of GITs.

Global Teams

The role of the global team leader, while similar to that of the traditional team leader, is complicated by the need for effective management of cultural differences between team members. Consequently, global team leaders should be proficient in managing conflict, developing trust and relationships, and establishing a common team culture across cultural differences (Zakaria et al., 2004). The ability to develop a simplified common culture is particularly important since teams are constantly evolving with new members, goals, and opportunities. The global business manager (i.e., global team leader) within a transnational organization is a strategist, architect, and coordinator (Bartlett & Ghoshal, 2002). The functional manager of global companies is no longer a controller of rote processes, but rather serves as an information scanner, implementor of best practices, and champion of emerging opportunities. When combined, these roles represent a major proportion of the skill and knowledge set of competent global team leaders.

Global team dynamics consist of a series of social interaction incidents. These events, such as conflict resolution and relationship building between multicultural team members, can be managed through the routine communication process (Maznevski & Chudoba, 2000). The temporal rhythm of both face-to-face and virtual meetings improves team effectiveness by "structuring expectations and making response times predictable" (p. 486). Thus, the respective leader can support the team by supporting a communication and decision-making process.

The described competencies broadly profile the leader of effective global teams, which are characterized by relatively high environmental and low technical complexity.

These competencies may be included in the social and cultural categories of the study's leadership model. Thus, many of these competencies may also be beneficial for leaders of GITs.

Global Innovation Teams

The GIT is the most complex type within the team typology. The virtual nature of this team type is maximized through dispersion, multiple cultures, and varying communication modes. Team responsibilities are both technically and environmentally complex. Therefore, a leader needs senior management support; full access to information technology; and a complete array of technical, social, and cultural competencies to effectively integrate and leverage diverse team talent. Technical competencies relate to understanding technical challenges and project management proficiency. Social competencies include networking, negotiation, and motivation skills. Cultural competencies may include being multilingual, open minded, willing to learn, and humble (Schweiger et al., 2003).

Transnational R&D projects depend on extensive integration and synchronization of a multitude of interrelated innovation sub-teams (Boutellier et al., 2000). A major constraint in the effective use of dispersed innovation teams is the sharing of tacit knowledge, which cannot be managed in the same manner as explicitly defined designs or process specifications. Leaders must encourage tacit knowledge sharing through simulations, informal contact, job rotation, and time allotted for creative thinking and "brainstorming." They must find strategic ways of accessing middle management, which acts as a "bridge" between the latest technology and organizational processes.

Chevrier (2003) conducted three case studies to characterize the leadership of multinational project groups, two of which involved product development. The global innovation leader implemented specific practices "(1) to draw upon individual tolerance and self-control, (2) to enter into a trial-and-error process coupled with relationship development and (3) to capitalize on transnational corporate or professional cultures" (p. 141). The Chevrier research highlighted the need for continuous leadership flexibility within the complexity of a global environment.

The described competencies broadly profile leaders of effective GITs, which are characterized by relatively high environmental and high technical complexity. GIT leaders may also require many of the competencies described for the effective leadership of traditional, innovation, and global teams. As such, GIT leader competencies will be found in each of the technical, social, and cultural categories of the study's leadership model.

Leadership Competencies Summary

This literature review has highlighted both common and unique competencies of traditional, innovation, global, and global innovation team leaders. Common leader characteristics include a participatory style, open-minded flexibility, and skill in boundary spanning and trust building. However, the need for these characteristics intensifies as business operations expand into multiple global locations and implement an integrated and global R&D strategy. The potential influence of societal cultures on team effectiveness is a pivotal factor and requires a change in leader emphasis from technical acumen to cultural sensitivity.

Related literature indicated that the components of the transformational leadership style are effective for all team types. While this is a generally universal style, significant cultural variation in leader preferences complicates the leadership role and requires leader focus on cross-cultural communication and relationship building (House et al., 2004). Surprisingly little research exists on the leader competencies needed to promote the effectiveness of GITs. The study focused on this knowledge gap and provided a clearer understanding of GIT leadership for theoretical and practical purposes.

Chapter Conclusion

As business has globalized, it has become more complex. Related literature has addressed the increasingly sophisticated aspects of teams and their leadership. Cultural variation at a societal level has a strong influence on business effectiveness (Hofstede & Hofstede, 2005). U.S.-based firms that expand into the global arena with insufficient training on cultural differences and virtual communication capabilities may be faced with predictably poor project performance. However, the study of GITs remains sparse, despite the large global R&D investment, the increasing rate of technological change, and the increasing innovative capability of many developing countries. The acknowledged need for, and benefits of, GITs are tempered by the cost of coordination and the difficulty in managing their associated interdependence and diversity. The objective of the GIT leader is to apply a contingent set of transformational behaviors that promote idea generation, experimentation, and implementation within self-managed teams composed of highly skilled, multidisciplinary, and mobile members.

Chapter Summary

This literature review began with a description of literature focused on the topic of study, as differentiated by a global, organizational, and team level of analysis. Within the team context, reviewed studies addressed the effectiveness of traditional, innovation, global, and global innovation teams. A foundational overview of theories was related to the primary themes of the study—leadership, innovation, and societal culture. Literature was also reviewed with respect to the leadership characteristics that promote the effectiveness of each type of team, with emphasis on the leadership of GITs. A large research base in the fields of leadership, societal culture, and innovation was integrated to highlight their significance within the context of a GIT. Only a few studies specifically addressed GITs.

Bergrenn (2004) concluded that incremental innovation by GITs is an appropriate intermediate step as firms expand into the global arena. Radical innovation requires high interdependence and is thus better suited for colocated teams. Schweiger et al. (2003) found that the GIT leader should strive for the support of senior management, maintain a common focus, minimize cultural complexity, establish a common language, promote team-member motivation, and establish human development practices such as job rotation and technical forums. Chevrier (2003) suggested that "structured examination of the cultural sense-making processes of project members" must be a primary leader objective (p. 141). Leader behavior should promote familiarity between team members, emphasize the engineering or organization culture, increase cultural awareness, and apply a contingent approach with each project.

According to Schweiger et al. (2003), the leadership challenge is to effectively integrate diverse talent. As such, key leadership characteristics include technical understanding, skill in subsidiary relationship building, negotiation skills, multilingual communication skills, project management experience, a drive toward achievement, an open-minded nature, a willingness to learn, and a humble attitude.

This literature review provided a basis for the research methodology described in Chapter 3. The selected method and population for study were primarily determined through the review of numerous and recent research studies within the field of team leadership.

CHAPTER 3: METHOD

The purpose of this qualitative Delphi study was to identify leadership competencies that promote the effectiveness of GITs in large MNCs. The findings could assist organizations with multinational interests to develop effective leaders and cohesive teams able to produce innovative products and services for improved organizational productivity and long-term growth potential. The research could also help to build a foundation for a global leadership theory that combines the transformational leadership style and cultural intelligence within a complex global business environment. The primary topic of leadership in a team context was the focus of the literature review. This provided the framework for a description of the selected research methodology and design.

Research Design

An appropriate research design identified the leadership style that supports innovation in a team context with both technological and environmental complexity. The selected strategy of inquiry was to survey industry experts within the fields of innovation, global operations, and team leadership (Creswell, 2003). Such experts were purposively solicited in the study to obtain a maximum variation of perspectives from cultural and organizational experience (Creswell, 2005). Electronic questionnaires elicited opinions of the discipline experts with broad experience in global leadership, innovation, teams, and cultural issues affecting the team dynamic. The research question and corresponding survey are sufficiently general to mitigate concerns surrounding competition-sensitive business practices. The specific method of analysis is known as the modified Delphi method and involved two related surveys (Hearnshaw et al., 2001). The data collected

provided a set of ideal leader competencies organized into a model of global innovation leadership. This leadership model was compared and contrasted with other existing models and theories to describe new knowledge and to highlight its practical value.

A classic Delphi design is a three-round survey administration (Linstone & Turoff, 2002). The first round is typically used to develop the dimensions or attributes of a broadly defined research question. Participants are solicited with open-ended survey questions and their responses are coded to develop a preliminary model. The second round allows the participants to order a complete list of attributes, in terms of importance or expected relationship with a dependent variable. The responses are used to order the components of the independent variable and determine the degree of consensus. The third round allows participants to review the aggregated results of the second round and modify their responses, if they so desire.

Table 2 lists nine studies that applied the Delphi method to investigate leader competencies within a wide variety of professional contexts. Three of those studies used a two-round Delphi. Hearnshaw et al. (2001) suggested that in such a study, "the preparatory stage of formulating issues can be supplanted by reference to existing research and subsequent rounds can be used to develop, rather than directly reiterate, the concerns of previous rounds" (p. 173). Hearnshaw et al. "considered that two rounds would be enough to reach adequate consensus and would minimise [*sic*] the workload for participants" (p. 174).

Table 2

Selected Delphi Studies Related to Competency Research

Study	Objective	Number of rounds	Number of participants
Hearnshaw et al. (2001)	Desirable characteristics of review criteria	2	38
Loo and Thorpe (2004)	Effectiveness needs of female first-line nurse managers	2	41
Lopopolo et al. (2004)	Leadership competencies of entry-level physical therapists	3	34
McGowan (1990)	Roles and competencies of training practitioners	2	13
Satterlee (1999)	Executive skills in international business	3	36
Seibert (2004)	Competencies for counselors of strategic managers	3	17
Shearin (1995)	Competencies for computer network literacy	3	20
Sheridan (2005)	Intercultural leadership competencies	3	26
Wright et al. (2005)	Advocacy training curricula for pediatric residents	3	36

Note. The average number of participants was 29.

A two-round Delphi was selected for the research design of the study for matching reasons described by Hearnshaw et al. (2001). The selected Spencer and Spencer (1993) competency framework was identified as a well-organized model that can eliminate the preparatory stage of the Delphi method. The process steps of the two-round Delphi study design are summarized in Figure 5. Participants rated a defined list of leader

competencies in Round 1. The competencies were ranked and the participants were

permitted to modify their ratings of the same competencies in Round 2. A detailed

analysis of the Round 2 results was subsequently conducted.
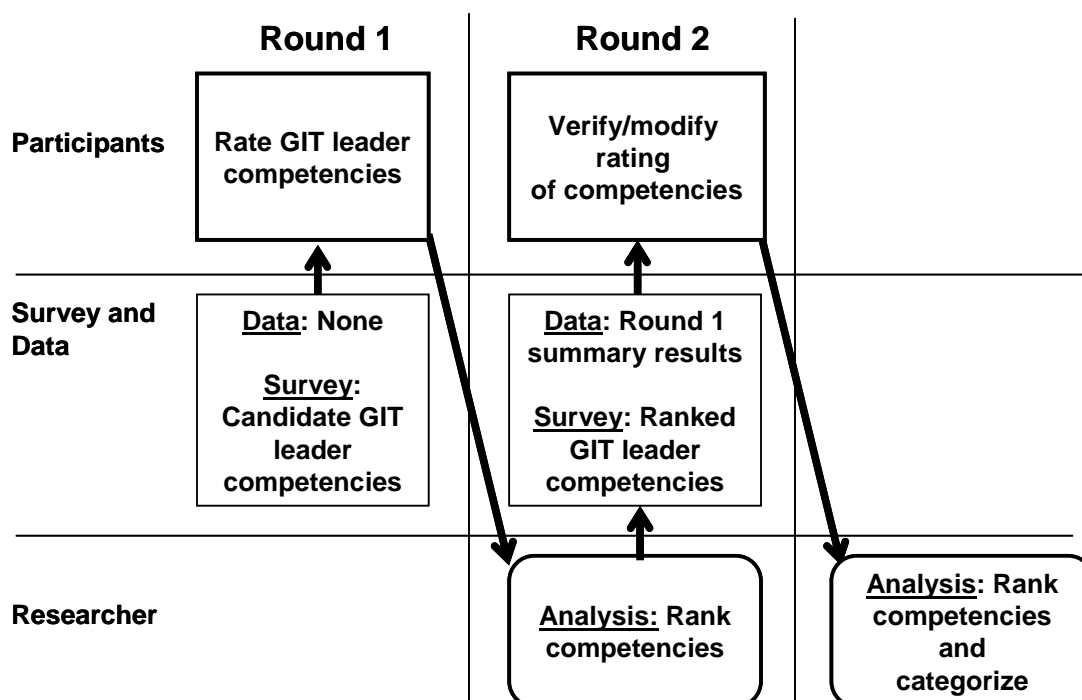
Figure 5. Two-round Delphi research process. GIT = global innovation team.

The design of the study was structured to characterize leadership competencies

that benefit team effectiveness. Leadership, innovation, and societal culture theories and

models described within the literature review provided the theoretical "lens" for

structuring and interpreting the research data (Creswell, 2005). The qualitative study

benefited from the structure of a hypothetical (i.e., propositional) relationship between

the dependent and independent variables, as found in a quantitative study (Linstone &

Turoff, 2002). Team effectiveness is the dependent variable, while leadership competency is the independent variable. This Delphi design facilitated reaching a qualitative relationship (i.e., a degree of importance) between selected leadership competencies and GIT effectiveness.

According to Linstone and Turoff (2002), the Delphi method "may be characterized as a method for structuring a group communication process, so that the process is effective in allowing a group of individuals, as a whole, to deal with complex problems" (p. 3). Consequently, Delphi methodology is appropriate for problems that do not lend themselves "to precise analytical techniques but can benefit from subjective judgments on a collective basis" (p. 3). The study was complex due to the nature of leadership, the social dynamics of teams, and the diverse context of global business operations. However, the Delphi method was selected for practical reasons to minimize constraints related to the disclosure of proprietary information, single industry focus, instrument validity, number of study subjects, and the logistics surrounding data gathering. The approach is also conducive to information gathering from experts with a wealth of knowledge and skill in business using a logistically facile online data collection procedure. An online survey using asynchronous communication allowed cost-effective and equitable participation of globally dispersed experts (Turoff & Hiltz, 1996). Expert participants can be selected to obtain the desired representation (Creswell, 2005). Anonymity prevents undue influence by any individual or minority group and eliminates the potential for cultural bias (Linstone & Turoff, 2002).

Dalkey and Helmer (as cited in Linstone & Turoff, 2002) developed the Delphi method during the 1950s to obtain a consensus forecast from a panel of experts given a

complex set of variables and incomplete information. Since that time, the Delphi technique has been applied within numerous disciplines and adapted to address a wide variety of research questions. With the advent of the Internet, Delphi surveys have been efficiently conducted online (Turoff & Hiltz, 1996). The Delphi methodology has been used to identify leader competencies (i.e., knowledge and skill), their relative importance, and desired levels of proficiency (Lopopolo et al., 2004). The method has facilitated identification of an ideal set of intercultural competencies for U.S. business leaders working within the global economy (Sheridan, 2005). Satterlee (1999) applied the Delphi technique to answer a research question similar to that of this study. The Satterlee research asked, "What key executive skills are required for success in the international business arena?" (p. 10).

Other potential research methods reviewed in related literature were evaluated, but either did not satisfy the fundamental research objective of the study or posed major logistical constraints. A variety of quantitative (Allen, 2005; House et al., 2004); qualitative (Bergrenn, 2004; Brewer, 2004; Chevrier, 2003; Schweiger et al., 2003); and mixed (Barrett, 2000) methods have been applied in past study of global teams, leadership, and team leadership. Constraints on the applicability of quantitative methods include the necessity of a large sample size and the mediating effects of culture on U.S.-based instruments. The majority of qualitative research has employed the case study method. However, a case study of GIT would be constrained by the significant travel to various countries to observe and interview the GIT leader and the multinational team members.

Population and Sample

The general population of the study is composed of experts in the study or practice of innovation, leadership, culture, and teams (Creswell, 2005). The study population is a part of the general population that was targeted to obtain "a list of names (i.e., the sampling frame) for the sample" (Creswell, 2005, p. 379). The study population consisted of experts identified from professional networking and from the authors of relevant research. The sample was drawn from the study (or target) population (Creswell, 2005) and consisted of those experts who agreed to participate. Industry and academic experts with experience in the fields of innovation, leadership, cultures, and teams were selected for participation. Purposive sampling (Creswell, 2003) was performed to achieve a balanced distribution of the number of participants within the four disciplines under study. Such a sampling could not be achieved by other methods such as the random sampling applied in quantitative methods.

Sample size for Delphi studies is not determined statistically, but rather, from the successful outcomes of prior and similar research. Successful Delphi studies have been conducted with as few as 10 to 15 panelists within a single reference group (Ziglio, 1996). According to Sheridan (2005), "Delbecq et al. (1975) recommended utilizing [a] minimally sufficient number of participants and suggested that there should be between 30 and 50 participants if an international expert group is gathered" (pp. 41–42). As indicated in Table 2, an average of 29 participants was used in nine similar Delphi studies of leadership competencies. Given that the study drew from an international group of experts, and given the findings of related research, a reasonable and manageable sample size was viewed as 30 participants. Consequently, the study sample of the study was

composed of 36 experts with industrial and academic experience in leadership,

innovation, societal cultures, and teams. Each expert had a minimum of six years of

experience in cross-cultural studies, teams, leadership, or product development. All

respondents were required to communicate in English because the survey was written

solely in English. The personal networking candidates have demonstrated English

proficiency through publication in various U.S.-based journals and texts, and through

contribution to U.S.-based industry studies. Nevertheless, recognizing the variation in

English proficiency and cultural background, the 20-competency survey was relatively

simple and straightforward, the English wording and grammar were not ambiguous, and

the individual competencies were not culturally controversial or insensitive. Participants

were not be classified as vulnerable subjects under the relevant federal guidelines (U.S.

Department of Health and Human Services, n.d.).

Instrumentation

A two-round survey instrument was developed for the study to elicit the opinions

of expert panel members. The instruments were constructed with survey tools provided

by an online survey site. Figure 6 illustrates the three-step process of instrument

development, validation, and implementation. Step 1 was performed to construct a draft

pair of online survey instruments. In Step 2, the drafted instruments were tested in a pilot

study to ensure clarity and face validity using experts with the same qualifications as the

primary study. The instruments were used in the two-round Delphi process as illustrated

earlier in Figure 5, but with emphasis on obtaining participant comments on the data

collection structure and process itself. The validated survey instruments are provided in

Appendices A and C. Step 3 is the implementation of the validated instruments during the

primary study, as described in subsequent Data Collection and Data Analysis sections.

Step 1 **Step 2** **Step 3**

| Preliminary Instrument
Develop structure and process | Pilot Study
Finalize and validate instrument | Primary study
Collect and analyze data |
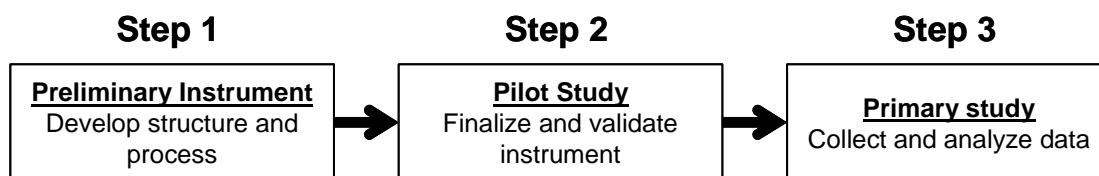
Figure 6. Process of instrument development, validation, and implementation.

Preliminary Instrument

The structure of the two-round questionnaire is based on similar Delphi

instruments developed by Sheridan (2005), Ziglio (1996), Lopopolo et al. (2004),

McGowan (1990), Seibert (2004), Shearin (1995), Hearnshaw et al. (2001), Loo and

Thorpe (2004), and Satterlee (1999). The approaches used in these studies with respect to

demographical information, number of rounds, statistical analysis, and participant

selection were considered in the preliminary construction of the survey.

The questionnaire implemented in the study was required to present a set of

competencies within the social, technical, and cultural categories. Competencies from

approximately 20 research sources were reviewed and compiled to investigate the

possibility of developing a new competency model (Alexander & Wilson, 1997); Hirst &

Mann, 2004); Dainty, Cheng & Moore, 2004); Tubbs & Schulz, 2006); Lugo, 2007).

However, ill-defined terminology or lack of substantiating data prevented any meaningful

or consistent compilation. Only the Spencer and Spencer (1993) competency model was

fully defined and sufficiently comprehensive to include social, technical, and cultural

aspects. The selected competencies are briefly described in Table 3 (Spencer & Spencer,

1993).

Table 3

Brief Definition of Competencies

Competency	Brief description
Achievement orientation	Results oriented, desires self-improvement, competes against standard, self-challenges, innovative, takes calculated risks
Analytical thinking	Demonstrates cause-effect reasoning, plans complex interdependent systems, sets priorities, applies analytical techniques
Conceptual thinking	Integrates components into a single vision, demonstrates critical thinking, develops new models and theories, recognizes patterns
Concern for order, quality, and accuracy	Reduces uncertainty; increases the clarity of tasks, roles, and functions; monitors progress; organizes data and processes
Customer-service orientation	Takes initiative to understand, responds to and solves client needs, desires to help and advocate for others
Developing others	Teaches, mentors, and supports others; provides constructive feedback; develops new training programs
Directiveness	Demonstrates assertiveness and aggressiveness, uses positional power to direct others, takes charge and imposes discipline, effective in recovery from poor performance situations
Expertise and specialized knowledge	Demonstrates depth/breadth of legal, product, and service knowledge; committed to learning; demonstrates broad scope of organizational knowledge
Flexibility	Adapts to new situations; appreciates views of others; demonstrates strategic scope of change (i.e., cultural intelligence)

(*table continues*)

Competency	Brief description
Impact and influence	Persuades with data or examples; appeals to reason; builds coalitions for company, rather than personal, goals
Information seeking	Seeks understanding and diagnosis, scans for opportunities, demonstrates curiosity, demonstrates need for self-observation, desires to learn more, involves others
Interpersonal understanding	Desires to understand the needs and feelings of others, listens, demonstrates cross-cultural sensitivity and empathy
Initiative	Demonstrates bias for action, proactive, seizes or creates opportunities, involves others, demonstrates a long-term future orientation
Organizational awareness	Understands power relationships and informal and formal structures and cultures, politically aware of internal and external "worlds"
Organizational commitment	Aligns with organizational goals over self-interests, assists others first, demonstrates personal sacrifice for the organization
Relationship building	Networks, establishes rapport, builds social contacts and friendships for business purposes
Self-confidence	Believes in own ability to accomplish challenging tasks, demonstrates strong expression and impression, admits and learns from failure
Self-control	Maintains emotional control under conflict or stress, not impulsive, resists inappropriate involvement, calms others
Team leadership	Desires to lead and motivate others, sets positive example, supports groups within the organization, communicates a compelling vision
Teamwork and cooperation	Willing to participate in and facilitate group functions and conflict resolution, empowers and encourages others

The instrument for administration during Round 1 of the study is provided in Appendix A. The survey consisted of five parts—informed consent, contact information for executive summary, demographical information, competency queries, and open-ended comments. A definition of terms and consent form is included in Part 1 of the survey. Part 2 requests contact information if the participant is interested in obtaining an executive summary of the research prior to the formal publishing of the dissertation. Part 3 solicits basic information on the geographical, cultural, and professional background of the respondents. This information was used to identify any patterns between individual background and other survey responses. Part 4 of the study instrument was the competency survey, which asks respondents to rate each of 20 leadership competencies in terms of perceived importance to the effectiveness of GITs. The competencies briefly described above in Table 3 (Spencer & Spencer, 1993) and ordered alphabetically were rated by the study participants using a 5-point Likert-type scale. Part 5 of the instrument solicited comments, rationale, and concerns of the respondents in an open-ended format. This feedback was used to modify specific aspects of the Round 2 survey or clarify the definitions of leadership competencies.

