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Influence of Knowledge Sharing Behaviors on Global Virtual Team Performance

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Walden University
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Abstract

Influence of Knowledge Sharing Behaviors on Global Virtual Team Performance

by

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MBA, University of Phoenix, 2009

BA, University of Memphis, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Management

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Abstract

Global virtual teams (GVT) are increasingly important in organizations. Barriers to knowledge sharing behavior (KSB) could negatively impact GVT performance. The purpose of this quantitative study was to discover the extent of predictive power of KSB on GVT performance and how Leader-member exchange (LMX) moderates this relationship. Research questions investigated the extent that KSB influences GVT performance and the extent that LMX moderates the relationship between KSB and GVT performance. LMX theory focuses on individual relationships between superiors and subordinates and ways each relationship impacts team dynamics and performance provided theoretical foundation for this study. Online survey measured the influence of KSB on GVT performance from 210 respondents as GVT members. Respondents were anonymous and consisted of individuals from different nationalities and ethnicities functioning in culturally diverse GVT across a global organization's footprint. MANCOVA analysis showed a significant relationship between KSB and GVT performance and LMX relationship significantly moderates the relationship between KSB and GVT performance. Further study is recommended to understand the extent of gains in overall KSB among GVT performance, to understand GVT interaction from a social perspective, to understand shared experiences of GVT. Social change implication: study provides global organizations with an enriched understanding that KSB and LMX mediation are important to team performance which improve GVT.

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Dedication

This dissertation is dedicated to my family, my parents, the late Robert N. Goodson, Sr. and Bettye Adhale Goodson, my children, Robert N. Goodson III, Mary Elizabeth Goodson, and Sarah Anne Wilson, my siblings Linda Gayle Webb, Karen Clare Lewis, Kathy Ann Marsh, Donna Beth Neely, William Henry Goodson, and Bettye Ruth Mitchelson.

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I appreciate the many years that Dr. Anthony Lolas, my initial mentor and committee chair, cheered me on and advised me. Dr. Lolas retired before I completed the program and fortuitously I was placed on the ‘doorstep’ of Dr. David Goodman.

Dr. Goodman arrived as my mentor and committee chair with vigorous enthusiasm It is through Dr. Goodman’s constant support and contact, his vast knowledge of SPSS, and appropriate statistical tests to measure the research results, his understanding of academic writing and the dissertation process, and his newfound friendship that have propelled me to the finish line.

I salute my Walden University cohort, which dwindled to a solo member, Terika. My cohort assisted my PhD trek by offering candid feedback and criticism while keeping the *bar* raised and standards high.

I am gratful for Elvis, my trusty canine of many years, who spent many a moment beside my desk chair, unfalteringly snoring but loyal and consistent in temperament, who sadly succumbed to cancer and left this world a few years ago. Filling the canine companion void came Drei and Rudi, two wonderful black German Shepherds who were always by my side.

Though my drive to finish ebbed and flowed, the constant support of those named above was steadfast. The relentless cheering from my children, my siblings, and my friends kept me focused on reaching the successful completion of this dissertation. I am forever grateful to all! Thanks for getting me to the finish line!

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Chapter 1: Introduction to the Study

In the ever-broadening global business market, the need for global virtual teams has become more significant than ever (Cogliser et al., 2013; Klitmøller & Lauring, 2013; Verburg et al., 2013). Global virtual teams are practical tools for many organizations because they allow highly qualified individuals to function together as a group despite where they live (Cogliser et al., 2013; Klitmøller & Lauring, 2013). Thus, global virtual teams allow company managers to pool their best and brightest employees at a low cost in a virtual setting (Cogliser et al., 2013; Klitmøller & Lauring, 2013). This study provides insight into the specific functioning of global virtual teams, concerning how the leader–member exchange (LMX) relationship quality within the team moderates the relationship between team members' knowledge-sharing behaviors (KSBs) and team performances. Although global virtual teams frequently possess expertise, the mode of communication used by team members, as well as cultural differences within the group, could be detrimental to knowledge sharing (Verburg et al., 2013). In other words, team dynamics, such as leader–member and member–member relationships, cultural and language differences, and trust, all influence how knowledge is shared in a global virtual team. I isolated these various factors and studied these in relation to the independent variable of knowledge sharing and its influence on the dependent variable of global virtual team performance, as moderated through leader–member relationships.