The survey instrument administered in Round 2 of the study allowed participants to confirm or modify their ratings of leader competencies from Round 1. The survey instrument for Round 2 is provided in Appendix C. It consisted of three parts—introduction, competency queries and open-ended comments. Part 1 reiterated study objectives and presents an enhanced definition of terms. Part 2 consisted of the competency queries. The same competencies from Round 1 were rated by importance using the same 5-point Likert-type scale. The instrument included, for each competency,

the rating provided by the particular participant and the mean response from the Round 1 survey. Thus, a unique instrument was constructed for each participant and clearly identified by a code associated with each respondent. In Part 3, comments, rationale for a particular rating, or any concerns were solicited with an open-ended format.

Pilot Study

The purpose of the pilot study was to further develop and validate the survey instrument, thus reducing "statistical mortality in the [primary] study" (Eggers & Jones, 1998, p. 57). The administration process used for the pilot study was similar to that planned for the primary research. However, the emphasis in the pilot study was on the analysis of participant comments and recommendations regarding the structure and content of the instrument. Pilot study participants were different from those selected for the primary study, but had the same qualifications. The pilot participants were asked to comment on the validity, clarity, content, and administration of the Delphi survey. Their responses were used to finalize the survey questions, online questionnaire format, and method of analysis. The following steps describe the data collection process of the pilot survey:

1. Qualified candidate participants were identified via professional networking and from relevant published research.

2. Three participants were selected with the same qualifications as those in the primary study.

3. The Round 1 letter (see Appendix A) was e-mailed to the pilot panel.

4. The pilot panel responses to the Round 1 survey were analyzed and the Round 2 questionnaire was modified, as appropriate.

5. The Round 2 letter was e-mailed to the pilot panel (see Appendix C).

6. The pilot panel responses to the Round 2 survey were analyzed.

7. The Round 1 and Round 2 surveys were modified in accordance with the final comments and corrections provided by the expert panel.

Analysis of the pilot study data focused on the comments and recommendations provided by the three expert participants. Nevertheless, the survey results from the two Delphi pilot rounds administered in the study were analyzed using descriptive statistics to verify the analysis process. The survey results of pilot Round 1 were used to rank all competencies in order of importance. Survey responses from pilot Round 2 were analyzed to obtain the final ranking and degree-of-consensus results.

Data Collection

The procedure for collecting survey data was a modified Delphi process of two rounds of questionnaires and feedback. Broad representation allowed greater construct validity and generalizability of the findings. The boundary of the data collection is the purposeful selection of experts as participants and the defined set of survey questions (Creswell, 2003). The study data consisted of expert qualification and demographic information, and the survey responses collected via the online questionnaires. The study was not limited to a particular physical or geographical location.

The online data collection method and protocol allowed comprehensive documentation of survey responses and textual data from widely dispersed participants. Such electronic information was readily manipulated, sorted, and summarized to generate feedback to participants as part of the Delphi process. A simplified two-round survey questionnaire and closed-end questions improved the response rate. Further incentive to

respond was provided by offering an executive summary of the research results prior to publication of the dissertation. The participants were solicited for their responses via e-mail in a consistent pattern. Those who had not responded within the requested timeframe were contacted with an e-mail emphasizing the importance of their participation with a request for them to complete the survey.

The detailed data collection process for the two Delphi rounds of the primary study had the following steps:

1. 488 potential participants were identified from professional networking and from the authors of relevant published research.

2. The potential participants were solicited with an e-mailed invitation letter via the SurveyMonkey.com website (see Appendix A).

3. Of the 452 delivered invitations, 46 participants with the required expert qualifications completed the survey.

4. The 46 participant responses to the Round 1 survey were analyzed.

5. The Round 1 summary results were incorporated into the personalized Round 2 surveys for each participant. Each participant was coded with a unique number. The code was used to clearly, but confidentially, identify the specific Round 2 survey that was distributed to each corresponding participant.

6. The Round 2 letter was e-mailed to the panel of 46 experts, soliciting them to complete the preliminary Round 2 online survey (see Appendix C). A follow-up e-mail was sent to those participants who had not completed the survey after four days (see Appendix C).

7. Of the 46 participants who completed Round 1, 36 participants responded to the Round 2 survey.

The data collection process of the study ensured confidentiality. Both the identity of the participants and the response data were treated as strictly confidential and have not nor will not be shared with any individual for any reason. The web-based survey did not request personal information. The Round 2 administration was distributed with an aggregated summary (i.e., mean and standard deviation) of the compiled responses from Round 1. While the survey was open and available to respondents, the data were protected by the latest in firewall and intrusion-prevention technology. The confidentiality of all data stored on the survey website was strictly maintained. When the survey was closed after the final round was complete, the data were downloaded and deleted from the survey website. All study data were electronic and as mentioned earlier, stored on a separate encrypted and password-protected hard-drive accessed solely by the researcher for purposes of the proposed study. All recorded data will be deleted 3 years after study completion.

Data Analysis

Using an inductive approach, the survey results from the two Delphi rounds administered in the study were analyzed using descriptive and inferential statistics to identify patterns and degree of consensus. As shown in Table 4, previous Delphi studies have used a variety of descriptive statistics to determine degree of importance and level of consensus. This study used the response mean to rank leadership competencies in terms of importance and the response standard deviation to determine degree of

consensus. Inferential statistical analysis was performed on the Round 2 data to

determine if the difference between competency means was significantly different.

Table 4

Statistical Methods Applied by Past Delphi Studies

Study	Statistical method
Hearnshaw et al. (2001)	Inclusion criteria: (a) at least 80% of the expert panel providing an importance rating of 5 or more and (b) a feasibility rating of 4 or more
Loo and Thorpe (2004)	Total score (response frequency multiplied by weighting factor) for importance criterion; No consensus criterion
Lopopolo et al. (2004)	Median and average for importance; *SD* calculated; No statistic used for consensus
McGowan (1990)	Mean as primary criterion for importance*; SD* as secondary criterion if match; "80% or more of respondents are within two numbers on the Likert-type scale" (p. 109) for consensus criterion
Satterlee (1999)	Average rating on a 10-point Likert-type scale for importance criterion; No consensus criterion
Shearin (1995)	Mean, median, *SD* (< 1), or positive skewness used as consensus criteria
Sheridan (2005)	Mean rating for importance; *SD* (<1) for relative consensus
Seibert (2004)	Mean and median for importance; No consensus criterion since sample was too small for *SD*
Wright et al. (2005)	Mean ranking for importance and consensus; *SD* calculated but not used for consensus

In addition to the analysis of the individual competency data, the leadership

competencies under study were analyzed with respect to the social, technical, and cultural

categories. These categories were established to highlight the multidimensional nature of GIT leadership and to align the competencies with the theoretical framework. As indicated in Table 5, these categories are similar to those used by McLandsborough (1995) and Sheridan (2005). A categorization of the Spencer and Spencer (1993) competencies used in the study is provided in Table 6. Social competencies relate to interpersonal and intrapersonal skills and knowledge. Emotional intelligence encompasses many of these competencies (Goleman, Boyatzis, & McKee, 2002; Prati et al., 2003). Technical competencies relate to organizational and technical skills and knowledge. Examples include cognitive intelligence, entrepreneurship, and creativity (Brewer, 2004; Drucker, 1985; Ettlie, 2006). Cultural competencies relate to human relations that cross cultural boundaries and in many respects, to cultural intelligence (Earley & Ang, 2003).

Table 5

Competency Categories Used in Past Research

Study	Categories
Hearnshaw et al. (2001)	None
Loo and Thorpe (2004)	None
Lopopolo et al. (2004)	Knowledge, skills
McGowan (1990)	None
McLandsborough (1995)	Personal, technical, multicultural, administrative
Pavett and Lau (1985)	Knowledge, skills, attitudes
Satterlee (1999)	Participant country of origin (United States, Canada, Mexico)
Shearin (1995)	None
Sheridan (2005)	Intrapersonal, interpersonal, intercultural
Seibert (2004)	Knowledge, skills, attitudes
Wright et al. (2005)	Knowledge, skills

Table 6

Assignment of Leadership Competencies to Social, Technical, and Cultural Categories

Dimension	Competency
Social	Customer-service orientation; Developing others; Directiveness and assertiveness; Impact and influence; Organizational commitment; Self-control; Self-confidence, Team leadership; Teamwork and cooperation.
Technical	Achievement orientation; Analytical thinking; Conceptual thinking; Concern for order, quality, and accuracy; Initiative and proactive; Expertise and specialized knowledge; Information seeking; Organizational awareness
Cultural	Flexibility and adaptability; Interpersonal understanding; Relationship building

The survey results of Round 1 were used to rank all competencies in order of importance to the effectiveness of GITs. Commentary by the expert participants provided personal insight and perspectives as they related to the leadership competencies under study. A summary of the participant's demographic information and their qualifying experience within each of the study themes were presented in tabular format. All leadership competencies were ranked in order of importance by the response mean. Consensus was defined when the response standard deviation was less than one. Analysis of variance (ANOVA) was performed on the Round 1 data to determine if some of the differences between competency means were statistically significant.

Analysis of the Round 2 data involved the ranking of leadership competencies by importance to GIT effectiveness; and ranking the competencies within the social, technical, and cultural categories. The Round 2 survey results were analyzed using descriptive statistics to finalize the ranking of leadership competencies and to identify the degree of consensus. Consensus was not specifically sought as in a traditional Delphi; however, any outstanding variation of opinion was preserved and reported. Any persistent lack of consensus following Round 1 may be due to the cultural variation of the participants and was reported as a valuable finding, as appropriate. Round 1 and Round 2 data were compared to determine the extent by which the degree of importance (response mean) and degree of consensus (response standard deviation) were affected by group opinion. The effect of societal culture on the study results was investigated by relating the cultural orientation (nationality) of the study participants to the type of competencies selected by the participants. ANOVA was performed to determine if the difference between each pair of competency means was significantly different.

Validity and Reliability

The Delphi method presents several features that improve internal validity. The anonymity of participants is maintained to prevent domination by a few or by elite individuals. Sample selection is designed to provide a practical degree of professional heterogeneity, thus minimizing bias by, and limited generalizability to, a single professional domain (Linstone & Turoff, 2002). The extensive real-world experience of the participating experts provides greater assurance that their responses are valid and define the contextual truth. Their experience also influences their responses, allowing contextual complexity to be implicitly incorporated. Content validity indicates the ability of the instrument to measure those variables intended for measurement (Creswell, 2005). Thus, the content validity of this Delphi study is dependent on the credibility of the competencies derived from Spencer and Spencer (1993). Construct validity was assessed by a comparison of the findings with results of similar research (Alexander & Wilson, 1997; Chin et al., 2001; Kets de Vries & Florent-Treacy, 2003; Sheridan, 2005).

External validity is typically the generalizability of a sample to the greater population (Creswell, 2005). According to Hearnshaw et al. (2001), "The external validity of the collective opinion produced by a Delphi method is dependent on the composition of the expert panel" (p. 175). Using this rationale, the external validity of the study was primarily based on the professional background of the expert participants. The cultural diversity of the participants was a secondary factor to generalizability of the findings to other cultures. The external validity of this study was limited by the small number of participants within any single discipline and from any single cultural background. In terms of reliability, the "informed group judgments, achieved through the

methodological procedures associated with the Delphi method, are more reliable than individual judgment" (Ziglio, 1996, p. 15). Physicians have applied Delphi methodology to estimate employee absenteeism within a 10% error rate (Linstone & Turoff, 2002).

Chapter Summary

The qualitative Delphi method was selected for the study to develop qualitative data toward answering the research question, which asks, "Which leadership competencies improve the effectiveness of GITs in large MNCs?" Various other quantitative and qualitative methods were relatively inappropriate or logistically impractical. The study population consisted of experts in the study or practice of innovation, leadership, societal culture, and teams. The target population consisted of those experts identified by professional networking and from the authors of relevant research. A pilot study validated the preliminary survey instruments. Participants of the pilot study had the same qualifications as those in the primary study, and focused on possible improvements to the structure and content of the surveys. After the survey instruments were finalized and validated, the primary study was conducted. A sample of 36 experts was obtained from the target population with substantial professional experience in the four domains. The expert participants responded to a Likert-type survey questionnaire to identify desirable competencies of GIT leaders. A two-round Delphi for the research design using an existing, well-defined set of competencies developed by Spencer and Spencer (1993) were selected to facilitate participant involvement. The Internet-based data collection process allowed equitable and economical contribution by participants who were located around the world (Linstone & Turoff, 2002). The survey, while written only in English, was sufficiently simple and focused as to preclude mis-

interpretation from participants with imperfect English proficiency. The mean results were used to rank the competencies in terms of importance to GIT effectiveness, and the results standard deviation measured the degree of expert consensus. Internal and external validity was improved through the use of well-qualified expert participants who remained mutually anonymous. Although limited by participant selection and the qualitative Delphi method, the results may be generalizable within the conceptual boundary defined by teams with multicultural and physically dispersed members.

This research method was used to generate substantial and meaningful data that are presented and analyzed in Chapter 4. The Round 1 data analysis provides exploratory insight into the pattern of expert responses and degree of consensus. Round 2 data analysis shows how the experts modified their responses based on the Round 1 data, and determines the statistical significance of the final dataset. Themes related to GIT leader competencies in large MNCs are identified based on this analysis.

CHAPTER 4: ANALYSIS

The purpose of the study was to identify those leadership competencies that may improve the effectiveness of global innovation teams (GITs) in large MNCs. An online survey design allowed cost-effective and equitable participation of expert participants who were located in many parts of the world. Selected practitioner and academic experts in the fields of innovation, societal culture, leadership, and teams identified the relative importance of selected competencies for GIT leaders. These experts were from 16 nationalities in Asia, Europe, and North America. Results of Round 1 and Round 2 of the study are presented. These results were analyzed to determine the absolute and relative degree of importance of the 20 individual competencies and of the three competency categories. The study produced qualitative data that fully answered the research question. Results of the pilot study both validated and helped to improve the survey instrument. The results from the primary Delphi study identified the important competencies of GIT leaders.

Results of the Pilot Study

The purpose of the pilot study was to further develop and validate the survey instrument, thus reducing "statistical mortality in the [primary] study" (Eggers & Jones, 1998, p. 57). The pilot study verified that the survey process was effective, the survey questionnaires were understandable, and the analysis method produced meaningful results. Comments from the pilot participants were used to improve aspects of the survey and procedures. The two-round survey was submitted to three pilot participants—one an expert practitioner, one an expert academic, and one expert academic familiar with the Delphi method. All three participants had United States nationality.

The three participants first completed Round 1. All participants were readily able to access the SurveyMonkey.com website and respond to the online survey. However, two pilot participants recommended better definitions of the competencies. In response, certain competency titles were expanded in Round 2. Competency definitions were later added to the primary study. The raw data were obtained from the SurveyMonkey.com website, from which response mean and standard deviation statistics were calculated. A customized survey for Round 2 was created for each participant that included his or her Round 1 responses and the mean responses from the three pilot participants. The Round 1 data were used by the pilot participants to optionally modify their competency ratings in Round 2.

Two of the three Round 1 pilot participants then completed Round 2. The resulting data were analyzed to determine final mean and standard deviation statistics to determine for each competence the importance rating and the degree of consensus, respectively. One participant verified that the mean and individual response data in each of the Round 2 competency questions were effectively presented and meaningful. One participant noted that attrition between Delphi rounds could be large. Consequently, about 50 Round 1 participants (or about 10% of the initial participant database) were targeted during the primary study to increase the likelihood that at least 30 participants (or 60% of the Round 1 participants) would complete both rounds.

Results of the Primary Study

Both rounds of the primary study generated meaningful and statistically significant results. Round 1 produced a dataset of expert opinions on the importance of GIT leader competencies that was not influenced by the opinions of the experts as a

group. Rowe and Wright (1999) referred to the round 1 experts in a typical Delphi as a *staticized* (or non-interacting) group. Round 2 allowed the participants to modify their responses based on the Round 1 data, so the Round 2 data represented a more accurate opinion of the global group of expert participants (Rowe & Wright, 1999), if not a complete consensus of opinion.

Round 1 Results

Round 1 was used to collect information on participant demographics, competency ratings, and any expert commentary. Reasons for the low response rate are discussed. The Round 1 data were analyzed to determine response mean and standard deviation and thus the level of competency importance and the degree of expert consensus, respectively. ANOVA was performed on the Round 1 data to determine if the differences between competency means were statistically significant.

A total of 46 complete and qualified responses were obtained for Round 1. As shown in Table 7, the Round 1 response rate of 14% was based on the 452 solicitations that were successfully delivered. McLandsborough (1995) reported an average response rate of 34% in six previous Delphi studies, within a range of 14% to 53%. Thus, the Round 1 response rate of 14% is at the low end of this range. The low response rate is likely due to the unsolicited nature of the survey. Approximately 12 potential participants who declined to participate responded via email that they were too busy with existing duties, or that they were unqualified to respond. Thus, the low response rate may be partly attributed to the inability to screen participants for minimum qualifications, and partly to many well-published academics who are in high demand for their services.

Table 7

Round 1 Response Count

Count	Description
488	Emailed solicitations
30	Undeliverable emails
6	Opted out of unsolicited surveys
452	Delivered solicitations
64	Total responses
16	Partial responses
48	Completed responses
2	Unqualified responses
46	Completed and qualified responses

Demographic data consisting of age, gender, highest academic degree, nationality, professional specialization, and years of relevant experience are presented in Appendix A. In particular, a broad and balanced diversity was achieved in terms of nationality and professional specialization. The participants were from 19 Asian, European, and North American nationalities. Rather than country of residence or current location, nationality was used in this study to more accurately represent the societal culture of the participants. The participants reported professional experience in all study themes of leadership, societal culture, innovation, teams, and their various combinations. The participants had an average of approximately 10 years industrial or academic research experience in leadership, multinational cultures, innovation (product development), and teams.

The Round 1 data were analyzed to determine response mean and standard deviation and thus the level of competency importance and the degree of expert consensus, respectively. As shown in Table 8, the competencies were ranked by the response mean. The range in responses was from a score of 1 for low importance to a score of 5 for high importance on a 5-point Likert-type scale. The response means of the 20 ranked competencies are plotted in Figure 7 to visualize the absolute and relative distribution of results. The response standard deviation, which measures variation about the mean, is also presented in Table 8. The response standard deviation shows a gradual trend of increasing variation (decreasing consensus) with lower-rated competencies. In this study, group consensus was defined as a standard deviation value less than unity (Shearin, 1995; Sheridan, 2005). As presented in Table 4 of Chapter 3, this definition of consensus has been used in similar Delphi studies more frequently than other criteria. Thus, the participants were in consensus for all competencies, although several of the lower ranked competencies had a standard deviation close to unity. Since the absolute value used to define consensus is arbitrary (Rowe & Wright, 1999), more meaningful analysis was obtained by discussing, for each competency, the relative degree of consensus over the range of reported standard deviation values.

Table 8

Round 1 Competency Results

Rank	Competency	Mean	SD
1	Teamwork and cooperation	4.50	0.66
2	Initiative and proactive	4.37	0.74
3	Interpersonal understanding	4.35	0.60
4	Information seeking	4.30	0.63
5	Impact and influence	4.22	0.73
6	Flexibility and adaptability	4.15	0.73
7	Conceptual thinking	4.11	0.82
8	Analytical thinking	4.09	0.81
9	Team leadership	4.02	0.75
10	Self-confidence	3.83	0.74
11	Organizational awareness	3.80	0.91
12	Self-control	3.79	0.80
13	Relationship building	3.72	0.81
14	Developing others	3.70	0.76
15	Customer-service orientation	3.65	0.87
16	Achievement orientation	3.50	0.94
17	Organizational commitment	3.52	0.89
18	Expertise and specialized knowledge	3.33	0.97
19	Directiveness and assertiveness	3.30	0.96
20	Concern for order, quality, and accuracy	3.17	0.97
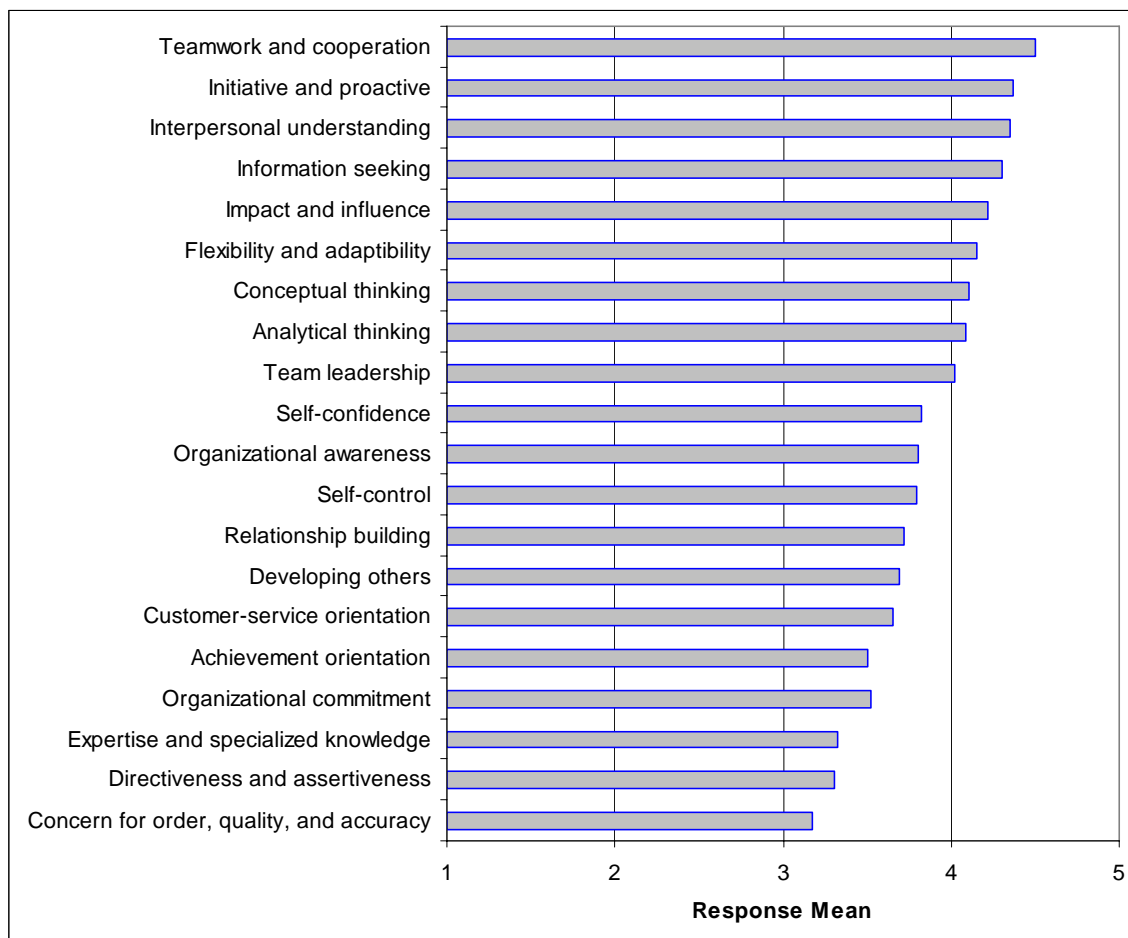
Figure 7. Response means for Round 1.

ANOVA was performed on the Round 1 data to determine if the differences between competency means were statistically significant. According to Bogartz (1994), ANOVA is used to test multiple samples with an *F*-test in a similar manner as the single-sample *t*-test. The data were structured such that competency type was the independent variable, and the degree of importance to effective GITs was the dependent variable. The null (H0) and alternative (H1) hypotheses are stated as follows:

H0: There is no significant difference between the 20 leadership

competencies with respect to their importance to effective GITs

H1: There is a significant difference between the 20 leadership

competencies with respect to their importance to effective GITs

In terms of the research data, the null hypothesis stated that all the competency response means of the dependent variable are equal. This assertion implied that the individual responses were obtained by chance and not affected by the independent variable (the competency types). The results of the ANOVA, performed using the single-factor ANOVA function in Microsoft© Excel©, are presented in Table 9. The probability (P-value) that the data were obtained randomly is extremely small. Thus, the null hypothesis was rejected, implying that the difference between some or all of the Round 1 response means was significant. Further analysis to determine the statistical significance between response means for each pair of groups (or competencies) was not performed for the preliminary Round 1 data, but rather only for the final Round 2 data. Since the primary findings and themes are based only on Round 2 results, additional statistical analysis of Round 1 data was unnecessary.

Table 9

Round 1 ANOVA Results

Source of variation	SS	df	MS	F	P-value	F crit
Between Groups	138	19	7.282	11.18	<0.0001	1.598
Within Groups	584	897	0.652			
Total	723	916				

SS = sum of squared deviates
df: degree of freedom
MS: mean square
F: ratio of MS (between groups) divided by MS (within groups)
P-value: probability that the null hypothesis is supported
F crit: Value of F associated with 0.05 confidence level

Round 2 Results

The Round 2 survey collected data on competency ratings and any further

commentary from the participants. The primary purpose of Round 2 was to finalize the

importance ratings of each competency, and thus provide sufficient data to answer the

research question. The response rate was found to be higher than several previous Delphi

studies. Demographic analysis highlighted the global dispersion of the participants.

Response means and standard deviations indicated the level of importance and degree of

consensus among the expert participants, respectively. Round 1 and Round 2 response

means were compared to determine the extent by which the mean response was affected

by group opinion. ANOVA was performed on the Round 2 data to determine its

statistical significance. A Tukey Honestly Significantly Different (HSD) test was

conducted to identify which specific pairs of competency means are statistically different

The effect of societal culture on the study results was investigated by relating the cultural

orientation of the study participants to the type of competencies selected by the participants.

Of the 46 participants who completed Round 1, 36 participants completed Round 2, a 78% response rate. McLandsborough (1995) reported an average response rate of 34% in six previous Delphi studies, within a range of 14% to 53%. Thus, the Round 2 response rate is well above the range. In a more recent study with an online delivery technique similar to this study, Sheridan (2005) reported a response rate of 95%, 82%, and 87% during three Delphi rounds.

The demographic data of the Round 2 participants were previously obtained from the Round 1 survey and are presented in Appendix D. As in Round 1, a broad and balanced diversity was achieved in terms of nationality and professional specialization. Participants had 16 Asian, European, and North American nationalities, and had professional specialization in all study themes (leadership, societal culture, innovation, leadership and innovation, leadership and culture, culture and innovation, and teams). The Round 2 participants had an average of approximately 10 years of experience in leadership, societal culture, innovation, and teams. Industrial experience may include team leadership, expatriate duty, or participation in a product development team. Academic experience would be related to the study of leadership, cross-cultural effects, innovation or product development, and teams.

The primary difference between rounds was the gender distribution, as the percentage of females who participated decreased from 42% in Round 1 to 33% in Round 2. Since the percentage of females in the initial database of all potential participants was

approximately 30%, the Round 2 gender distribution closely represented the target population.

As shown in Table 10, the competencies were ranked by the response mean. The response mean of the 20 ranked competencies is plotted in Figure 8 to visualize the absolute and relative distribution of results. The response standard deviation is also provided in Table 10. Given the definition of consensus ($SD<1$), the expert participants were in consensus for all competencies. However, the standard deviation of several lower ranked competencies was close to unity, indicating a persistent and relatively high variance in expert opinion.

Table 10

Round 2 Competency Results

Rank	Competency	Mean	SD
1	Teamwork and cooperation	4.51	0.61
2	Interpersonal understanding	4.40	0.69
3	Flexibility and adaptability	4.29	0.57
4	Team leadership	4.11	0.63
5	Relationship building	4.09	0.66
6	Initiative and proactive	4.06	0.89
7	Achievement orientation	4.03	0.62
8	Information seeking	4.00	0.60
9	Conceptual thinking	3.94	0.69
10	Analytical thinking	3.74	0.74
11	Developing others	3.69	0.80
12	Self-confidence	3.62	0.74
13	Impact and influence	3.60	0.77
14	Expertise and specialized knowledge	3.54	0.98
15	Organizational awareness	3.50	0.79
16	Self-control	3.43	0.65
17	Customer-service orientation	3.40	0.98
18	Directiveness and assertiveness	3.29	0.76
19	Concern for order, quality, and accuracy	3.26	0.75
20	Organizational commitment	3.12	0.98

control, *customer-service orientation*, and *organizational commitment*, already lower-

ranked in Round 1, were scored even lower in Round 2.

Table 11

Comparison Between Round 1 and Round 2 Response Means

Round 2 Rank	Competency	Response mean		Absolute change	Percent change
		Round 1	Round 2		
1	Teamwork and cooperation	4.50	4.51	0.01	0.32
2	Interpersonal understanding	4.35	4.40	0.05	1.20
3	Flexibility and adaptability	4.15	4.29	0.13	3.22
4	Team leadership	4.02	4.11	0.09	2.30
5	Relationship building	3.72	4.09	0.37	9.91
6	Initiative and proactive	4.37	4.06	-0.31	-7.11
7	Achievement orientation	3.50	4.03	0.53	15.10
8	Information seeking	4.30	4.00	-0.30	-7.07
9	Conceptual thinking	4.11	3.94	-0.17	-4.08
10	Analytical thinking	4.09	3.74	-0.34	-8.42
11	Developing others	3.70	3.69	-0.01	-0.27
12	Self-confidence	3.83	3.62	-0.21	-5.45
13	Impact and influence	4.22	3.60	-0.62	-14.64
14	Expertise and specialized knowledge	3.33	3.54	0.22	6.52
15	Organizational awareness	3.80	3.50	-0.30	-8.00
16	Self-control	3.79	3.43	-0.36	-9.55
17	Customer-service orientation	3.65	3.40	-0.25	-6.90
18	Directiveness and assertiveness	3.30	3.29	-0.01	-0.31
19	Concern for order, quality, and accuracy	3.17	3.26	0.09	2.86
20	Organizational commitment	3.52	3.12	-0.40	-11.47

Round 1 and Round 2 response standard deviations are compared in Table 12. Expert consensus was improved between rounds for a majority of the competencies, but especially *achievement orientation*, *flexibility and adaptability*, *concern for order, quality, and accuracy*, *directiveness and assertiveness*, and *self-control*. The expert panel further increased its degree of consensus for *teamwork and cooperation*, the highest ranked competency, which initially had a relatively high consensus. Consensus decreased for seven competencies, of which four competencies (*interpersonal understanding*, *initiative and proactive*, *customer-service orientation*, and *organizational commitment*) showed a standard deviation increase greater than 10%. Nevertheless, the expert panel was in consensus (*SD*<1) for all competencies in both rounds.

Table 12

Comparison Between Round 1 and Round 2 Response Standard Deviations

Round 2 Rank	Competency	Response *SD*		Absolute change	Percent change
		Round 1	Round 2		
1	Teamwork and cooperation	0.66	0.61	-0.05	-7.00
2	Interpersonal understanding	0.60	0.69	0.09	14.92
3	Flexibility and adaptability	0.73	0.57	-0.16	-21.50
4	Team leadership	0.75	0.63	-0.11	-15.29
5	Relationship building	0.81	0.66	-0.15	-18.43
6	Initiative and proactive	0.74	0.89	0.14	19.50
7	Achievement orientation	0.94	0.62	-0.32	-34.07
8	Information seeking	0.63	0.60	-0.02	-3.96
9	Conceptual thinking	0.82	0.69	-0.13	-15.67
10	Analytical thinking	0.81	0.74	-0.07	-8.67
11	Developing others	0.76	0.80	0.04	5.25
12	Self-confidence	0.74	0.74	0.00	-0.05
13	Impact and influence	0.73	0.77	0.05	6.45
14	Expertise and specialized knowledge	0.97	0.98	0.01	1.36
15	Organizational awareness	0.91	0.79	-0.12	-13.36
16	Self-control	0.80	0.65	-0.15	-18.53
17	Customer-service orientation	0.87	0.98	0.10	11.59
18	Directiveness and assertiveness	0.96	0.76	-0.20	-21.09
19	Concern for order, quality, and accuracy	0.97	0.75	-0.22	-22.81
20	Organizational commitment	0.89	0.98	0.09	10.08

ANOVA was performed on the Round 2 data to determine its statistical significance. The null hypothesis is that all the competency response means are equal. The null (H0) and alternative (H1) hypotheses are stated as follows:

H0: There is no significant difference between the 20 leadership competencies with respect to their importance to effective GITs

H1: There is a significant difference between the 20 leadership competencies with respect to their importance to effective GITs

This assertion implied that the individual responses were obtained by chance and not affected by the treatment of the independent variable (Bogartz, 1994). The dependent variable is the single-factor degree of importance. The independent variable (or treatment) is the competency type, which comprises 20 groups. Results of the ANOVA are presented in Table 13. The probability that the means are equal is extremely small (P<0.0001). Since the null hypothesis is rejected, the Round 2 response means are not all equal, and have statistically significant variation.

Table 13

Round 2 ANOVA Results

Source of Variation	SS	df	MS	Fcrit	P-value
Between Groups	102.9	19	5.416	9.791	< 0.0001
Within Groups	387.2	700	0.553		
Total	49.10	719			

SS: sum of squared deviates
df: degree of freedom
MS: mean square
F: ratio of MS (between groups) divided by MS (within groups)
P-value: probability that the null hypothesis is true
F crit: value of F associated with 0.05 confidence level
Note: added experiment-wide mean to eight missing observations

A Tukey HSD test was conducted to identify which specific pairs of competency means are statistically different (Bogartz, 1994). This analysis quantitatively determined the relative importance of the competencies, which strengthens the answer to the research question. To satisfy the condition that the Tukey HSD test be applied to groups with equal sample sizes, eight missing observations were replaced with the experiment-wide mean. The Tukey HSD test was performed on all 190 competency pairs using XLSTAT, a Microsoft© Excel©-based statistics software package (Addinsoft, n.d). Table 14 summarizes a pair-wise comparison analysis, by grouping competencies with statistically equivalent means. For example, the top nine competencies (Group A) have statistically equivalent means, and thus have an equivalent level of importance. Group A is statistically more important than the remaining 11 competencies. The results of the complete set of 190 pair-wise comparisons are provided as Table D7 in Appendix D.

Table 14

Summary of Tukey HSD Test of Round 2 Results

Competency	Adjusted mean	Groups				
Teamwork and cooperation	4.500	A				
Interpersonal understanding	4.389	A				
Flexibility and adaptability	4.278	A	B			
Team leadership	4.111	A	B	C		
Relationship building	4.083	A	B	C		
Initiative and proactive	4.050	A	B	C	D	
Achievement orientation	4.028	A	B	C	D	E
Information seeking	3.994	A	B	C	D	E
Conceptual thinking	3.938	A	B	C	D	E
Analytical thinking	3.750		B	C	D	E	F
Developing others	3.694		B	C	D	E	F
Self-confidence	3.633			C	D	E	F
Impact and influence	3.611			C	D	E	F
Expertise and specialized knowledge	3.556			C	D	E	F
Organizational awareness	3.494			C	D	E	F
Self-control	3.444				D	E	F
Customer-service orientation	3.417					E	F
Concern for order, quality, and accuracy	3.300						F
Directiveness and assertiveness	3.300						F
Organizational commitment	3.133						F

Adjusted mean: Competency response mean after adding experiment-wide mean to eight missing observations
Group: set of competencies with statistically equal means

The effect of societal culture on the study results was investigated by relating the

cultural orientation of the study participants to the type of competencies selected by the

participants. According to Hofstede and Hofstede (2005), "individualism and masculinity affect our thinking about people in organizations" (p. 242). In this study, the people in question are the GIT leaders. In contrast, the cultural dimensions of uncertainty avoidance and power distance "affect our thinking about organizations" themselves (p. 242). Thus, the investigation focused on the degree of individualism and masculinity of the expert participants as defined by the Hofstede cultural dimensions.

Figure 9 is a plot of the individualism and masculinity indices of the countries studied by Hofstede (2001). As shown in Table D4 of Appendix D, the 36 study participants who completed Round 2 had 16 nationalities. The nationalities of the study participants are highlighted in the figure. All the participant nationalities were reported by Hofstede with the exception of Lithuania, which was assumed to have a cultural orientation similar to that of reported Estonia. Most participants were from relatively individualistic cultures, and from a wide range of feminine and masculine cultures.
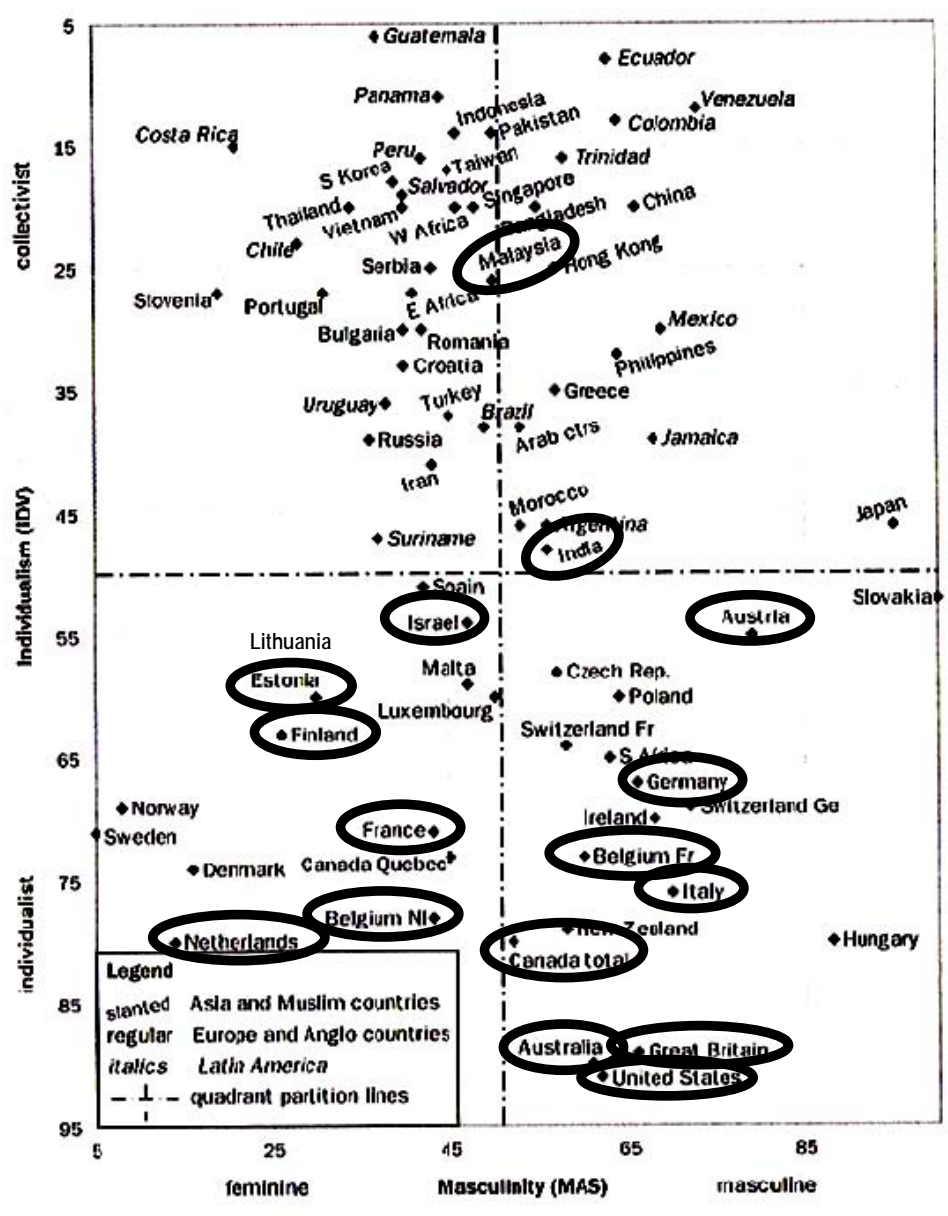
Figure 9. Individualism and masculinity of study participants based on Hofstede cultural dimensions.

Source: Hofstede and Hofstede (2005)

Table 15 lists the top 10 competencies with assigned masculine or feminine orientations, and individualistic or collectivistic orientations, as defined by Hofstede and Hofstede (2005). A masculine orientation is associated with "being responsible, decisive, and ambitious" (p. 136), while feminine cultures "focus on relationships" (p. 132). Individualistic cultures are characterized by independence and working well alone, while people in collectivist cultures work well as a group. Using these definitions, four of the top five (first quartile) competencies are feminine and collectivist, and the lower ranked (second quartile) five competencies are masculine and individualistic. Thus, the participants recommended, with a relatively high degree of consensus, GIT leader competencies that are primarily feminine and collectivist. These results are closely associated with key workplace characteristics as reported by Hofstede and Hofstede (2005). Feminine workplace characteristics such as consensus, negotiation, and equality are related to *teamwork and cooperation, interpersonal understanding,* and *relationship building*. Collectivist societies support group-level norms and decision making in the workplace, which are similar to *teamwork and cooperation*.

Table 15

Classification of Top 10 Ranked Competencies Using Hofstede Cultural Dimensions

Rank	Competency	Masculine or feminine	Collectivist or individualistic
1	Teamwork and cooperation	Feminine	Collectivist
2	Interpersonal understanding	Feminine	Collectivist
3	Flexibility and Adaptability	Feminine	Collectivist
4	Team leadership	Masculine	Individualistic
5	Relationship building	Feminine	Collectivist
6	Initiative and Proactive	Masculine	Individualistic
7	Achievement orientation	Masculine	Individualistic
8	Information seeking	Masculine	Individualistic
9	Conceptual thinking	Masculine	Individualistic
10	Analytical thinking	Masculine	Individualistic

The Round 2 results, which reflect a collectivist orientation, are in stark contrast to the individualistic cultural orientation of the participants. Furthermore, while the participants were from a wide range of feminine and masculine cultures, the participants collectively recommended a feminine set of GIT leader competencies over masculine competencies. A cursory implication is that societal cultural prototypes may not be accurate predictors of group norms. Indeed, Hofstede (2001) cautioned that his cultural dimensions and results are only valid at the societal level of analysis. However, another implication is that the Delphi method can directly influence individual opinion. The

Round 1 results, which were not influenced by group opinion, included three masculine and individualistic competencies (*initiative and proactive*, *information seeking,* and *impact and influence*) in the top quartile. The Round 1 results more closely aligned with the predominant masculine and individualistic cultural orientation of the expert panel. Thus, masculine and individualistic panel members appear to have modified their opinion to concede that feminine and collectivist competencies are more effective in the GIT context.

Findings

Findings – by Competency

The following findings are presented by each of the 20 competencies, and directly answer the research question: Which the leadership competencies improve the effectiveness of GITs in large MNCs? While the following discussion of each competency focuses on the results of Round 2, any meaningful change in level of importance or degree of consensus from Round 1 to Round 2 is also identified. The definition of each competency is reiterated from the Data Analysis section in Chapter 3 to rationalize the assignment of each competency into technical, social, or culture categories. Tukey HSD statistical analysis results, initially presented in the previous section, are summarized to highlight significant differences in importance between competencies. The competencies are discussed in decreasing order of the Round 2 ranking.