This chapter includes several sections to illuminate the research topic further. The organization of the chapter will include the following: (a) background of the study; (b) problem statement; (c) purpose of the study; (d) research questions (RQs); (e) advancing

scientific knowledge; (f) significance of the study; (g) rationale for methodology; (h) nature of the research design for the study; (i) definition of terms; and (j) assumptions, limitations, and delimitations. The chapter ends with a summary of the information presented and an overview of the contents of the rest of the dissertation.

Background of the Study

In a global business environment, managers of international companies often must pool resources from across geographic locations to form expert teams to address organizational problems (Goh & Wasko, 2012). One solution has been to form global virtual teams, which allows employees within the same company but from different areas of expertise and geographical locations to combine their skills in a virtual setting. Such teams are more than twice as likely in multinational companies as in organizations that are solely U.S. based (Minton-Eversole, 2012). As of January 2016, Global Workforce Analytics (2016) indicated that at least 50% of the U.S. workforce held a job compatible with at least partial virtual functioning, and 80% to 90% of the workforce would like to work virtually at least half the time. However, these teams face unique problems related to communication, flaws in leadership and structure, and social climate (Fan et al., 2014; Goh & Wasko, 2012; Hill & Bartol, 2016). Cultural variation and technological factors, such as the inability to read facial expressions and discern vocal tone in e-mail communication, could lead to miscommunication that damages trust between virtual team members (Boies et al., 2015; Brahm & Kunze, 2012; Shachaf, 2008; S. Braun et al., 2013). But the effort that team managers put into the leader–member relationship may lead to higher performance (Magnusson et al., 2014).

Given the significant role that managers play in cultivating positive collaborative environments in face-to-face teams, researchers have requested investigation about how the factors that influence the climate between virtual team members relate to leader-member relations in global virtual teams (Boies et al., 2015; Brahm & Kunze, 2012; S. Braun et al., 2013). Team knowledge-sharing patterns influence team performance (Gardner et al., 2012; Goh & Wasko, 2012), as they are crucial to team creativity, team performance, and team problem-solving (Buvik & Tvedt, 2016; Gardner et al., 2012). The creation of a team environment that facilitates knowledge sharing and trust among team members is an essential aspect of team leadership and influences team creativity and performance (Boies et al., 2015; Brahm & Kunze, 2012). Knowledge sharing may be crucial in virtual teams, where team member interchange is less prone to small talk and nonwork-related conversation (Klitmøller & Lauring, 2013). Certain types of communication could be pragmatic in regulating the effects of cultural diversity on knowledge sharing among team members (Klitmøller & Lauring, 2013). However, there is a need to examine applied global virtual team samples or leader–member behaviors as these relate to knowledge sharing patterns and performance in global virtual teams.

Problem Statement

A growing number of researchers have positively linked knowledge sharing to improved firm performance (Jayasingam et al., 2013; Kuzu & Özilhan, 2014; Vij & Farooq, 2014; Z. Wang & Wang, 2012). Knowledge strategies that highlight the importance of trust and management support are helpful in improving firm performance (S. Wang & Noe, 2010; Z. Wang & Wang, 2012). However, national, cultural, and

communication differences may lead to conflicts that can negatively influence knowledge sharing (Wei, 2010). Unique cultural values could influence knowledge-sharing motivations as well (Zhang et al., 2014). Organizational structure, leadership, trust, human resources policies, and communication and technology processes all contribute to successful knowledge sharing (Cai et al., 2013; Hsu & Chang, 2014; Seba et al., 2012; Solli-Sæther & Karlsen, 2014; Yeo & Gold, 2014). Knowledge sharing improvement is crucial to understanding what motivates members of a team to share knowledge (McGrane, 2016).

Global virtual teams are increasingly important in international businesses and allow organizations to improve productivity by combining the best talent, regardless of geographic location (Pinjani & Palvia, 2013). But unclear organizational structures and leadership styles, trust, and communication within global virtual teams hurt the team and individual performance. Furthermore, navigating cultural differences across global virtual teams can be challenging for managers. Global virtual teams, which consist of people around the world with different cultural backgrounds, are also not likely to have universal practices for knowledge sharing (S. Wang & Noe, 2010; Z. Wang & Wang, 2012). Although global virtual teams have the combined talents of highly skilled employees, they have suffered barriers to performance from cultural dissimilarity and communication issues (Boies et al., 2015; Brahm & Kunze, 2012; S. Braun et al., 2013). Global virtual teams still suffer markedly lower performance than teams who operate face-to-face because of the barriers a virtual interface presents in fostering high levels of knowledge sharing among team members (Boies et al., 2015).