Teamwork and Cooperation

A leader who is competent in *teamwork and cooperation* is willing to participate in and facilitate group functions and conflict resolution, and empowers and encourages others (Spencer & Spencer, 1993). This social competency is associated with interpersonal dynamics and transformational leadership behavior (Bass & Riggio, 2006). With a mean response of 4.51, the expert panel considered *teamwork and cooperation* to be the top-ranked competency. The mean response remained virtually unchanged from Round 1 to Round 2. The expert panel was in relatively strong consensus in both Round 1 and Round 2, as indicated by the low *SD* (Round 2 *SD* of 0.61, within the *SD* range of 0.57 to 0.98). *Teamwork and cooperation* was found to be statistically more important than the 11 lowest ranked competencies.

Interpersonal Understanding

A GIT leader with *interpersonal understanding* desires to understand the needs and feelings of others, listens, and demonstrates cross-cultural sensitivity and empathy (Spencer & Spencer, 1993). Since this competency is similar to the behavioral component of cultural intelligence (Earley & Ang, 2003), *interpersonal understanding* is placed in the cultural category. With a relatively high Round 2 mean response of 4.40, *interpersonal understanding* was ranked second. The mean response slightly increased from Round 1 to Round 2, and the degree of consensus, while decreasing slightly from Round 1 to Round 2, remained relatively high. *Interpersonal understanding* was found to be statistically more important than the 11 lowest ranked competencies.

Flexibility and Adaptability

     Flexibility and adaptability allows a person to adapt to new situations, appreciate views of others, and demonstrate strategic scope of change (Spencer & Spencer, 1993). Especially relevant in new cultural situations (Earley & Ang, 2003), *flexibility and adaptability* is placed in the cultural category. The expert participants ranked *flexibility and adaptability* third, with a Round 2 mean of 4.29. The expert panel increased their degree of consensus between Round 1 and Round 2, to such an extent that *flexibility and adaptability* had the highest degree of consensus (*SD* of 0.57). *Flexibility and adaptability* was found to be statistically more important than the nine lowest ranked competencies.

Team Leadership

     The *team leadership* competency has the following attributes: Desires to lead and motivate others, sets positive example, supports groups within the organization, and communicates a compelling vision (Spencer & Spencer, 1993). *Team leadership*, with its transformational leadership qualities (Bass & Riggio, 2006), was thus categorized as a social competency. Although the study focused on team leadership, the response mean of 4.11 in Round 2 resulted in ranking *team leadership* fourth, which did not change from Round 1. As described in the Themes section below, this result suggests that GIT leaders are more effective when directly participating in team activities, rather than performing a distinct leader role. Expert panel consensus improved to a relatively high level in Round 2 (*SD* of 0.63). Based on the Tukey HSD test, *team leadership* was found to be significantly more important than the five lowest-ranked competencies.

Relationship Building

Networking, establishing rapport, and building social contacts and friendships for business purposes are characteristics of *relationship building* (Spencer & Spencer, 1993). Since the ability to develop long-term relationships requires knowledge of culturally endorsed leadership behavior (House et al., 2004), *relationship building* is classified as a cultural competency of GIT leaders. With a Round 2 mean of 4.09, *relationship building* was ranked fifth. The expert participants substantially increased their rating of *relationship building* between rounds, and simultaneously improved their degree of consensus, ending with a relatively low standard deviation of 0.66. *Relationship building* was found to be statistically more important than the five lowest ranked competencies.

Initiative and Proactive

Initiative and proactive is characterized by demonstrating a bias for action, being proactive, seizing or creating opportunities, involving others, and demonstrating a long-term future orientation (Spencer & Spencer, 1993). Thus, *initiative and proactive* is an individual competency associated with entrepreneurship (Drucker, 1985), and in turn, the technical category. The study experts considered that *initiative and proactive* had a moderate-high ranking in the GIT context. *Initiative and proactive* was ranked second in Round 1 but was ranked sixth in Round 2 based on a mean of 4.06. The degree of consensus decreased considerably, with a relatively high standard deviation of 0.89 in Round 2 increasing from a *SD* of 0.74 in Round 1. The statistical analysis found *initiative and proactive* to be more important than the four lowest ranked competencies.

Achievement Orientation

   Achievement orientation is defined as results oriented, desires self-improvement, competes against standard, self-challenges, innovative, and takes calculated risks (Spencer & Spencer, 1993). With many similarities to entrepreneurship (Drucker, 1985), *achievement orientation* was assigned to the technical category. Its response mean of 3.50 (Round 1) increased appreciably to 4.03 (Round 2). The panel came to a strong consensus (*SD* of 0.62 in Round 2) after an initially low degree of consensus (*SD* of 0.94) in Round 1. *Achievement orientation* was found to be statistically more important than the three lowest ranked competencies.

Information Seeking

   An *information seeking* leader seeks understanding and diagnosis, scans for opportunities, demonstrates curiosity, demonstrates need for self-observation, desires to learn more, and involves others (Spencer & Spencer, 1993). Such a competency can be associated with entrepreneurship (Drucker, 1985), and thus be placed in the technical category. The study found *information seeking* to have moderate-high ranking of eighth. Similar to the change in importance for *initiative and proactive*, the expert participants reduced the ranking of *information seeking* from fourth, based on a reduction of the mean score from 4.30 in Round 1 to 4.00 in Round 2. The degree of consensus remained approximately constant and relatively low between rounds. *Information seeking* was statistically more important than the three lowest ranked competencies.

Conceptual Thinking

An individual with a *conceptual thinking* competency integrates components into a single vision, demonstrates critical thinking, develops new models and theories, and recognizes patterns (Spencer & Spencer, 1993). Such entrepreneurial characteristics (Drucker, 1985) allowed *conceptual thinking* to be assigned to the technical category. The expert panel ranked *conceptual thinking* ninth, given its mean of 3.94. The response *standard deviation* of 0.82 reduced to 0.69 in Round 2, implying much improved consensus. *Conceptual thinking* was found to be statistically more important than the three lowest ranked competencies.

Analytical Thinking

The definition of *analytical thinking* is: Demonstrates cause-effect reasoning, plans complex interdependent systems, sets priorities, and applies analytical techniques (Spencer & Spencer, 1993). Successful technical work and entrepreneurship (Drucker, 1985) requires this competency, so *analytical thinking* was placed in the technical category. The response means of 4.09 and 3.74 in Round 1 and Round 2, respectively, indicated that the expert panel reduced their ranking of *analytical thinking* from eighth to tenth. Round 2 consensus was relatively moderate and slightly improved over Round 1. *Analytical thinking* was found to be statistically less important than the top two competencies.

Developing Others

To competently develop others, a person teaches, mentors, and supports others; provides constructive feedback; and develops new training programs (Spencer &

Spencer, 1993). *Developing others* is a transformational leadership quality (Bass & Riggio, 2006), and can thus be placed in the social category. With a Round 2 response mean of 3.69, *developing others* has a low-moderate ranking. There was negligible change in response mean or the degree of consensus from Round 1 to Round 2. *Developing others* was found to be statistically less important than the top two competencies.

Self-Confidence

Self-confidence is believing in one's own ability to accomplish challenging tasks, demonstrating strong expression and impression, and admitting and learning from failure (Spencer & Spencer, 1993). *Self-confidence* was assigned to the social category due to its potentially inspirational influence on others (Bass & Riggio, 2006). *Self-confidence* was reduced in ranking by the expert panel between rounds from tenth to twelfth (mean of 3.83 to 3.62), and the moderate degree of consensus was unchanged. *Self-confidence* was found to be statistically less important than the top three competencies.

Impact and Influence

By exhibiting *impact and influence*, a person persuades with data or examples; appeals to reason; and builds coalitions for company, rather than personal, goals (Spencer & Spencer, 1993). This highly interpersonal competency should thus be part of the social category (Bass & Riggio, 2006). The expert participants opined that *impact and influence*, while initially of relatively high ranking in Round 1, was of lower ranking (thirteenth) relative to the aforementioned cultural competencies. The mean score of 4.22 in Round 1 was reduced to 3.60 in Round 2. The degree of consensus remained relatively

moderate. *Impact and influence* was found to be statistically less important than the top three competencies.

Expertise and Specialized Knowledge

A leader with *expertise and specialized knowledge* demonstrates depth and breadth of legal, product, and service knowledge; is committed to learning; and demonstrates broad scope of organizational knowledge (Spencer & Spencer, 1993). *Expertise and specialized knowledge* is evidently associated with the technical category and successful entrepreneurship (Drucker, 1985). A third quartile mean of 3.54 was increased 0.22 from Round 1, while degree of consensus was essentially unchanged. *Expertise and specialized knowledge* was found to be statistically less important than the top three competencies.

Organizational Awareness

Organizational awareness is defined as understanding power relationships and informal and formal structures and cultures, and being politically aware of internal and external "worlds" (Spencer & Spencer, 1993). Necessary for intrapreneurship, the organizational version of entrepreneurship (Kuratko, 2007), such knowledge placed *organizational awareness* into the technical category. A reduced moderate mean response from 3.80 (Round 1) to 3.50 (Round 2) placed *organizational awareness* fifteenth in ranking. The expert panel improved its consensus of *organizational awareness*, but a Round 2 standard deviation of 0.79 indicated a relatively low consensus. *Organizational awareness* was found to be statistically less important than the top three competencies.

Self-Control

  Self-control allows a person to maintain emotional control under conflict or stress, prevent impulsive behavior, resist inappropriate involvement, and calm others (Spencer & Spencer, 1993). *Self-control* by a leader, like *self-control*, can influence followers and thereby is a social competency (Bass & Riggio, 2006). The mean score was reduced to 3.43 in Round 1 from 3.79 in Round 2, placing *self-control* sixteenth in ranking. A standard deviation of 0.65 indicated a high level of consensus among the panel members. *Self-control* was found to be in the statistically least important group of competencies and was significantly less important than the top five competencies.

Customer-Service Orientation

  An individual with a *customer-service orientation* takes initiative to understand, respond to, and solve client needs, and desires to help and advocate for others (Spencer & Spencer, 1993). The emotional intelligence focus on other people (Goleman, Boyatzis, & McKee, 2002) placed *customer-service orientatio*n into the social category. The expert panel ranked this competency relatively low (mean of 3.40), which was reduced from the Round 1 response mean of 3.65. The panel was in low consensus in either round, especially with a high standard deviation of 0.98 in Round 2. *Customer-service orientation* was found to be significantly less important than the top six competencies.

Directiveness and Assertiveness

  A *directive and assertive* leader demonstrates assertiveness and aggressiveness, uses positional power to direct others, takes charge and imposes discipline, and is effective recovering from poor performance situations (Spencer & Spencer, 1993). The

interaction with others resembles transactional leadership (Bass & Riggio, 2006) and thus places this competency in the social category. A relatively low score (Round 2 mean of 3.29) indicates little acceptance of directive or assertive behavior in a global product development team. While consensus improved in Round 2, the standard deviation was still a moderately high 0.76. *Directive and assertive* was found to be statistically less important than the top nine competencies.

Concern for Order, Quality, and Accuracy

    Concern for order, quality, and accuracy is characterized by a leader who reduces uncertainty; increases the clarity of tasks, roles, and functions; monitors progress; and organizes data and processes (Spencer & Spencer, 1993). This competency may be useful for intrapreneurs (Kuratko, 2007), so was placed in the technical category. The Round 2 mean score of 3.26 (versus a Round 1 mean score of 3.17) is the penultimate of the 20 competencies. A standard deviation of 0.75 reflects a relatively weak consensus. *Concern for order, quality, and accuracy* was statistically less important than the top nine competencies.

Organizational Commitment

    A person who aligns with organizational goals over self-interests, assists others first, and demonstrates personal sacrifice for the organization has *organizational commitment* (Spencer & Spencer, 1993). For purposes of this study, *organizational commitment* is a social competency given the focus on the transformational development of others and the organization itself (Bass & Riggio, 2006). The mean response was dramatically reduced by 0.40 from Round 1, such that o*rganizational commitment* had

the lowest ranking (Round 2 mean of 3.12) of the 20 competencies. The expert panel was in low consensus in both rounds. *Organizational commitment* was found to be statistically less important than the top nine competencies.

<div align="center">Findings – by Category</div>

As explained in the Data Analysis section of Chapter 3, the competencies were assigned to social, technical, and cultural categories. These categories help to differentiate between the competencies, frame the analysis, and identify themes. Thus, the categories provided a more comprehensive and multi-faceted answer to the research question, which is to identify GIT leader competencies that enhance GIT effectiveness. Initially presented by individual competency in the preceding section, in this section the competency response means are aggregated into categories. The average of the competency response means by category provided a metric for the absolute and relative ranking of the social, technical, and cultural categories. The categories are discussed for Round 1 and Round 2, and prominent changes between the rounds are noted.

Round 1 Findings

The Round 1 competency response means are organized by category in Table 16. The table illustrates the two-dimensional distribution of the competencies across the three categories. The cultural, technical and social competencies are fairly evenly distributed with respect to their rankings. The table also clearly shows the balanced distribution of the top six competencies across the categories. The competencies are organized by category in Table 17. The cultural category has the highest average value, followed by the equally-valued technical and social categories. A *t*-test was performed to investigate

the statistical equality of the three competency categories. The results of the *t*-test are provided in Table 18. The difference between the cultural-technical, cultural-social, and technical-social pairs is not significant. Thus, categorization of the Round 1 data could not provide meaningful differentiation of the competencies.

Table 16

Ranked Round 1 Competency Response Means Assigned to Categories

		Response mean by category		
Rank	Competency	Cultural	Technical	Social
1	Teamwork and cooperation			4.50
2	Initiative and proactive		4.37	
3	Interpersonal understanding	4.35		
4	Information seeking		4.30	
5	Impact and influence			4.22
6	Flexibility and adaptability	4.15		
7	Conceptual thinking		4.11	
8	Analytical thinking		4.09	
9	Team leadership			4.02
10	Self-confidence			3.83
11	Organizational awareness		3.80	
12	Self-control			3.79
13	Relationship building	3.72		
14	Developing others			3.70
15	Customer-service orientation			3.65
16	Achievement orientation		3.50	
17	Organizational commitment			3.52
18	Expertise and specialized knowledge		3.33	
19	Directiveness and assertiveness			3.30
20	Concern for order, quality, and accuracy		3.17	

Table 17

Round 1 Competencies by Category

Category	Rank	Competency	Mean
Cultural	3	Interpersonal understanding	4.35
	6	Flexibility and adaptability	4.15
	13	Relationship building	3.72
Technical	2	Initiative and proactive	4.37
	4	Information seeking	4.30
	7	Conceptual thinking	4.11
	8	Analytical thinking	4.09
	11	Organizational awareness	3.80
	16	Achievement orientation	3.50
	18	Expertise and specialized knowledge	3.33
	20	Concern for order, quality, and accuracy	3.17
Social	1	Teamwork and cooperation	4.50
	5	Impact and influence	4.22
	9	Team leadership	4.02
	10	Self-confidence	3.83
	12	Self-control	3.79
	14	Developing others	3.70
	15	Customer-service orientation	3.65
	17	Organizational commitment	3.52
	19	Directiveness and assertiveness	3.30

Average response mean of cultural competencies: 4.07
Average response mean of social competencies: 3.84
Average response mean of technical competencies: 3.83

Table 18

T-test Results of Category Pairs for Round 1

Category pair	Cultural-technical	Cultural-social	Technical-social
Variable 1 (category)	Cultural	Cultural	Technical
Mean	4.07	4.07	3.83
Variance	0.1041	0.1041	0.2077
Observations	3	3	8
Variable 2 (category)	Technical	Social	Social
Mean	3.83	3.84	3.84
Variance	0.2077	0.1322	0.1322
Observations	8	9	9
df	5	4	13
t Stat	0.9672	1.0610	-0.0119
$P(T \leq t)$ two-tail	0.3779	0.3485	0.9907
t Critical two-tail	2.5706	2.7764	2.1604
Significant?	No	No	No

Round 2 Findings

The competency response means obtained in Round 2 are organized by category in Table 19. In general, the expert panel increased the ranking of the cultural competencies, and simultaneously reduced the importance of technical and social competencies. One major exception to this trend was that *teamwork and cooperation* remained the most highly ranked (social) competency. The competencies are organized by category in Table 20. Cultural competencies as a category are again the most highly

ranked, followed by the equally-ranked technical competencies and social competencies.
Figure 10 plots the category values to illustrate their absolute and relative rankings. There
were no outliers in the dataset, as indicated by the gradual variation in the competency
response mean and standard deviation values of less than unity. Rather, the response
means of the three categories (and of the competency means themselves) appear to be
quite similar. A *t*-test was performed to investigate the statistical equality of the three
competency categories. The results of the *t*-test are provided in Table 21. The difference
between the cultural and technical categories is significant (P<0.001), as is the cultural-
social pair (P<0.001). The technical-social pair is statistically equivalent.   Thus, the
cultural category is significantly more important than the technical and social categories.

Table 19

Ranked Round 2 Competency Response Means Assigned to Categories

		Response mean by category		
Rank	Competency	Cultural	Technical	Social
1	Teamwork and cooperation			4.51
2	Interpersonal understanding	4.40		
3	Flexibility and adaptability	4.29		
4	Team leadership			4.11
5	Relationship building	4.09		
6	Initiative and proactive		4.06	
7	Achievement orientation		4.03	
8	Information seeking		4.00	
9	Conceptual thinking		3.94	
10	Analytical thinking		3.74	
11	Developing others			3.69
12	Self-confidence			3.62
13	Impact and influence			3.60
14	Expertise and specialized knowledge		3.54	
15	Organizational awareness		3.50	
16	Self-control			3.43
17	Customer-service orientation			3.40
18	Directiveness and assertiveness			3.29
19	Concern for order, quality, and accuracy		3.26	
20	Organizational commitment			3.12

Table 20

Round 2 Competencies by Category

Category	Rank	Competency	Mean
Cultural	2	Interpersonal understanding	4.40
	3	Flexibility and adaptability	4.29
	5	Relationship building	4.09
Technical	6	Initiative and proactive	4.06
	7	Achievement orientation	4.03
	8	Information seeking	4.00
	9	Conceptual thinking	3.94
	10	Analytical thinking	3.74
	14	Expertise and specialized knowledge	3.54
	15	Organizational awareness	3.50
	19	Concern for order, quality, and accuracy	3.26
Social	1	Teamwork and cooperation	4.51
	4	Team leadership	4.11
	11	Developing others	3.69
	12	Self-confidence	3.62
	13	Impact and influence	3.60
	16	Self-control	3.43
	17	Customer-service orientation	3.40
	18	Directiveness and assertiveness	3.29
	20	Organizational commitment	3.12

Average response mean of cultural competencies: 4.26
Average response mean of technical competencies: 3.76
Average response mean of social competencies: 3.64

Table 21

T-Test Results of Category Pairs for Round 2

Category Pair	Cultural-technical	Cultural-social	Technical-social
Variable 1 (category)	Cultural	Cultural	Technical
Mean	4.26	4.26	3.76
Variance	0.0247	0.0247	0.0878
Observations	3	3	8
Variable 2 (category)	Technical	Social	Social
Mean	3.76	3.64	3.64
Variance	0.0878	0.1860	0.1860
Observations	8	9	9
df	7	10	14
t Statistic	3.6124	3.6388	0.6632
P(T<=t) two-tail	0.0086	0.0045	0.5180
t Critical two-tail	2.3646	2.2281	2.1448
Significant?	Yes	Yes	No
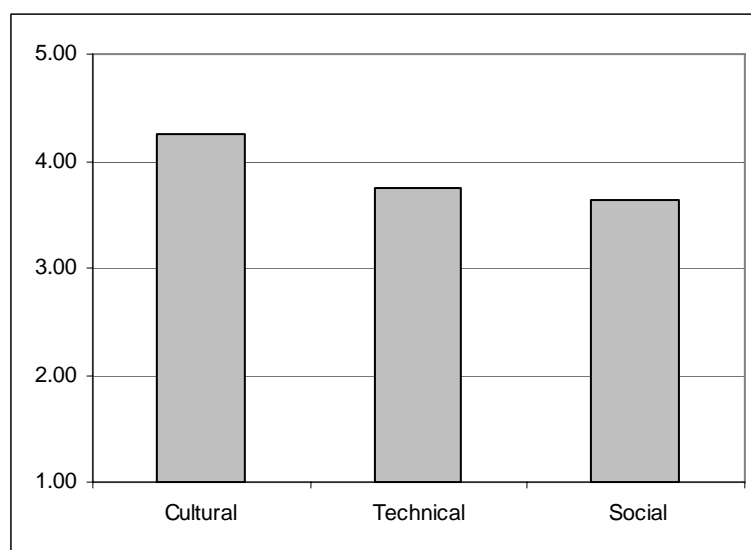
Figure 10. Bar graph of Round 2 competency average response means by category.

Themes

Several important themes were found in the responses for each competency and in the three categories. These themes can be made given the strong consensus between panel members, especially for competencies in the first and second quartiles.

Themes – by Competency

The Effective GIT Leader Is a Team Player

A participative and supportive leadership style is expected to be most effective in GITs, as indicated by the top-ranked *teamwork and cooperation* competency. Since *team leadership* is ranked fourth, effective GIT leaders are not expected to be at the forefront of the team. Similarly, *directiveness and assertiveness,* the opposite of *teamwork and cooperation,* is ranked 18 of 20, so is rarely considered effective.

The Effective GIT Leader Is Entrepreneurial

Creative and entrepreneurial competencies are associated with the effective GIT leader, especially *conceptual thinking, information seeking, achievement orientation,* and *initiative and proactive*. This theme supports the team-player theme, implying the GIT leader should directly participate in, and contribute to, the innovation process.

The Effective GIT Leader Has Concern for Team Members

The effective GIT leader has greater concern for team members than herself, and has competencies of relationship building and developing others. Conversely, individual competencies are ranked low, including *self-confidence*, *self-control*, and *expertise and specialized knowledge*.

The Effective GIT Leader Is Organizationally Self-Managed

Effective GIT leaders do not need to excel in organizational competencies, such as *organizational commitment*, *organizational awareness*, and *concern for order, quality, and accuracy*. Although the leader should be adept at petitioning the larger organization for team resources, this theme suggests that GITs are most effective if self-managed and somewhat independent of organizational processes.

Themes – by Category

The Effective GIT Leader Excels in Cultural Competencies

Cultural competencies are most applicable to effective GIT leadership, even in a complex technical context such as product development. All three cultural competencies are ranked in the top quartile. Within the team taxonomy described in Research Context section of Chapter 2, a GIT is characterized by both technical and environmental complexities. Nevertheless, the findings indicate that the ability to manage environmental complexity (such as cross-cultural relationships) is more important than the management of technical complexity.

The Effective GIT Leader Has Broad Technical Competencies

While cultural aspects may supersede technical concerns in a GIT environment, the GIT leader still needs a moderate degree of a broad array of technical competencies, which are predominant in the second and third quartiles.

The Effective GIT Leader Has Fundamental Social Competencies

Cultural competencies are more important than many social competencies in a multicultural innovation team environment. While social competencies are distributed across the four quartiles, the majority of social competencies are found in the fourth (low) quartile. However, many of the basic attributes and behaviors found in social competencies are also present in many cultural competencies.

Summary

Administration of the survey during two Delphi rounds generated sufficient data to answer the research question, restated here as follows: Which leadership competencies improve the effectiveness of GITs in large MNCs? The mean responses were used to rank the 20 competencies in terms of absolute and relative ranking. Response standard deviation indicated an acceptable degree of consensus among the diverse expert panel members. *Teamwork and cooperation* was found to be the most highly ranked competency with a high degree of consensus. *Interpersonal understanding* and *flexibility and adaptability* ranked second and third, respectively, with similarly high consensus. While the focus of this study was on the leadership of teams, *team leadership* ranked only fourth. The lowest ranked competencies were *organizational commitment*, *concern for order, quality, and accuracy*, and *directiveness and assertiveness*. The competencies were also ranked in terms of cultural, technical, and social categories. Cultural competencies were ranked highest by the expert panel, followed by equivalent technical and social competencies. These results formed the basis for seven themes. The GIT leader is a team player, is entrepreneurial, has concern for others, is organizationally self-managed, excels in cultural competencies, has broad-based technical competencies, and

has fundamental social competencies. The findings provided a basis for meaningful

conclusions in Chapter 5. The findings are compared with the existing competency

models and relevant theory. Chapter 5 also includes recommendations for corporate

leadership development and for future academic research.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to identify those leadership competencies that improve the effectiveness of global innovation teams (GITs) in large MNCs. A single research question focused on this distinct purpose and guided the research design. In Chapter 4, results of the study were presented as 20 competencies ranked in terms of importance. The results formed the basis for seven themes as follows. The GIT leader should: a) develop a participative leadership style, b) contribute to the team's creative and entrepreneurial activities, c) express a genuine concern for team members and their development, d) not over-emphasize organizational skills and knowledge to the detriment of interpersonal and team-building competencies, e) possess a strong suite of cultural competencies, f) develop a broad set of technical competencies, and g) build a fundamental base of social competencies.

This chapter includes analysis of the results with regard to existing competency models and relevant theories. A succinct GIT leader competency model is presented that integrates cultural, technical, and social competencies within the theoretical framework. Various other leader competency models exist in the literature, but none that specifically address the leadership of GITs (Alexander & Wilson, 1997; Hirst & Mann, 2004; Dainty et al., 2004; Tubbs & Schulz, 2006; Lugo, 2007). Recommendations include those for corporate leadership development and those for an academic audience.

Conclusions

The response means were used to rank the 20 competencies in terms of absolute and relative importance. Response standard deviation indicated an acceptable degree of consensus among the diverse expert panel members. *Teamwork and cooperation* was

found to be the most important competency with a high degree of consensus. *Interpersonal understanding* and *flexibility and adaptability* ranked second and third, respectively, with similarly high consensus. Although the original focus of this study was on the leadership of teams, *team leadership* was only ranked fourth by survey respondents. Least important competencies were *organizational commitment*; *concern for order, quality and accuracy*; and *directiveness and assertiveness*. The competencies were also ranked in terms of cultural, technical, and social categories. Cultural competencies were considered by the expert panel to be the most highly ranked, followed by technical and social competencies.

Comparison With Existing Competency Models

Spencer and Spencer (1993) developed competency models for a variety of professions, including that of a generic manager and of a technical professional. Each Spencer and Spencer model consists of a series of relevant competencies that are prioritized by weighting factors. The weighting factor "gives an indication of the importance of that competency for superior performance" (Spencer & Spencer, 1993, p. 161). The results of this study were compared with these two competency models, since an effective GIT leader was shown earlier to have both managerial and technical competencies. Table 22 relates the ranked competencies from this study with the weighting factors of a generic manager and a technical professional. While the GIT leader is similar to that of a generic manager in terms of *teamwork and cooperation*, several differences were found. *Achievement orientation* and *impact and influence* are the most important competencies for the generic manager and technical professional but are of only moderate importance for a GIT leader. Conversely, *interpersonal understanding*,

flexibility and adaptability, and *team leadership* are of high importance for GIT

leadership but are of low or no importance for the generic manager and technical

professional. Competencies with moderate importance such as *conceptual thinking* and

self-confidence matched those for the generic manager and technical professional. Lower

ranked competencies such as *organizational commitment*; *concern for order, quality, and*

accuracy; and *directiveness and assertiveness* were also of low weighting in the Spencer

and Spencer (1993) competency models. This comparative analysis highlighted the

considerable influence of cross-cultural team member composition on the leadership of

global innovation teams. Thus, a leader with superior cultural competencies will have a

major positive influence on GIT effectiveness. These findings also clearly distinguish

GIT leaders from generic managers and technical professionals. With respect to the

corporate sector, the implication is that GIT leaders require unique training and

experiences. An academic implication is that further research is needed to differentiate

leaders of various organizational settings and team types. This differentiation can be

founded on a unique set of theories, in a manner as described in the following section.

Table 22

Comparison of Ranked Competencies With Existing Competency Models

		Weighting	
Rank	Competency	Generic manager	Technical professional
1	Teamwork and cooperation	5	2
2	Interpersonal understanding	-	3
3	Flexibility and adaptability	-	-
4	Team leadership	2	-
5	Relationship building	Th	-
6	Initiative and proactive	5	4
7	Achievement orientation	6	6
8	Information seeking	2	2
9	Conceptual thinking	2	4
10	Analytical thinking	5	4
11	Developing others	3	-
12	Self-confidence	2	3
13	Impact and influence	6	5
14	Expertise and specialized knowledge	Th	2
15	Organizational awareness	Th	-
16	Self-control	-	-
17	Customer-service orientation	-	2
18	Directiveness and assertiveness	2	-
19	Concern for order, quality, and accuracy	-	2
20	Organizational commitment	-	-

Th: Threshold requirements for reasonable (minimum) performance
Source: Spencer and Spencer (1993)

Comparison With Relevant Theory

As presented in the Theoretical Framework section of Chapter 1, Table 1 summarized the association of relevant theory with the study themes. Table 23, a modification of Table 1, incorporates the results of this study by ranking the categories, which in turn ranks the research themes and the relevant theory. By ranking the theory most applicable to GIT leadership, this study may guide future theory development. A more focused theory or model of GIT leadership may in turn be used to develop future quantitative studies. The cultural category was found in Chapter 4 to be the most highly ranked, so cultural intelligence theory is expected to be the most relevant to GIT leadership. Thus, the cultural category is labeled with a ranking of one (high), as is the corresponding societal culture research theme. The technical category was found to be less relevant to GIT leadership. As such, both the technical category and associated innovation theory are ranked 3 (low). The social category was found to be equivalent to the technical category, so the leadership theme and associated transformational leadership theory are also ranked 3 (low). The interaction between societal culture (rank 1) and innovation (rank 3) is *innovation and societal culture*, which is ranked 2 (moderate). The interacting theme of *innovation* and *leadership* is also ranked 2 (moderate). The *leadership and societal culture* theme combines societal culture (rank 1) and leadership (rank 3), resulting in a moderate ranking of 2. A comprehensive review of the theories was provided in the *Historical Overview of the Research Themes* section of Chapter 2. Further discussion of the relationship between the applicable theories and the leadership competencies is provided below.

Table 23

Ranking of Categories, Research Themes, and Relevant Theory

Competency category (ranking)	Research theme (ranking)	Theory or model
Cultural (1)	Societal culture (1)	Cultural intelligence
	Innovation and societal culture (2)	Culture and new product development
Technical (3)	Innovation (3)	Entrepreneurship
	Innovation and leadership (3)	Innovation leadership
Social (3)	Leadership (3)	Transformational leadership
	Leadership and societal culture (2)	Culturally endorsed implicit leadership

Cultural intelligence is the most relevant theory based on its association with the top-ranked cultural category. Cultural intelligence integrates adaptation, motivation, and social aptitudes (Earley & Ang, 2003), which directly relates to the three cultural competencies of *flexibility*, *interpersonal understanding*, and *relationship building*. With respect to the Hofstede cultural dimensions, the three cultural competencies can be associated with low uncertainty avoidance, low power-distance, and high collectivism.

The culture and new product development model (Sivakumar & Nakata, 2003), which is associated with the innovation and societal culture interaction theme, had a

moderate (rank 2) relevance to GIT leadership. The culture and new product development model considered individualism as associated with the early-phase creative aspects of innovation, while collectivism is more beneficial to the development phase. The model developed in this study emphasized *teamwork and cooperation*, so the culture and new product development model was relevant insofar as the GIT is responsible for late-stage new product development.

Entrepreneurship theory (rank 3) describes the disciplined process of searching for and exploiting opportunities to create new wealth (Drucker, 1985). Leaders are frequently associated with entrepreneurship, given their similarity as visionary change agents. Entrepreneurship theory can be associated with the technical competencies of *initiative and proactive*, *information seeking*, *achievement orientation*, and *conceptual thinking*.

Culturally endorsed implicit leadership theory (rank 2) is based on the interaction between the societal culture (rank 1) and leadership (rank 3) themes. Culturally endorsed implicit leadership theory uses six leadership dimensions–charismatic and value-based, team-oriented, autonomous, participative, self-protective, and humane oriented (House et al., 2004). The GIT leadership model developed in this study closely resembles the team-oriented and participative leadership dimensions of the GLOBE study. For example, the *teamwork and cooperation* competency (social category) corresponds with in-group collectivism in the team-oriented leadership dimension.

Innovation leadership (rank 3) models the interaction of social and technical competencies within the theoretical framework. The Mumford et al. (2002) three-component innovation leadership style consists of idea generation, idea structuring, and

idea promotion. Idea generation is associated with *conceptual thinking* in the technical category, idea structuring corresponds to the technical *organizational awareness*, and idea promotion relates to the social *impact and influence* competency.

Transformational leadership theory (rank 3) may be associated with the social competency category of the theoretical framework. Transformational leaders assist workers in clarifying the importance of goals and the means to achieve them, transcending self-interests for the good of the group, and developing their full capability (Bass & Riggio, 2006). These attributes correspond to the social competencies of *developing others*, *impact and influence*, and *team leadership*.

This ranking of applicable theory formed the basis for a leadership development program that mitigates many of the issues addressed in Chapter 1. Global virtual teams were found to be notoriously ineffective and difficult to manage (Zakaria et al., 2004; Govindarajan & Gupta, 2001). As stated in Chapter 1, the general problem is the difficulty of leading GITs, which are composed of globally dispersed, multicultural, and highly skilled workers. The study suggested that an effective GIT leader development program should be based primarily on a combined and prioritized set of theories, with cultural intelligence theory as most prominent. The program would be tailored to account for early-stage or late-stage innovation performed by the GIT, as defined by the culture and new product development model. The development program would also include elements of entrepreneurship, so that the leader becomes an active and inspiring role model for GIT members.

Competency Model of GIT Leadership

The ranked competencies provided in Table 24 define a comprehensive GIT leader competency model that integrates the cultural, technical, and social categories. This study found that all three categories are valuable to GIT leader effectiveness, but that the cultural competencies have relatively greater influence than the technical or social competencies. Global innovation leadership within a team context is a combination of the three primary themes of societal culture, innovation, and leadership, and augmented by the three interacting themes of leadership and societal culture, leadership and innovation, and innovation and societal culture. Thus, GIT leadership reflects aspects of cultural intelligence, the culture and new product development model, culturally endorsed implicit leadership theory, entrepreneurship, innovation leadership, and transformational leadership style.

This competency model extends our knowledge of leadership by developing a unique competency model of effective GIT leaders. The GIT leader competency model extended the recent research of Satterlee (1999), Sheridan (2005), and Lugo (2007), each of whom identified the social and cultural competencies of global leaders, by adding the technical competencies needed for innovation. Dainty et al. (2004) built a competency model for a construction project manager (team leader) that included technical and social competencies. No known competency models exist that combine the social, technical, and cultural competencies needed for effective GIT leaders.

Table 24

Competency Model of GIT Leadership

Rank	Competency	Category
1	Teamwork and cooperation	Social
2	Interpersonal understanding	Cultural
3	Flexibility and adaptability	Cultural
4	Team leadership	Social
5	Relationship building	Cultural
6	Initiative and proactive	Technical
7	Achievement orientation	Technical
8	Information seeking	Technical
9	Conceptual thinking	Technical
10	Analytical thinking	Technical
11	Developing others	Social
12	Self-confidence	Technical
13	Impact and influence	Social
14	Expertise and specialized knowledge	Technical
15	Organizational awareness	Technical
16	Self-control	Social
17	Customer-service orientation	Social
18	Directiveness and assertiveness	Social
19	Concern for order, quality, and accuracy	Technical
20	Organizational commitment	Social

The theoretical framework initially illustrated as Figure 2 in Chapter 1 was

modified as shown in Figure 11 to highlight the most important competencies associated

with the three primary themes. The top 10 competencies (in the first and second quartiles)

are shown associated with their respective categories. The societal culture theme consists of the cultural competencies of *interpersonal understanding*, *flexibility and adaptability*, and *relationship building*. Technical competencies that are aligned with the innovation theme include *initiative and proactive*, *achievement orientation*, *information seeking*, *conceptual thinking*, and *analytical thinking*. Social competencies of *teamwork and cooperation* and *team leadership* are associated with the leadership theme.
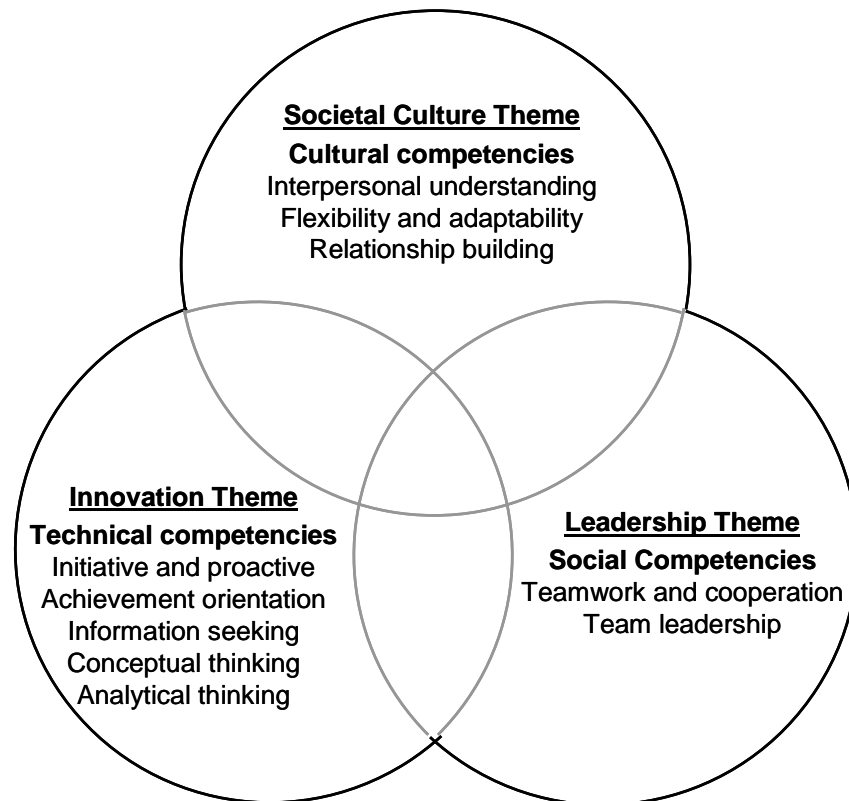
Figure 11. GIT leadership model integrates cultural, technical, and social competencies within the theoretical framework.

Effect of Limitations and Delimitations

The limitations and delimitations described in the Limitations/Delimitations section of Chapter 1 were concerned with instrument validity, expert availability and qualifications, and logistics of data generation. The limitation of instrument construct validity was mitigated by using an established set of competencies and comparing the study results with existing competency models. However, the study was limited by the availability of corporate or practitioner experts. Several attempts to gain access to GIT leaders of a MNC were unsuccessful, so the majority of participants were identified from published research. The effect of this limitation was to restrict the validity of results to the experience of a cadre of academic experts, as suggested by the percentage of respondents with doctoral degrees. Their experience may not have included participation in actual teams, either as a team member or as a team leader. Nevertheless, the results generally concur with the relevant research and literature.

The research study was delimited to a specific type of team – that of the global innovation team. However, the study participants may not have been able to differentiate between the leaders of global innovation teams and of the other types of teams, defined in the Research Context section of Chapter 2 as traditional, innovation, and global teams. Thus, the results may be influenced by the limited experience of the study participants, especially regarding the unique context of GITs. The delimitations of English comprehension and internet access did not have a detrimental effect, since all the study participants had published literature in English and had equal access to the Internet.

Significance of Research to Leadership

This study developed a competency model for leaders of global innovation teams. Global innovation teams are a unique form of team, so the effective GIT leader requires a unique set of competencies. Competency models can be used in leader recruitment, selection, development, performance management, succession planning, and compensation (Spencer & Spencer, 1993). Consequently, such leader development and improved leader effectiveness may increase job satisfaction of subordinates, which in turn may result in higher group productivity and organizational profitability.

As described in Chapter 1, the team typology consists of traditional teams, innovation teams, global teams, and global innovation teams. The team typology, initially portrayed in Figure 4, is reiterated in Figure 12 with a focus on GITs and the study results. Traditional team leaders may excel with social competencies, such as *teamwork and cooperation* and *team leadership*. In addition to social competencies, innovation team leaders may require technical competencies such *initiative and proactive*, *achievement orientation*, and *information seeking*. Global team leaders, with exposure to multicultural team members, are expected to require both the social competencies of traditional teams and the cultural competencies of *interpersonal understanding*, *flexibility and adaptability*, and *relationship building*. The leaders of GITs have the most demanding and complex suite of competencies, which reflect the technical and environmental complexities of the GIT itself. A GIT leader should have the cultural competencies of the global leader, the technical competencies of the innovation leader, and the social competencies of the traditional team leader. This construct was supported by the research study. All three competency categories were found in the top 10

competencies as identified by the expert panel. Thus, a GIT leader should possess a combination of cultural, technical, and social competencies. This team-specific combination and ranking of competencies is highlighted in Figure 12.
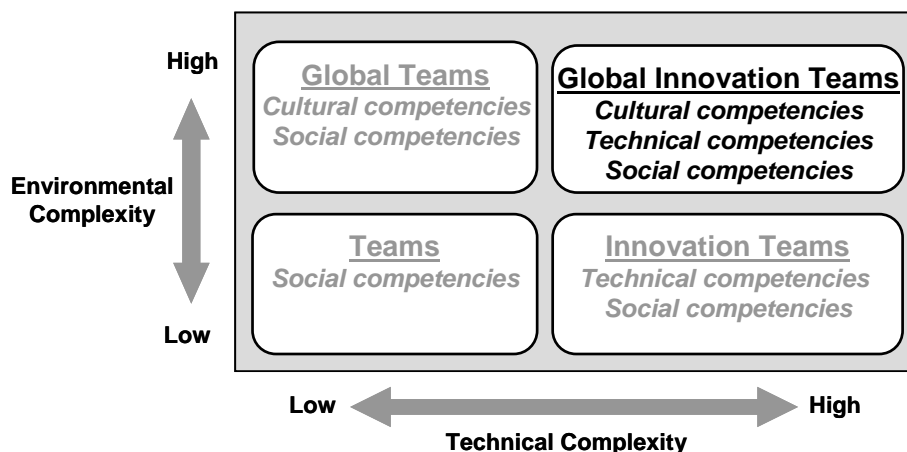
Figure 12. Study confirmed unique set of competencies for most complex team type.

This study added to the body of knowledge on leadership. Previous research was presented in the *Current Findings of the Leadership Competencies Literature* section in Chapter 2 and was used to identify specific study contributions. Sheridan (2005) found that global leaders from the United States need to develop intercultural awareness, express a caring attitude toward their followers, and build long-term relationships. This study corroborated the Sheridan results, but additionally addressed the technical competencies necessary in a product development context. This unique set of social, technical, and cultural competencies will become a critical success factor in the rapidly growing internationalization of R&D (Ambos & Schlegelmilch, 2004; Department of

Trade and Industry, 2005). Chevrier (2003) identified the need for global product development team leaders with flexibility, self-control, organizational awareness, and relationship management skills. This study included the Chevrier competencies, but in a more comprehensive model that identified both important and less important competencies. The statistically significant results of this study can be used with more confidence in leader development. Schweiger et al. (2003) found that the global team leader should strive for the support of senior management, maintain a common focus, minimize cultural complexity, establish a common language, promote team member motivation, and establish human development practices. While these skills reflect *team leadership*, *developing others*, and *organizational awareness*, this study suggests that cultural competencies of *interpersonal understanding*, *flexibility and adaptability*, and *relationship building* are even more important to GIT leaders. Shane et al. (1995) investigated the influence of societal culture (such as collectivism and uncertainty avoidance) on the methods preferred by champions of innovation to overcome organizational resistance. The study experts, with various North American, Asian, and European cultural backgrounds, were expected to have a wide range of leadership preferences (Hofstede, 2001). Nevertheless, the expert panel strongly preferred a collectivist GIT leader orientation, as represented by the top-ranked *teamwork and cooperation* competency. The experts are suggesting that a collectivist leader orientation is essential to any GIT, regardless of the leader's cultural background. The implication is that individualistic leaders will require concerted training to adopt more collectivistic behaviors.

Recommendations

This research study developed a competency model for leaders of global innovation teams. Corporate interest in this competency model will be based on the rapid globalization of new product development in MNCs. Thus, corporate recommendations focus on the implementation of the competency model to improve GIT leader selection and performance. Academia will be attracted to the complex interaction between extant theories and the potential for development of new theory related to the active topics of leadership, innovation, teams, and societal culture.

Corporate Recommendations

Competency models can be used in leader selection, development, performance management, succession planning, and compensation (Spencer & Spencer, 1993). Indeed, Dainty et al. (2004) recognized that "the role of competency-based performance management is growing in significance in many industries and sectors" (p. 877). Leader development and improved leader effectiveness may increase job satisfaction of subordinates, which in turn may result in higher group and organizational productivity (Barczak & McDonough, 2003b; Curral, Forrester, Dawson, & West, 2001).

Selection is the process of matching the right person to the right job. Selection is critical in a GIT because its output (innovative new products and services) is critical to the sustained success and even survival of the parent organization. Spencer & Spencer, 1993) offered various tests to identify and select the most compatible candidate for a particular job. To select a GIT leader, a position which typically requires extensive travel and cross-cultural adaptability, biographical data may be particularly useful in identifying

candidates with a penchant for travel to and resilience in novel societal cultures (Spencer & Spencer, 1993).

GIT leadership development is more complex than for many other leadership positions due to the broad set of competencies that are ultimately needed for maximum GIT effectiveness (Tubbs & Schulz, 2006). Since cultural competencies were found in this study to be the most important, a primary focus of leader development should be related to cross-cultural training. Tan and Chua (2003) suggested a "multifaceted and integrated" (p. 270), competence-based training program framed by the three cognition, motivation, and behavior components of CQ theory.

The competency model is also useful as a template in career planning, remedial training, or job rotation. Performance management involves planning, managing, and assessing the outcome of a job. The innovation process is characterized by many indirect and serendipitous connections between inputs and outcomes. Thus, performance of GIT leaders may best be managed using a mixed model that combines both outcomes and the leadership process itself. Spencer and Spencer (1993) specifically recommended a mixed model for self-managed teams, in which "individual results [or] outputs may be less important than contribution to the group process" (p. 268). As such, the *teamwork and cooperation* competency may be an ideal measurement standard to assess job performance of GIT leaders.

Succession planning may use the GIT leadership model to identify personnel with the qualifications for future job advancement. The GIT leader requires a broad set of technical competencies. A GIT leader competency model may be used to identify GIT members with successful technical performance who have the potential to develop the

social and cultural competencies required for the GIT leader. These candidates would be assessed against the GIT leader competency model, and, if high-potential, would be assigned to a tailored leadership development program (Spencer & Spencer, 1993).

Similar to the performance management approach described above, compensation plans can be based partly on achievement and partly on the demonstration of desired GIT leader competencies. The GIT leader is highly multi-skilled, having a broad set of cultural, technical, and social competencies. Compensation would reflect that unique set of competencies. In terms of achievement, compensation would reflect the organizational value a GIT leader provides in terms of effective innovation (Spencer & Spencer, 1993). Given the distinct time lag between creative inputs and eventual profitability, the compensation plan for a GIT leader would emphasize early-stage innovation outcomes until a complete product innovation cycle has been demonstrated.

Academic Recommendations

This study addressed a relevant industrial issue that can significantly benefit from the further application of academic rigor. The growing use of globalized R&D may be the next controversial subject related to outsourcing and the development of national intellectual capital (European Commission Directorate-General for Enterprise, 2004). A theoretical framework helped to organize a complex and multi-faceted subject. Succinct research methods such as Delphi help to derive insight from data obtained from highly qualified yet globally dispersed sources. The study pointed to applicable models and theory that may be extended, integrated, and quantitatively validated. However, these models do not directly address the leadership of teams in a complex technical context. Thus, the primary academic recommendation is to further develop a model or theory of

global innovation leadership by combining the theory of cultural intelligence, the culture and new product development model, culturally endorsed implicit leadership theory, entrepreneurship, innovation leadership, and transformational leadership style.

Suggestions for Further Research

This qualitative study probed the general characteristics of leadership in a complex technical and environmental context. Two avenues of future research are suggested to further understand this relevant and dynamic subject. These suggestions address some of the limitations and delimitations identified in Chapter 1. First, limited access to corporate R&D groups should be considered in planning future research projects. Product development may provide an organization its primary competitive advantage (Drake, Sakkab, & Jonash, 2006), so any insight into its operation through academic research may be reluctantly disclosed. The second limitation was the specification of a "typical" R&D context, which is highly dependent on the experiences of the study participants.

If access to the R&D project can be obtained, a qualitative case study may be performed to more precisely define the context in which the GIT operates and the leader competencies appropriate to that specific context. For example, a case study of the leadership of a global R&D project may identify the actual competencies that were used by the GIT leader, the actual context in terms of technical and environmental complexities, and the outcome of the project. The results of such a case study could be used to ground the more generalized results developed in this study. The recommended study would also support or refute the accuracy of opinion of predominantly academic experts, as obtained in this study. Alternatively, a comparative case study may identify

the differences in leader competencies of several GITs within a particular industry, and the varying outcomes of each GIT project. Comparisons may also be made between GIT leaders from different societal cultures. However, a logistical limitation may be the foreign travel needed to interview globally dispersed GIT leaders.

A quantitative extension of this work could correlate the influence of specific leader competencies on GIT effectiveness. As the dependent variable, GIT effectiveness may be measured by team member satisfaction or degree of goal achievement. Leader competencies may be measured by various assessment tools, such as the GLOBE research survey (House et al., 2004), the Values Survey Module (Hofstede, 2001), or customized versions of those and similar tools. Such a study, while requiring a larger number of participants than for a qualitative study, will define the effect of societal culture on GIT leader effectiveness. To mitigate the acknowledged limitation of a predominantly academic panel of experts in this study, a quantitative study would need to be conducted with practitioner team leaders and members.

Either case study or quantitative approaches will further mitigate the issues identified in the *Background of the Problem* section. A chorus of researchers have promoted increased internationalization of corporate R&D to remain competitive (Ambos & Schlegelmilch, 2004), improved coordination between dispersed groups (Boutellier et al., 2000), building (and maintaining) trust among culturally disparate team members (Jarvenpaa & Tanriverdi, 2003), and streamlining global team processes (Govindarajan & Gupta, 2001).

Summary

This chapter included analysis of the study results with regard to existing competency models and relevant theories. A GIT leader competency model was presented that integrates cultural, technical, and social categories within the theoretical framework. Recommendations included those for corporate leadership development and future research studies for an academic audience.

Results of the study were compared with two competency models developed by Spencer and Spencer (1993). While the GIT leader is similar to that of a generic manager in terms of *teamwork and cooperation*, several differences were found. *Achievement orientation* and *impact and influence* were the most important competencies for the generic manager and technical professional but are of only moderate importance for a GIT leader. Rather, a leader with superior cultural competencies has a greater positive influence on GIT effectiveness. Findings of the study were also compared to relevant theory. The cultural category was found to be the most important, so cultural intelligence theory is expected to be the most relevant to GIT leadership. The technical category was second in importance, indicating that entrepreneurship theory is of lesser relevance to GIT leadership. The social category was also less important than the cultural category, so transformational leadership theory has less relevance to GIT leadership.

The study extended existing research by developing a GIT leader competency model that integrates cultural, technical, and social categories. The study recognized that global innovation teams are a unique form of team, so the effective GIT leader requires a unique set of competencies. The societal culture theme consisted of the cultural competencies of *interpersonal understanding*, *flexibility and adaptability*, and

relationship building. Technical competencies that are aligned with the innovation theme include *initiative and proactive*, *achievement orientation*, *information seeking*, *conceptual thinking*, and *analytical thinking*. Social competencies of *teamwork and cooperation* and *team leadership* are associated with the leadership theme.

Corporate recommendations focused on the implementation of the competency model to improve GIT leader selection, development, and performance. Academic recommendation will be attracted to the complex interaction between extant theories and the potential for development of new theory related to the active topics of leadership, societal culture, innovation, and teams.

REFERENCES

Addinsoft. (n.d.). XLSTAT. Retrieved March 7, 2008 from

http://www.xlstat.com/en/home/

Alexander, J., & Wilson, M. S. (1997) Leading across cultures: Five vital capabilities.

287–294. In F. Hesselbein, M. Goldsmith, & R. Beckhard (Eds.), *The*

organization of the future (pp. 287–294). San Francisco: Jossey-Bass.

Allen, R. L. (2005). The influence of leadership on the motivation of virtual teams

[Electronic version]. *ProQuest Digital Dissertations database.* (UMI No.

3175073)

Ambos, B., & Schlegelmilch, B. B. (2004). The use of international R&D teams: An

empirical investigation of selected contingency factors. *Journal of World*

Business, 39, 37–48.

Avolio, B. J., Kahai, S., & Dodge, G. E. (2000, Winter). E-leadership: Implications for

theory, research, and practice. *Leadership Quarterly, 11,* 615–668.

Barczak, G., & McDonough, E. F. (2003a). Leading global product development teams.

Research Technology Management, 46(6), 14–18.

Barczak, G., & McDonough, E. F. (2003b). The role of trust and project commitment in

new product development teams. *Proceedings of the Management of Engineering*

and Technology 2003 Conference, USA, 274–281.

Barczak, G., & Wilemon, D. (2003). Team member experiences in new product

development: Views from the trenches. *R&D Management, 33,* 463–479.

Barrett, B. J. (2000). Factors influencing the performance effectiveness of globally dispersed teams [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 9985352)

Bartlett, C., & Ghoshal, S. (2002). *Managing across borders: The transnational solution* (2nd ed.). Boston: Harvard Business School Press.

Bass, B. M. (1997). Does the transactional-transformational leadership paradigm transcend organizational and national boundaries? *American Psychologist, 52,* 130–139.

Bass, B. M. & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Bell, B. S., & Kozlowski, S. W. J. (2002). A typology of virtual teams: Implications for effective leadership. *Group & Organization Management, 27,* 14–49.

Bergrenn, C. H. R. I. (2004). Global dreams – local teams: Rhetoric and realities of transnational innovation. *International Journal of Innovation Management, 8,* 115–145.

Bogartz, R. S. (1994). *An introduction to the analysis of variance*. Westport, Connecticut: Preager.

Bolden, R., & Gosling, J. (2006). Leadership competencies: Time to change the tune? *Leadership, 2*(2), 147–163.

Bossink, B. A. G. (2004). Effectiveness of innovation leadership styles: A manager's influence on ecological innovation in construction projects. *Construction Innovation, 4,* 211–228.

Boutellier, R., Gassmann, O., & von Zedtwitz, M. (2000). *Managing global innovation: Uncovering the secrets of future competitiveness* (2nd Rev. ed.). New York: Springer.

Brewer, C. R. H. (2004). Leader creativity: How essential is this ability? (Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3138508)

Bueno, C. M., & Tubbs, S. L. (2004). Identifying global leadership competencies: An exploratory study. *Journal of American Academy of Business, Cambridge, 5,* 80–87.

Burns, J. M., (1978). *Leadership*. New York: HarperCollins .

Chesbrough, H. W. (2003). *Open innovation.* Boston: Harvard Business School Press.

Chevrier, S. (2003). Cross-cultural management in multinational project groups. *Journal of World Business, 38,* 141–149.

Chin, C. O., Gu, J., & Tubbs, S. L. (2001). Developing global leadership competencies. *Journal of Leadership Studies, 7,* 20–31.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23,* 239–290.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Curral, L. A., Forrester, R. H., Dawson, J. F., & West, M. A. (2001). It's what you do and the way that you do it: Team task, team size, and innovation-related group processes. *European Journal of Work & Organizational Psychology, 10,* 187–204.

Dainty, A., Cheng, M., & Moore, D. (2004). A competency-based performance model for construction project managers. *Construction Management & Economics*, *22*(8), 877-886.

Den Hartog, D. N., House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., & Dorfman, P. W. (1999). Culture specific and cross-culturally generalizable implicit leadership theories: Are attributes of charismatic/transformational leadership universally endorsed? *Leadership Quarterly, 10,* 219–256.

Department of Trade and Industry. (2005). *The 2005 R&D scoreboard* [Data file]. Available from Department of Trade and Industry Website, www.innovation.gov. uk

Drake, M. P., Sakkab, N., & Jonash, R. (2006, November/December). Maximizing return on innovation investment. *Research Technology Management, 49*(6), 32–41.

Drucker, P. F. (1985). *Innovation and entrepreneurship.* New York: HarperCollins.

Druskat, V. U., & Wheeler, J. V. (2004). How to lead a self-managing team. *MIT Sloan Management Review, 45,* 65–71.

Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures.* Stanford, CA: Stanford University Press.

Eggers, R. M., & Jones, C. M. (1998). Practical considerations for conducting Delphi studies: The oracle enters a new age. *Educational Research Quarterly, 21,* 53–66.

Ettlie, J. E. (2006). *Managing innovation: New technology, new products, and new services in a global economy* (2nd ed.). Oxford, United Kingdom: Elsevier.

European Commission Directorate-General for Enterprise. (2004, January). *Innovation management and the knowledge - driven economy* [Electronic version]. Brussels, Belgium: Author.

FT Global 500 2007. (n.d.). *Financial times.* Retrieved August 21, 2007, from http://www.ft.com/reports/ft5002007

Gassmann, O., & von Zedtwitz, M. (1998, July). Organization of industrial R&D on a global scale. *R & D Management, 28*(3), 147–262.

Gassmann, O., & von Zedtwitz, M. (2003, June). Trends and determinants of managing virtual R&D teams. *R & D Management, 33,* 243–262.

Golden, T. D., & Veiga, J. F. (2005). Spanning boundaries and borders: Toward understanding the cultural dimensions of team boundary spanning. *Journal of Managerial Issues, XVII,* 178–197.

Goleman, D., Boyatzis, R., & McKee, A. (2002). *Primal leadership: Realizing the power of emotional intelligence.* Boston: Harvard Business School Press.

Govindarajan, V., & Gupta, A. K. (2001). Building an effective global business team. *MIT Sloan Management Review, 42*(4), 63–71.

Hearnshaw, H. M., Harker, R. M., Cheater, F. M., Baker, R. H., & Grimshaw, G. M. (2001). Expert consensus on the desirable characteristics of review criteria for improvement of health care quality [Electronic version]. *Quality in Health Care, 10,* 173–178.

Henttonen, K., & Blomqvist, K. (2005). Managing distance in a global virtual team: The evolution of trust through technology-mediated relational communication. *Strategic Change, 14,* 107–119.

Hirshorn, J. H. (2002). Intercultural communication and the International Space Station program [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3067769)

Hirst, G., & Mann, L. (2004). A model of R&D leadership and team communication: The relationship with project performance. *R & D Management, 34,* 147–160.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across cultures* (2nd ed). Thousand Oaks, CA: Sage.

Hofstede, G., & Hofstede, G. J. (2005). *Cultures and organizations: Software of the mind.* New York: McGraw-Hill.

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies.* London: Sage.

Howell, J. M., & Higgins, C. A. (1990). Champions of technological innovation. *Administrative Science Quarterly, 35*(2), 1–16.

Jarvenpaa, S., Knoll, K., & Leidner, D. E. (1998). Is anybody out there? Antecedents of trust in global virtual teams. *Journal of Management Information Systems, 14,* 29–64.

Jarvenpaa, S., & Tanriverdi , H. U. S. E. (2003). Leading virtual knowledge networks. *Organizational Dynamics, 31,* 403–412.

Jassawalla, A. R., & Sashittal, H. C. (2000). Strategies of effective new product team leaders. *California Management Review, 42,* 34–51.

Javidan, M., Dorfman, P. W., De Luque, M. S., & House, R. J. (2006). In the eye of the beholder: Cross cultural lessons in leadership from project GLOBE. *Academy of Management Perspectives, 20,* 67–90.

Jones, G. R. (2007). *Organizational theory, design, and change* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Jones, K. H. (1990). Innovation leadership at NASA: A comparative study of innovation-producing attributes of four administrations at NASA. *ProQuest Digital Dissertations.* (UMI No. 9025963)

Katzenbach, J. R., & Smith, D. K. (1993). *The wisdom of teams.* Boston: Harvard Business School Press.

Keller, R. T. (1986). Predictors of the performance of project groups in R & D organizations. *Academy of Management Journal, 29*, 715–726.

Keller, R. T. (1992). Transformational leadership and the performance of research and development project groups. *Journal of Management, 18,* 489–501.

Keller, R. T. (2001). Cross-functional project groups in research and new product development: Diversity, communications, job stress, and outcomes. *Academy of Management Journal, 44,* 547–555.

Kerber, K. W., & Buono, A. F. (2004). Leadership challenges in global virtual teams: Lessons from the field. *S.A.M. Advanced Management Journal, 69,* 4–10.

Kets de Vries, M. F. R., & Florent-Treacy, E. (2003). Global leadership from A to Z. In S. Chowdhury (Ed.), *Organization 21C: Someday all organizations will lead this way* (pp. 19–33). Upper Saddle River, NJ: Pearson Education.

Kim, Y., Min, B., & Cha, J. (1999). The roles of R&D team leaders in Korea: A

    contingent approach. *R & D Management, 29,* 153–165.

Kirkman, B. L., & Mathieu, J. E. (2004). The role of virtuality in work team

    effectiveness. *Academy of Management Proceedings,* L1–L6.

Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). The impact of team

    empowerment on virtual team performance: The moderating role of face-to-face

    interaction. *Academy of Management Journal, 47,* 175–192.

Kratzer, J., Leenders, R. T., & van Engelen, J. M. L. (2004). Stimulating the potential:

    Creative performance and communication in innovation teams. *Creativity and*

    Innovation Management, 13, 63–71.

Kratzer, J., Leenders, R. T., & van Engelen, J. M. L. (2006). Managing creative team

    performance in virtual environments: An empirical study in 44 R&D teams.

    Technovation, 26, 42–49.

Kristensson, P., & Norlander, T. (2003, March). The creative product and the creative

    processes in virtual environments. *Creativity & Innovation Management, 12*(1),

    32–40.

Kuratko, D. F. (2007). Entrepreneurial leadership in the 21st century. *Journal of*

    Leadership and Organizational Studies, 13(4), 1–11.

Lambooy, J. (2005, December). Innovation and knowledge: Theory and regional policy.

    European Planning Studies, 13(8), 1137–1152.

Linstone, H. A., & Turoff, M. (2002). *The Delphi method: Techniques and applications.*

    Newark, NJ: Authors.

Lipnack, J., & Stamps, J. (2000). *Virtual teams: People working across boundaries with technology* (2nd ed.). New York: Wiley.

Loo, R., & Thorpe, K. (2004). Making female first-line nurse managers more effective: A Delphi study of occupational stress. *Women in Management Review, 19*(2), 88–97.

Lopopolo, R. B., Schafer, D. S., & Nosse, L. J. (2004). Leadership, administration, management, and professionalism (LAMP) in physical therapy: A Delphi study. *Physical Therapy, 84,* 137–150.

Lugo, M. V. (2007). An examination of cultural and emotional intelligences in the development of global transformational leadership skills. [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3283980).

Magner, R. E. (2005). Solving the great debate. Virtual teams vs. face-to-face teams: A new organizational form or not? (Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3180741)

Malaviya, P., & Wadhwa, S. (2005). Innovation management in organizational context: An empirical study. *Global Journal of Flexible Systems Management, 6,* 1–14.

Maznevski, M. L., & Chudoba, K. M. (2000). Bridging space over time: Global virtual team dynamics and effectiveness. *Organization Science, 11,* 473–492.

McDonough, E. F., III, & Cedrone, D. (1998). Managing globally distributed teams: Beyond technology solutions. In L. S. Peters (Ed.), *IEMC '98 Proceedings. Pioneering new technologies: Management issues and challenges in the third millennium* (pp. 529–534). Piscataway, NJ: Institute of Electrical and Electronics Engineers.

McGowan, M. C. (1990). The roles and competencies of U.S. petroleum industry training and development practitioners in lesser developed countries (Electronic version). *ProQuest Digital Dissertations.* (UMI No. 9106965)

McLandsborough, W. G. (1995). Executive competencies for the global business arena as perceived by executive search firms [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 9539265)

Mumford, M. D., Scott, G. M., Gaddis, B., & Strange, J. M. (2002). Leading creative people: Orchestrating expertise and relationships. *Leadership Quarterly, 13,* 705–750.

Nakata, C., & Sivakumar, K. (1996, January). National culture and new product development: An integrative review. *Journal of Marketing, 60,* 61–72.

Orvis, K. L. (2004). Leadership and team performance in collocated and distributed teams [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3126540)

Pavett, C. M., & Lau, A. W. (1985). A comparative analysis of research and development managerial jobs across two sectors. *Journal of Management Studies, 22,* 69–82.

Persaud, A. (2005). Enhancing synergistic innovative capability in multinational corporations: An empirical investigation. *Journal of Product Innovation Management, 22,* 412–429.

Pickering, C., & Wynn, E. (2004, November). An architecture and business process framework for global team collaboration. *Intel Technology Journal, 8*(4), 373–382.

Pokay, Y. H. (2005). The role of cultural distance in the dynamics and performance of global new product development teams [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3174208)

Prati, L. M., Douglas, C., Ferris, G. R., Ammeter, A. P., & Buckley, M. R. (2003). Emotional intelligence, leadership effectiveness, and team outcomes. *International Journal of Organizational Analysis, 11,* 21–40.

Rank, J., Pace, V. L., & Frese, M. (2004). Three avenues for future research on creativity, innovation, and initiative. *Applied Psychology: An International Review, 53,* 518–528.

Rowe, G. & Wright, G. (1999). The Delphi technique as a forecasting tool: Issues and analysis. *International Journal of Forecasting.* 15. 353–375.

Salaman, G., & Storey, J. (2002). Managers' theories about the process of innovation. *Journal of Management Studies, 39*(2), 147–165.

Santos, J., Doz, Y., & Williamson, P. (2004). Is your innovation process global? *MIT Sloan Management Review, 45,* 31–37.

Satterlee, B. (1999). *The acquisition of key executive skills and attitudes required for international business in the third millennium.* (ERIC Document Reproduction Service No. ED432175)

Schweiger, D. M., Atamer, T., & Calori, R. (2003). Transnational project teams and networks: Making the multinational organization more effective. *Journal of World Business, 38,* 127–140.

Scott, W. R. (2003). *Organizations: Rational, natural, and open systems.* Upper Saddle River, NJ: Prentice Hall.

Seibert, M. J., III (2004). The identification of strategic management counseling competencies essential for the Small Business and Technology Development Center: A modified Delphi study [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3128789)

Senge, P. (1990). *The fifth discipline.* New York: Doubleday.

Shane, S., Venkataraman, S., & MacMillan, I. (1995). Cultural differences in innovation championing strategies. *Journal of Management, 21,* 931–952.

Shearin, E. T., Jr. (1995). Development of a definition and competencies for network literacy: A Delphi study [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 9526948)

Sheridan, E. (2005). *Intercultural leadership competencies for United States business leaders in the new millennium* [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3172360)

Sivakumar, K., & Nakata, C. (2003). Designing global new product teams: Optimizing the effects of national culture on new product development. *Journal of Marketing, 20,* 397–445.

Sivasubramaniam, N., Murry, W. D., Avolio, B. J., & Jung, D. I. (2002). A longitudinal model of the effects of team leadership and group potency on group performance. *Group & Organization Management, 27,* 66.

Snow, C. C., Davison, S. C., Snell, S. A., & Hambrick, D. C. (1996). Use transnational teams to globalize your company. *Organizational Dynamics, 24,* 50–67.

Spencer, L. M., & Spencer, S. M. (1993). *Competence at work.* New York: John Wiley & Sons.

Sternberg, R. J. (2000). Patterns of giftedness: A triarchic analysis. *Roeper Review, 22*(4), 231.

Switzer, J. S. (2000). Virtual teams: Profiles of successful leaders [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 9983697)

Tan, J.-S., & Chua, R. Y.C. (2003). Training and developing cultural intelligence. In Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures.* Stanford, CA: Stanford University Press.

Tubbs, S. L., & Schulz, E. (2006). Exploring a taxonomy of global leadership competencies and meta-competencies. *Journal of American Academy of Business, 8,* 29–34.

Turoff, M., & Hiltz, S. R. (1996). Computer based Delphi process. In M. Adler & E. Ziglio (Eds.), *Gazing into the oracle: The Delphi method and its application to social policy and public health* (pp. 56–85). London: Kingsley.

United Nations Educational, Scientific, and Cultural Organization. (2005). *UNESCO science report 2005.* Retrieved October 28, 2006, from www.unesco.org/ publishing

U.S. Department of Health and Human Services. (n.d.). Code of federal regulations: Part 46: Protection of human subjects. www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm

von Zedtwitz, M., & Gassmann, O. (2002). Market versus technology drive in R&D internationalization: Four different patterns of managing research and development. *Research Policy, 31,* 569–588.

Winston, B. E., & Patterson, K. (2006). An integrative definition of leadership. *International Journal of Leadership Studies, 1,* 6–66.

Wright, C. J., Katcher M. L., Blatt, S. D., Keller, D. M., Mundt, M. P., Botash, A. S., et al. (2005, May/June). Toward the development of advocacy training curricula for pediatric residents: A national Delphi study. *Ambulatory Pediatrics, 5*(3), 165–171.

Yukl, G. (2006). *Leadership in organizations* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Zaccaro, S. J., Rittman, A. L., & Marks, M. (2001, Winter). Team leadership. *Leadership Quarterly, 12,* 451–483.

Zakaria, N., Amelinckx, A., & Wilemon, D. (2004). Working together apart? Building a knowledge-sharing culture for global virtual teams. *Creativity & Innovation Management, 13,* 15–29.

Ziglio, E. (1996). The Delphi method and its contribution to decision-making. In M. Adler & E. Ziglio (Eds.), *Gazing into the oracle: The Delphi method and its application to social policy and public health* (pp. 3–33). London: Jessica Kingsley.

Zolin, R. V. (2002). Trust in cross-functional, global teams: Developing and validating a model of inter-personal trust in cross-functional, global teams [Electronic version]. *ProQuest Digital Dissertations.* (UMI No. 3048641)

APPENDIX A: ROUND 1 SURVEY DOCUMENTATION

E-mail Invitation to Potential Expert Participants for Pilot Study

Dear Prospective Delphi Pilot Study Participant:

I am a student at the University of Phoenix and pursuing a Doctor of Business Administration degree. I am conducting research in partial fulfillment of this degree. The study is entitled *Leadership Competencies for Effective Global Innovation Teams.* The purpose of this qualitative Delphi study is to identify important leadership competencies that promote the effectiveness of global innovation teams.

You are invited to participate in a pilot study to validate the instrument for this research. To qualify, a background of at least 6 years professional experience within one or more of the following discipline areas is necessary: leadership, innovation (product development), cross-cultural studies, or teams. If you meet these qualifications and agree to participate, you will complete a series of two Delphi surveys that requests experts to rate 20 competencies in terms of importance. The estimated time for completion of each survey is approximately 15 minutes.

The objective of this pilot study is to identify areas of improvement that will be incorporated into the survey instrument prior to administration in the primary Delphi study. Thus, if you decide to participate, your comments and suggestions provided in Part 5 of the survey will be especially appreciated.

Should you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email.phoenix.edu. My committee chair is Dr. Jim Goes, a faculty member within the School of Advanced Studies, University of Phoenix. He can be reached at 541-767-9759 or via e-mail at jgoes@email.phoenix.edu

For your convenience, the Delphi surveys are designed for completion on the Internet. You may begin the Round 1 survey at the following Internet link:

http://www.surveymonkey.com/s.aspx?sm=tvUbUcGgzZpv_2bOTdxTO2Qg_3d_3d

Please complete the survey by January 15, 2008. Thank you for your valued contribution.

Sincerely,

Ross H. Messinger

Doctoral Candidate
School of Advanced Studies
University of Phoenix
714-317-0687 (US)
rm4516@email.phoenix.edu

E-Mail Invitation to Potential Expert Participants for Primary Study

Dear Prospective Delphi Study Participant:

I am a student at the University of Phoenix and pursuing a Doctor of Business Administration degree. I am conducting research in partial fulfillment of this degree. The study is entitled *Leadership Competencies for Effective Global Innovation Teams.* The purpose of this qualitative Delphi study is to identify important leadership competencies that promote the effectiveness of global innovation teams.

You are invited to participate in this research. To qualify, a background of at least 6 years professional experience within one or more of the following discipline areas is necessary: leadership, innovation (product development), cross-cultural studies, or teams. If you meet these qualifications and agree to participate, you will complete a series of two Delphi surveys that requests experts to rate 20 competencies in terms of importance. The estimated time for completion of each survey is approximately 15 minutes.

Should you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email.phoenix.edu. My committee Chair is Dr. Jim Goes, a faculty member within the School of Advanced Studies, University of Phoenix. He can be reached at 541-767-9759 or via e-mail at jgoes@email.phoenix.edu

For your convenience, the Delphi surveys are designed for completion on the Internet. You may begin the Round 1 survey at the following Internet link:

http://www.surveymonkey.com/s.aspx?sm=tvUbUcGgzZpv_2bOTdxTO2Qg_3d_3d

Please complete the survey by January 30, 2008. Thank you for your valued contribution.

Sincerely,

Ross H. Messinger

Doctoral Candidate
School of Advanced Studies
University of Phoenix
714-317-0687 (US)
rm4516@email.phoenix.edu

Round 1 Survey

Leadership Competencies - Round 1

1. Informed Consent

I am a student at the University of Phoenix and pursuing a Doctor of Business Administration degree. I am conducting research in partial fulfillment of this degree entitled Leadership Competencies for Effective Global Innovation Teams. The purpose of this qualitative Delphi study is to identify important leadership competencies that promote the effectiveness of global innovation teams.

If you agree to participate in this study, you will complete a series of two Delphi surveys that request experts to rate 20 competencies in terms of their relative importance. The estimated time for completion of each survey is approximately 15 minutes. The two surveys will be completed within 1 month.

There are no foreseeable risks with participation in this study. Confidentiality will be strictly maintained through data encryption, firewalls, and separate and secured hard-drive storage. Demographical and personal data will also be maintained in strict confidence, and the survey responses will be summarized and reported only in aggregate form.

Although participation may not present a direct benefit to you, your contribution may benefit your organization with more effective leadership of strategically important global teams. Improved performance in such teams can result in significant financial return and competitive advantage.

Your participation in this study is voluntary. If you choose not to participate, or to withdraw from the study at any time, you can do so without penalty or loss of personal or professional benefit of any kind.

Should you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email.phoenix.edu

Thank you.

By selecting the consent button on this form, I acknowledge that I understand the nature of the study, that there are no foreseeable risks, and the means by which my identity will be kept confidential. My selection of the consent button on this form also indicates that I am 18 years of age or older and that I give my permission to voluntarily serve as a participant in the described study.

1. Informed Consent

○ I consent to participate in this research study
○ I do not consent to participate in this research study

2. Contact Information for Executive Summary

If you would like to receive an executive summary of the research results prior to publication of the research documentation, please provide your contact information:

1. Contact Information

First name _____

Last Name _____

E-mail address _____

Leadership Competencies - Round 1

3. Demographics

The following demographical information is required to associate demographic and cultural factors with your responses to the competency ratings. The information will also be used to determine degree of expertise. All information will remain strictly confidential.

1. What is your age?

2. What is your gender?
◯ Female
◯ Male

3. What is your nationality?

4. What is the highest academic degree you have earned?
◯ Bachelor
◯ Master
◯ Doctorate

5. What is your primary professional (academic or industrial) specialization?

6. How many years of professional (academic or industrial) experience do you have in any of the following fields?

Leadership	
Cross-cultural studies or expatriate experience	
Innovation	
Teams	

Leadership Competencies - Round 1

4. Leadership Competency

This survey requests your opinion on the importance of specific leadership competencies necessary for the effectiveness of global innovation teams.

Directions:
Please select the degree of importance for each competency. The competencies are ordered alphabetically.

Definitions:
Global innovation team - a group chartered to develop new products and services using team members located within any global location and with any cultural background.

Competency - an underlying characteristic of an individual that is causally related to criterion-based effective and/or superior performance in a professional role.

1. What is the level of importance you would assign to the specified leadership competency for effective global innovation teams?

	Low Importance 1	Low-Medium Importance 2	Medium Importance 3	Medium-High Importance 4	High Importance 5
Achievement orientation	○	○	○	○	○
Analytical thinking	○	○	○	○	○
Conceptual thinking	○	○	○	○	○
Concern for order, quality, and accuracy	○	○	○	○	○
Customer-service orientation	○	○	○	○	○
Developing others	○	○	○	○	○
Directiveness	○	○	○	○	○
Expertise/Specialized knowledge	○	○	○	○	○
Flexibility	○	○	○	○	○
Impact and influence	○	○	○	○	○
Information seeking	○	○	○	○	○
Interpersonal understanding	○	○	○	○	○
Initiative	○	○	○	○	○
Organizational awareness	○	○	○	○	○
Organizational commitment	○	○	○	○	○
Relationship building	○	○	○	○	○
Self-confidence	○	○	○	○	○
Self-control	○	○	○	○	○
Team leadership	○	○	○	○	○
Teamwork and cooperation	○	○	○	○	○

Leadership Competencies - Round 1

5. Conclusion

Thank you for participating in Round 1 of this Delphi study.

Ross Messinger will contact you shortly with a request to participate in Round 2 of the study.

1. Please add any comments or recommendations below:

APPENDIX B: ROUND 1 DATA

Survey Round 1 Demographic Data

Table B1

Age Distribution of Study Participants for Round 1

Age Range	Count	Percent
21-30	0	0
31-40	12	26
41-50	19	41
51-60	11	24
61-70	4	9

Table B2

Gender Distribution of Study Participants for Round 1

Gender	Count	Percent
Male	27	59
Female	19	41

Table B3

Highest Academic Degree of Study Participants for Round 1

Degree	Count	Percent
Doctorate	42	91
Masters	4	9
Bachelors	0	0

Table B4

Nationality Distribution of Study Participants for Round 1

Nationality	Count	Percent
Australia	2	4
Austria	1	2
Belgium	2	4
Canada	5	11
China	1	2
Denmark	1	2
Finland	1	2
France	1	2
Germany	4	9
India	3	7
Israel	1	2
Italy	1	2
Korea	1	2
Lithuania	1	2
Malaysia	1	2
Netherlands	1	2
Sweden	1	2
UK	5	11
US	13	28

Total number of nationalities equals 19

Table B5

Professional Specialization of Study Participants for Round 1

Theme	Count	Percent
Leadership	9	20
Societal culture	4	9
Innovation	7	15
Leadership and innovation	9	20
Leadership and culture	6	13
Culture and innovation	3	7
Teams	8	17

Table B6

Years of Professional Experience of Study Participants for Round 1

	Years of experience	
Theme	Total	Average
Leadership	493	11.0
Cross-cultural studies or expatriate experience	416	9.2
Innovation	399	8.9
Teams	520	11.6

Table B7

Survey Round 1 Raw Data

	Low Importance 1	Low-Medium Importance 2	Medium Importance 3	Medium-High Importance 4	High Importance 5	Response Count
Achievement orientation	0.0% (0)	2.2% (1)	23.9% (11)	**39.1% (18)**	34.8% (16)	46
Analytical thinking	0.0% (0)	4.3% (2)	32.6% (15)	**50.0% (23)**	13.0% (6)	46
Conceptual thinking	0.0% (0)	2.2% (1)	19.6% (9)	**54.3% (25)**	23.9% (11)	46
Concern for order, quality, and accuracy	4.3% (2)	10.9% (5)	**45.7% (21)**	28.3% (13)	10.9% (5)	46
Customer-service orientation	0.0% (0)	17.4% (8)	26.1% (12)	**45.7% (21)**	10.9% (5)	46
Developing others	0.0% (0)	6.5% (3)	**34.8% (16)**	32.6% (15)	26.1% (12)	46
Directiveness/assertiveness	2.2% (1)	15.2% (7)	**47.8% (22)**	21.7% (10)	13.0% (6)	46
Expertise/Specialized knowledge	0.0% (0)	15.2% (7)	28.3% (13)	**43.5% (20)**	13.0% (6)	46
Flexibility/adaptibility	0.0% (0)	0.0% (0)	6.5% (3)	**50.0% (23)**	43.5% (20)	46
Impact and influence	0.0% (0)	2.3% (1)	37.2% (16)	**41.9% (18)**	18.6% (8)	43
Information seeking	0.0% (0)	4.3% (2)	13.0% (6)	**47.8% (22)**	34.8% (16)	46
Interpersonal understanding	0.0% (0)	0.0% (0)	13.0% (6)	32.6% (15)	**54.3% (25)**	46
Initiative/Proactive	0.0% (0)	0.0% (0)	13.0% (6)	**54.3% (25)**	32.6% (15)	46
Organizational awareness	0.0% (0)	6.5% (3)	**41.3% (19)**	32.6% (15)	19.6% (9)	46
Organizational commitment	6.5% (3)	15.2% (7)	**41.3% (19)**	30.4% (14)	6.5% (3)	46
Relationship building	0.0% (0)	0.0% (0)	8.7% (4)	**50.0% (23)**	41.3% (19)	46
Self-confidence	0.0% (0)	0.0% (0)	37.0% (17)	**43.5% (20)**	19.6% (9)	46
Self-control	0.0% (0)	4.3% (2)	37.0% (17)	**41.3% (19)**	17.4% (8)	46
Team leadership	0.0% (0)	0.0% (0)	19.6% (9)	**43.5% (20)**	37.0% (17)	46
Teamwork and cooperation	0.0% (0)	0.0% (0)	8.7% (4)	32.6% (15)	**58.7% (27)**	46

APPENDIX C: ROUND 2 SURVEY DOCUMENTATION

E-Mail Invitation to Potential Expert Participants for Pilot Study

Dear Delphi Pilot Study Participant:

Thank you for participating in this important research study. Round 1 is now complete. Your responses to the Round 1 survey have been analyzed and incorporated into the Round 2 survey.

Round 2 will repeat the competency questionnaire, giving you the opportunity to confirm or adjust your responses from the Round 1 survey. The mean of the responses from all participants is also provided. Your Round 2 responses can be guided by the Round 1 results. The estimated time for completion of this survey is approximately 15 minutes.

The objective of this pilot study is to identify areas of improvement that will be incorporated into the survey instrument prior to administration in the primary Delphi study. Thus, if you decide to continue your participation, your comments and suggestions provided in Part 3 of the survey will be especially appreciated.

Your Round 2 survey is located online at the following link:

http://www.surveymonkey.com/s.aspx?sm=zjpu_2bXUmtxGUV1qW5v5dMQ_3d_3d

Please complete this survey by February 10, 2008. If you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email. phoenix.edu

Thank you for your valued contribution.

Sincerely,

Ross H. Messinger

Doctoral Candidate
School of Advanced Studies
University of Phoenix
714-317-0687 (US)
rm4516@email.phoenix.edu

E-Mail Invitation to Potential Expert Participants for Primary Study

Dear Delphi Study Participant:

Thank you for participating in this important research study. Round 1 is now complete. Your responses to the Round 1 survey have been analyzed and incorporated into the Round 2 survey.

Round 2 will repeat the competency questionnaire, giving you the opportunity to confirm or adjust your responses from the Round 1 survey. The mean of the responses from all participants is also provided. Your Round 2 responses can be guided by the Round 1 results. The estimated time for completion of this survey is approximately 15 minutes.

Your Round 2 survey is located online at the following link:

http://www.surveymonkey.com/s.aspx?sm=zjpu_2bXUmtxGUV1qW5v5dMQ_3d_3d

Please complete this survey by February 15, 2008. If you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email. phoenix.edu

Thank you for your valued contribution.

Sincerely,

Ross H. Messinger

Doctoral Candidate
School of Advanced Studies
University of Phoenix
714-317-0687 (US)
rm4516@email.phoenix.edu

E-Mail Reminder for Survey Return for Primary Study

Dear Delphi Study Participant:

This reminder is to encourage your participation in an important research study on leader competencies of effective global innovation teams. You are invited to complete the final round of a two-round Delphi survey that requests domain experts to rate 20 leadership competencies in terms of their importance to the effectiveness of such teams. The estimated time for completion of this round is approximately 15 minutes.

Your survey is located online at the following link:

http://www.surveymonkey.com/s.aspx?sm=zjpu_2bXUmtxGUV1qW5v5dMQ_3d_3d

Thank you for your valued contribution.

Sincerely,

Ross H. Messinger

Doctoral Candidate
School of Advanced Studies
University of Phoenix
714-317-0687 (US)
rm4516@email.phoenix.edu

Typical Round 2 Survey

.

Primary - Round 2 - Participant 30

1. Round 2 Introduction

Round 1 of the Delphi study is complete.

The purpose of this qualitative Delphi study is to identify important leadership competencies that promote the effectiveness of global innovation teams. If you agree to continue to participate in this study, you will complete the second of two Delphi surveys within which experts rate 20 competencies in terms of their importance to the effectiveness of global innovation teams. The estimated time for completion of this second survey is approximately 15 minutes.

There are no foreseeable risks with participation in this study. Confidentiality is strictly maintained through data encryption, firewalls, and separate and secure hard-drive storage. Demographical and personal data will also be maintained in strict confidence, and the survey responses will be summarized and reported only in aggregate form.

Although paricipation may not present a direct benefit to you, your contribution may benefit your organization with more effective leadership of strategically-important global teams. Improved performance on such teams can result in significant financial return and competitive advantage.

Your participation in this study is voluntary. If you choose not to participate, or to withdraw from the study at any time, you can do so without penalty or loss of personal or professional benefit of any kind.

Should you have any questions concerning the research study, please call me at 714-317-0687 or e-mail me at rm4516@email.phoenix.edu

Thank you.

Primary - Round 2 - Participant 30

2. Competency Survey

This survey requests your opinion on the importance of 20 competencies to the effectiveness of global innovation team leaders. Round 2 allows you to confirm or adjust your responses from the Round 1 survey. The competencies have been ranked according to the mean response from Round 1. Your response and the mean response from Round 1 are provided for each competency as a reference.

Directions:
Please rate each competency in terms of its degree of importance for leaders of effective global innovation teams. You may choose the same response provided in Round 1 or choose another response.

Definitions:
Global innovation team - a group chartered to develop new products and services using team members who are located within any global location and with any cultural background.

Definition of each competency:
Achievement orientation - Results oriented, desires self-improvement, competes against standard, self-challenges, innovative, takes calculated risks

Analytical thinking - Demonstrates cause-effect reasoning, plans complex interdependent systems, sets priorities, applies analytical techniques

Conceptual thinking - Integrates components into a single vision, demonstrates critical thinking, develops new models and theories, recognizes patterns

Concern for order, quality, & accuracy - Reduces uncertainty; increases the clarity of tasks, roles, and functions; monitors progress; organizes.

Customer-service orientation - Takes initiative to understand, responds to and solves client needs, desires to help and advocate for others

Developing others - Teaches, mentors, and supports others; provides constructive feedback; develops new training programs

Directiveness - Demonstrates assertiveness and aggressiveness, uses positional power to direct others, takes charge & imposes discipline.

Expertise/Specialized knowledge - Demonstrates depth/breadth of legal, product, & service knowledge; committed to learning.

Flexibility - Adapts to new situations; appreciates views of others; demonstrates strategic scope of changes.

Impact and influence - Persuades with data or examples; appeals to reason; builds coalitions for company, rather than personal, goals

Information seeking - Seeks understanding and diagnosis, scans for opportunities, demonstrates curiosity.

Interpersonal understanding - Desires to understand the needs and feelings of others, listens, demonstrates cross-cultural sensitivity and empathy

Initiative - Demonstrates bias for action, proactive, seizes or creates opportunities, involves others, demonstrates a long-term future orientation

Organizational awareness - Understands power relationships and informal and formal structures and cultures; politically aware.

Organizational commitment - Aligns with organizational goals over self-interests, assists others first, demonstrates personal sacrifice for the organization

Relationship building - Networks, establishes rapport, builds social contacts and friendships for business purposes.

Primary - Round 2 - Participant 30

Self-confidence - Believes in own ability to accomplish challenging tasks, demonstrates strong expression and impression.

Self-control - Maintains emotional control under conflict or stress, not impulsive, resists inappropriate involvement, calms others.

Team leadership - Desires to lead and motivate others, sets positive example, supports groups within the organization, communicates compelling vision.

Teamwork and cooperation - Willing to participate in and facilitate group functions and conflict resolution, empowers and encourages others.

1. What is the level of importance you would assign to the specified leadership competency for effective global innovation teams?

	Low Importance 1	Low-Medium Importance 2	Medium Importance 3	Medium-High Importance 4	High Importance 5
Teamwork and cooperation. Your Round 1 score = 4, Mean = 4.49	○	○	○	○	○
Interpersonal understanding. Your Round 1 score = 4, Mean = 4.40	○	○	○	○	○
Flexibility/Adaptibility. Your Round 1 score = 4, Mean = 4.36	○	○	○	○	○
Relationship building. Your Round 1 score = 4, Mean = 4.31	○	○	○	○	○
Team leadership. Your Round 1 score = 4, Mean = 4.20	○	○	○	○	○
Initiative/Proactive. Your Round 1 score = 4, Mean = 4.20	○	○	○	○	○
Information seeking. Your Round 1 score = 4, Mean = 4.13	○	○	○	○	○
Achievement orientation. Your Round 1 score = 4, Mean = 4.09	○	○	○	○	○
Conceptual thinking. Your Round 1 score = 4, Mean = 4.00	○	○	○	○	○
Self-confidence. Your Round 1 score = 4, Mean = 3.82	○	○	○	○	○
Developing others. Your Round 1 score = 4, Mean = 3.80	○	○	○	○	○
Impact and Influence. Your Round 1 score = 4, Mean = 3.76	○	○	○	○	○
Self-control. Your Round 1 score = 4, Mean = 3.71	○	○	○	○	○

Primary - Round 2 - Participant 30

Analytical thinking. Your Round 1 score = 4, Mean = 3.71	○	○	○	○	○
Organizational awareness. Your Round 1 score = 3, Mean = 3.67	○	○	○	○	○
Expertise/Specialized knowledge. Your Round 1 score = 5, Mean = 3.53	○	○	○	○	○
Customer-service orientation. Your Round 1 score = 3, Mean = 3.53	○	○	○	○	○
Concern for order, quality, and accuracy. Your Round 1 score = 4, Mean = 3.31	○	○	○	○	○
Directiveness/assertiveness. Your Round 1 score = 3, Mean = 3.29	○	○	○	○	○
Organizational commitment. Your Round 1 score = 4, Mean = 3.18	○	○	○	○	○

Primary - Round 2 - Participant 30

3. Conclusion

Thank you for participating in Round 2 of this Delphi study. Your participation is now complete and greatly appreciated.

Ross Messinger will contact you with results of the study if you previously requested an executive summary.

1. Please add any comments or recommendations below:

APPENDIX D: ROUND 2 DATA

Survey Round 2 Demographic Data

Table D1

Age Distribution of Study Participants for Round 2

Age range	Count	Percent
21-30	0	0
31-40	10	28
41-50	15	42
51-60	7	19
61-70	4	11

Table D2

Gender Distribution of Study Participants for Round 2

	Count	Percent
Male	24	67
Female	12	33

Table D3

Highest Academic Degree of Study Participants for Round 2

	Count	Percent
Doctorate	33	92
Masters	3	8
Bachelors	0	0

Table D4

Nationality Distribution of Study Participants for Round 2

Nationality	Count	Percent
Australia	1	3
Austria	1	3
Belgium	2	6
Canada	3	8
Denmark	1	3
Finland	1	3
France	1	3
Germany	3	8
India	3	8
Israel	1	3
Italy	1	3
Lithuania	1	3
Malaysia	1	3
Netherlands	1	3
UK	3	8
US	12	33

Total number of nationalities equals 16

Table D5

Professional Specialization of Study Participants for Round 2

Theme	Count	Percent
Leadership	8	22
Societal culture	1	3
Innovation	7	19
Leadership and innovation	8	22
Leadership and culture	4	11
Culture and innovation	3	8
Teams	5	14

Table D6

Years of Professional Experience of Study Participants for Round 2

	Years of experience	
Theme	Total	Average
Leadership	407	11.3
Cross-cultural studies or expatriate experience	334	9.3
Innovation	339	9.4
Teams	434	12.1

Table D7

Results of All Tukey HSD Pairwise Comparisons for Round 2

Contrast	Difference	Standardized difference	Pr > Diff	Significant
Teamwork and cooperation vs Organizational commitment	1.367	7.798	< 0.0001	Yes
Teamwork and cooperation vs Directiveness/Assertiveness	1.200	6.848	< 0.0001	Yes
Teamwork and cooperation vs Concern for order, quality, & accuracy	1.200	6.848	< 0.0001	Yes
Teamwork and cooperation vs Customer-service orientation	1.083	6.180	< 0.0001	Yes
Teamwork and cooperation vs Self-control	1.056	6.021	< 0.0001	Yes
Teamwork and cooperation vs Organizational awareness	1.006	5.738	< 0.0001	Yes
Teamwork and cooperation vs Expertise/Specialized knowledge	0.944	5.387	< 0.0001	Yes
Teamwork and cooperation vs Impact and Influence	0.889	5.071	< 0.0001	Yes
Teamwork and cooperation vs Self-confidence	0.867	4.946	0.000	Yes
Teamwork and cooperation vs Developing others	0.806	4.595	0.001	Yes
Teamwork and cooperation vs Analytical thinking	0.750	4.278	0.003	Yes
Teamwork and cooperation vs Conceptual thinking	0.562	3.203	0.139	No
Teamwork and cooperation vs Information seeking	0.506	2.886	0.298	No
Teamwork and cooperation vs Achievement orientation	0.472	2.694	0.433	No
Teamwork and cooperation vs Initiative/Proactive	0.450	2.569	0.529	No
Teamwork and cooperation vs Relationship building	0.417	2.377	0.679	No
Teamwork and cooperation vs Team leadership	0.389	2.218	0.789	No
Teamwork and cooperation vs Flexibility/Adaptibility	0.222	1.268	0.999	No
Teamwork and cooperation vs Interpersonal understanding	0.111	0.634	1.000	No
Interpersonal understanding vs Organizational commitment	1.256	7.165	< 0.0001	Yes
Interpersonal understanding vs Directiveness/Assertiveness	1.089	6.214	< 0.0001	Yes
Interpersonal understanding vs Concern for order, quality, & accuracy	1.089	6.214	< 0.0001	Yes
Interpersonal understanding vs Customer-service orientation	0.972	5.546	< 0.0001	Yes
Interpersonal understanding vs Self-control	0.944	5.387	< 0.0001	Yes

(*table continues*)

Interpersonal understanding vs Organizational awareness	0.895	5.105	< 0.0001	Yes
Interpersonal understanding vs Expertise/Specialized knowledge	0.833	4.754	0.000	Yes
Interpersonal understanding vs Impact and Influence	0.778	4.437	0.002	Yes
Interpersonal understanding vs Self-confidence	0.756	4.312	0.003	Yes
Interpersonal understanding vs Developing others	0.694	3.961	0.011	Yes
Interpersonal understanding vs Analytical thinking	0.639	3.644	0.036	Yes
Interpersonal understanding vs Conceptual thinking	0.450	2.569	0.529	No
Interpersonal understanding vs Information seeking	0.395	2.252	0.767	No
Interpersonal understanding vs Achievement orientation	0.361	2.060	0.877	No
Interpersonal understanding vs Initiative/Proactive	0.339	1.936	0.927	No
Interpersonal understanding vs Relationship building	0.306	1.743	0.973	No
Interpersonal understanding vs Team leadership	0.278	1.585	0.991	No
Interpersonal understanding vs Flexibility/Adaptibility	0.111	0.634	1.000	No
Flexibility/Adaptibility vs Organizational commitment	1.145	6.531	< 0.0001	Yes
Flexibility/Adaptibility vs Directiveness/Assertiveness	0.978	5.580	< 0.0001	Yes
Flexibility/Adaptibility vs Concern for order, quality, & accuracy	0.978	5.580	< 0.0001	Yes
Flexibility/Adaptibility vs Customer-service orientation	0.861	4.912	0.000	Yes
Flexibility/Adaptibility vs Self-control	0.833	4.754	0.000	Yes
Flexibility/Adaptibility vs Organizational awareness	0.784	4.471	0.001	Yes
Flexibility/Adaptibility vs Expertise/Specialized knowledge	0.722	4.120	0.006	Yes
Flexibility/Adaptibility vs Impact and Influence	0.667	3.803	0.020	Yes
Flexibility/Adaptibility vs Self-confidence	0.645	3.679	0.032	Yes
Flexibility/Adaptibility vs Developing others	0.583	3.328	0.098	No
Flexibility/Adaptibility vs Analytical thinking	0.528	3.011	0.226	No
Flexibility/Adaptibility vs Conceptual thinking	0.339	1.936	0.927	No
Flexibility/Adaptibility vs Information seeking	0.284	1.619	0.988	No
Flexibility/Adaptibility vs Achievement orientation	0.250	1.426	0.997	No
Flexibility/Adaptibility vs Initiative/Proactive	0.228	1.302	0.999	No
Flexibility/Adaptibility vs Relationship building	0.194	1.109	1.000	No
Flexibility/Adaptibility vs Team leadership	0.167	0.951	1.000	No

(*table continues*)

Team leadership vs Organizational commitment	0.978	5.580	< 0.0001	Yes
Team leadership vs Directiveness/Assertiveness	0.812	4.629	0.001	Yes
Team leadership vs Concern for order, quality, & accuracy	0.812	4.629	0.001	Yes
Team leadership vs Customer-service orientation	0.694	3.961	0.011	Yes
Team leadership vs Self-control	0.667	3.803	0.020	Yes
Team leadership vs Organizational awareness	0.617	3.520	0.054	No
Team leadership vs Expertise/Specialized knowledge	0.556	3.169	0.152	No
Team leadership vs Impact and Influence	0.500	2.852	0.320	No
Team leadership vs Self-confidence	0.478	2.728	0.407	No
Team leadership vs Developing others	0.417	2.377	0.679	No
Team leadership vs Analytical thinking	0.361	2.060	0.877	No
Team leadership vs Conceptual thinking	0.173	0.985	1.000	No
Team leadership vs Information seeking	0.117	0.668	1.000	No
Team leadership vs Achievement orientation	0.083	0.475	1.000	No
Team leadership vs Initiative/Proactive	0.062	0.351	1.000	No
Team leadership vs Relationship building	0.028	0.158	1.000	No
Relationship building vs Organizational commitment	0.950	5.422	< 0.0001	Yes
Relationship building vs Directiveness/Assertiveness	0.784	4.471	0.001	Yes
Relationship building vs Concern for order, quality, & accuracy	0.784	4.471	0.001	Yes
Relationship building vs Customer-service orientation	0.667	3.803	0.020	Yes
Relationship building vs Self-control	0.639	3.644	0.036	Yes
Relationship building vs Organizational awareness	0.589	3.362	0.088	No
Relationship building vs Expertise/Specialized knowledge	0.528	3.011	0.226	No
Relationship building vs Impact and Influence	0.472	2.694	0.433	No
Relationship building vs Self-confidence	0.450	2.569	0.529	No
Relationship building vs Developing others	0.389	2.218	0.789	No
Relationship building vs Analytical thinking	0.333	1.901	0.938	No
Relationship building vs Conceptual thinking	0.145	0.826	1.000	No
Relationship building vs Information seeking	0.089	0.509	1.000	No
Relationship building vs Achievement orientation	0.056	0.317	1.000	No
Relationship building vs Initiative/Proactive	0.034	0.193	1.000	No
Initiative/Proactive vs Organizational commitment	0.917	5.229	< 0.0001	Yes

(*table continues*)

Initiative/Proactive vs Directiveness/Assertiveness	0.750	4.278	0.003	Yes
Initiative/Proactive vs Concern for order, quality, & accuracy	0.750	4.278	0.003	Yes
Initiative/Proactive vs Customer-service orientation	0.633	3.610	0.040	Yes
Initiative/Proactive vs Self-control	0.605	3.452	0.067	No
Initiative/Proactive vs Organizational awareness	0.556	3.169	0.152	No
Initiative/Proactive vs Expertise/Specialized knowledge	0.494	2.818	0.343	No
Initiative/Proactive vs Impact and Influence	0.438	2.501	0.583	No
Initiative/Proactive vs Self-confidence	0.417	2.377	0.679	No
Initiative/Proactive vs Developing others	0.355	2.026	0.892	No
Initiative/Proactive vs Analytical thinking	0.300	1.709	0.978	No
Initiative/Proactive vs Conceptual thinking	0.111	0.634	1.000	No
Initiative/Proactive vs Information seeking	0.056	0.317	1.000	No
Initiative/Proactive vs Achievement orientation	0.022	0.124	1.000	No
Achievement orientation vs Organizational commitment	0.895	5.105	< 0.0001	Yes
Achievement orientation vs Directiveness/Assertiveness	0.728	4.154	0.005	Yes
Achievement orientation vs Concern for order, quality, & accuracy	0.728	4.154	0.005	Yes
Achievement orientation vs Customer-service orientation	0.611	3.486	0.060	No
Achievement orientation vs Self-control	0.583	3.328	0.098	No
Achievement orientation vs Organizational awareness	0.534	3.045	0.208	No
Achievement orientation vs Expertise/Specialized knowledge	0.472	2.694	0.433	No
Achievement orientation vs Impact and Influence	0.417	2.377	0.679	No
Achievement orientation vs Self-confidence	0.395	2.252	0.767	No
Achievement orientation vs Developing others	0.333	1.901	0.938	No
Achievement orientation vs Analytical thinking	0.278	1.585	0.991	No
Achievement orientation vs Conceptual thinking	0.089	0.509	1.000	No
Achievement orientation vs Information seeking	0.034	0.193	1.000	No
Information seeking vs Organizational commitment	0.861	4.912	0.000	Yes
Information seeking vs Directiveness/Assertiveness	0.694	3.961	0.011	Yes
Information seeking vs Concern for order, quality, & accuracy	0.694	3.961	0.011	Yes

(*table continues*)

Information seeking vs Customer-service orientation	0.577	3.294	0.108	No
Information seeking vs Self-control	0.550	3.135	0.166	No
Information seeking vs Organizational awareness	0.500	2.852	0.320	No
Information seeking vs Expertise/Specialized knowledge	0.438	2.501	0.583	No
Information seeking vs Impact and influence	0.383	2.184	0.810	No
Information seeking vs Self-confidence	0.361	2.060	0.877	No
Information seeking vs Developing others	0.300	1.709	0.978	No
Information seeking vs Analytical thinking	0.244	1.392	0.998	No
Information seeking vs Conceptual thinking	0.056	0.317	1.000	No
Conceptual thinking vs Organizational commitment	0.806	4.595	0.001	Yes
Conceptual thinking vs Directiveness/Assertiveness	0.639	3.644	0.036	Yes
Conceptual thinking vs Concern for order, quality, & accuracy	0.639	3.644	0.036	Yes
Conceptual thinking vs Customer-service orientation	0.522	2.977	0.244	No
Conceptual thinking vs Self-control	0.494	2.818	0.343	No
Conceptual thinking vs Organizational awareness	0.444	2.535	0.556	No
Conceptual thinking vs Expertise/Specialized knowledge	0.383	2.184	0.810	No
Conceptual thinking vs Impact and influence	0.327	1.867	0.947	No
Conceptual thinking vs Self-confidence	0.306	1.743	0.973	No
Conceptual thinking vs Developing others	0.244	1.392	0.998	No
Conceptual thinking vs Analytical thinking	0.188	1.075	1.000	No
Analytical thinking vs Organizational commitment	0.617	3.520	0.054	No
Analytical thinking vs Directiveness/Assertiveness	0.450	2.569	0.529	No
Analytical thinking vs Concern for order, quality, & accuracy	0.450	2.569	0.529	No
Analytical thinking vs Customer-service orientation	0.333	1.901	0.938	No
Analytical thinking vs Self-control	0.306	1.743	0.973	No
Analytical thinking vs Organizational awareness	0.256	1.460	0.996	No
Analytical thinking vs Expertise/Specialized knowledge	0.194	1.109	1.000	No
Analytical thinking vs Impact and influence	0.139	0.792	1.000	No
Analytical thinking vs Self-confidence	0.117	0.668	1.000	No
Analytical thinking vs Developing others	0.056	0.317	1.000	No
Developing others vs Organizational commitment	0.562	3.203	0.139	No

(*table continues*)

Developing others vs Directiveness/Assertiveness	0.395	2.252	0.767	No
Developing others vs Concern for order, quality, & accuracy	0.395	2.252	0.767	No
Developing others vs Customer-service orientation	0.278	1.585	0.991	No
Developing others vs Self-control	0.250	1.426	0.997	No
Developing others vs Organizational awareness	0.200	1.143	1.000	No
Developing others vs Expertise/Specialized knowledge	0.139	0.792	1.000	No
Developing others vs Impact and influence	0.083	0.475	1.000	No
Developing others vs Self-confidence	0.062	0.351	1.000	No
Self-confidence vs Organizational commitment	0.500	2.852	0.320	No
Self-confidence vs Directiveness/Assertiveness	0.333	1.901	0.938	No
Self-confidence vs Concern for order, quality, & accuracy	0.333	1.901	0.938	No
Self-confidence vs Customer-service orientation	0.216	1.234	1.000	No
Self-confidence vs Self-control	0.188	1.075	1.000	No
Self-confidence vs Organizational awareness	0.139	0.792	1.000	No
Self-confidence vs Expertise/Specialized knowledge	0.077	0.441	1.000	No
Self-confidence vs Impact and influence	0.022	0.124	1.000	No
Impact and Influence vs Organizational commitment	0.478	2.728	0.407	No
Impact and Influence vs Directiveness/Assertiveness	0.312	1.777	0.967	No
Impact and Influence vs Concern for order, quality, & accuracy	0.312	1.777	0.967	No
Impact and Influence vs Customer-service orientation	0.194	1.109	1.000	No
Impact and Influence vs Self-control	0.167	0.951	1.000	No
Impact and Influence vs Organizational awareness	0.117	0.668	1.000	No
Impact and Influence vs Expertise/Specialized knowledge	0.056	0.317	1.000	No
Expertise/Specialized knowledge vs Organizational commitment	0.423	2.411	0.653	No
Expertise/Specialized knowledge vs Directiveness/Assertiveness	0.256	1.460	0.996	No
Expertise/Specialized knowledge vs Concern for order, quality, & accuracy	0.256	1.460	0.996	No
Expertise/Specialized knowledge vs Customer-service orientation	0.139	0.792	1.000	No

(*table continues*)

Expertise/Specialized knowledge vs Self-control	0.111	0.634	1.000	No
Expertise/Specialized knowledge vs Organizational awareness	0.062	0.351	1.000	No
Organizational awareness vs Organizational commitment	0.361	2.060	0.877	No
Organizational awareness vs Directiveness/Assertiveness	0.194	1.109	1.000	No
Organizational awareness vs Concern for order, quality, & accuracy	0.194	1.109	1.000	No
Organizational awareness vs Customer-service orientation	0.077	0.441	1.000	No
Organizational awareness vs Self-control	0.050	0.283	1.000	No
Self-control vs Organizational commitment	0.312	1.777	0.967	No
Self-control vs Directiveness/Assertiveness	0.145	0.826	1.000	No
Self-control vs Concern for order, quality, & accuracy	0.145	0.826	1.000	No
Self-control vs Customer-service orientation	0.028	0.158	1.000	No
Customer-service orientation vs Organizational commitment	0.284	1.619	0.988	No
Customer-service orientation vs Directiveness/Assertiveness	0.117	0.668	1.000	No
Customer-service orientation vs Concern for order, quality, & accuracy	0.117	0.668	1.000	No
Concern for order, quality, & accuracy vs Organizational commitment	0.167	0.951	1.000	No
Concern for order, quality, & accuracy vs Directiveness/Assertiveness	0.000	0.000	1.000	No
Directiveness/Assertiveness vs Organizational commitment	0.167	0.951	1.000	No

Critical value: 3.544

Tukey's d critical value: 5.012

Table D8

Round 2 Raw Data Count

Competency	Low Import-ance 1	Low-medium Import-ance 2	Medium Import-ance 3	Medium-High Import-ance 4	High Import-ance 5	Total
Teamwork and cooperation	0	0	2	14	20	36
Interpersonal understanding	0	0	4	14	18	36
Flexibility and adaptability	0	0	2	22	12	36
Relationship building	0	0	6	21	9	36
Team leadership	0	0	5	22	9	36
Initiative and proactive	0	2	6	15	12	35
Information seeking	0	0	6	23	6	35
Achievement orientation	0	0	6	23	7	36
Conceptual thinking	0	1	6	22	6	35
Self-confidence	0	2	12	18	3	35
Developing others	0	1	15	14	6	36
Impact and influence	0	1	17	13	5	36
Self-control	0	2	17	16	1	36
Analytical thinking	0	1	12	18	5	36
Organizational awareness	0	3	15	14	3	35
Expertise and specialized knowledge	1	4	10	16	5	36
Customer-service orientation	2	3	12	16	3	36
Concern for order, quality, and accuracy	0	4	19	10	2	35
Directiveness and assertiveness	0	2	25	4	4	35
Organizational commitment	2	6	15	10	2	35

Table D9

Round 2 Raw Data Percent

Competency	Low Import-ance 1	Low-medium Import-ance 2	Medium Import-ance 3	Medium-High Import-ance 4	High Import-ance 5	Total
Teamwork and cooperation	0	0	6	39	56	100
Interpersonal understanding	0	0	11	39	50	100
Flexibility and adaptability	0	0	6	61	33	100
Relationship building	0	0	17	58	25	100
Team leadership	0	0	14	61	25	100
Initiative and proactive	0	6	17	43	34	100
Information seeking	0	0	17	66	17	100
Achievement orientation	0	0	17	64	19	100
Conceptual thinking	0	3	17	63	17	100
Self-confidence	0	6	34	51	9	100
Developing others	0	3	42	39	17	100
Impact and influence	0	3	47	36	14	100
Self-control	0	6	47	44	3	100
Analytical thinking	0	3	33	50	14	100
Organizational awareness	0	9	43	40	9	100
Expertise and specialized knowledge	3	11	28	44	14	100
Customer-service orientation	6	8	33	44	8	100
Concern for order, quality, and accuracy	0	11	54	29	6	100
Directiveness and assertiveness	0	6	71	11	11	100
Organizational commitment	6	17	43	29	6	100