The general problem was that barriers regarding knowledge sharing could negatively influence a global virtual team's performance (Solli-Sæther & Karlsen, 2014; Yeo & Gold, 2014). Therefore, improving knowledge-sharing behavior in a multilateral, virtual context is critical to improving the performance of global virtual teams (Boies et al., 2015). The specific problem was that researchers have not yet established the extent of leadership styles and leader–member relation factors needed for such improvements, which further negatively influences such teams (Hsu & Chang, 2014). I conducted this study to highlight the problem of low global virtual team performance and knowledge sharing across global virtual teams. One means of accentuating this problem and improving knowledge sharing across global virtual teams can include managers' attempts to improve the quality of LMX (Harris, Li, & Kirkman, 2014). However, there was a lack of literature surrounding this possible solution, which establishes the need for this study.

Purpose of the Study

The purpose of this MANCOVA analysis study was to determine the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderates this relationship. The results address the gap in existing global virtual team research on how leader–member relationships in global virtual teams influence knowledge sharing and team performance as well as what kinds of strategies need improving. The social implications of this study's results include strengthening the LMX among global virtual teams, increasing global virtual team performance, and strengthening the leader–member knowledge sharing among global virtual teams, thereby

improving overall company dynamics and performance and contributing positively to the global economy.

Research Questions and Hypotheses

Based on the problem identified and the theoretical framework provided for this quantitative MANCOVA analysis study, the general RQ of this study is as follows: To what extent does knowledge sharing improve global virtual team performance, and how does the quality of LMX moderate the relationship between the two? The specific RQs and hypotheses are as follows:

RQ 1: To what extent does knowledge sharing influence global virtual teams' performance?

$H_0$1: No significant relationship exists between knowledge sharing and global virtual teams' performance.

$H_1$1: A significant relationship exists between knowledge sharing and global virtual teams' performance.

RQ 2: To what extent does LMX relationship quality moderate the relationship between knowledge sharing and global virtual teams' performance?

$H_0$2: Leader-member exchange relationship quality does not significantly moderate the relationship between knowledge sharing and global virtual teams' performance.

$H_1$2: Leader-member exchange relationship quality does significantly moderate the relationship between knowledge sharing and global virtual teams' performance.

Theoretical Foundation

The theoretical framework for this study was the LMX theory developed by Graen in 1975 (Graen & Uhl-Bien, 1995), which focuses on individual relationships between superiors and subordinates in the workplace and the ways each unique relationship influences team dynamics and performance (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013). The theory suggests that managers may best maintain their leadership authority by employing specific techniques, such as designating pivotal jobs or roles to specific employees (i.e., relying on and developing strengths within the workforce), using negotiation, and building trust (Changing Minds, 2018). This promotes a give-and-take relationship between managers and team members who can work to the benefit of individuals, as well as a team or company (Changing Minds, 2018).

During the years since the creation of the LMX theory, numerous researchers have applied its principles on its own or as part of a broader theoretical framework (Graen & Uhl-Bien, 1995). For example, Erdogan and Bauer (2014) reviewed LMX literature and noted that LMX theory differed from other leadership theories, such as transformational leadership or servant leadership. Hu and Liden (2013) addressed how researchers could use the LMX to determine an individual's performance, organizational citizenship behavior (OCB), and job satisfaction. Similarly, Harris et al. (2014) used a group engagement model to assess LMX regarding group level and relational separation factors, as well as the ways such factors could influence OCB and team or company turnover. Although LMX emerged as having a positive influence on these areas when

group dynamics consisted of broader differences or higher levels of separation, LMX was not as effective (Harris et al., 2014).

The LMX framework was a useful model on which to base this research. I addressed issues surrounding LMX as it related to global virtual teams. Some researchers have conducted research using the LMX theory concerning the virtual work environment (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Harris et al., 2014; Hu & Liden, 2013; Jawadi, Daassi, Favier, & Kalika, 2013; Liden & Maslyn, 1998; Rockstuhl et al., 2012; Yukl et al., 2013). But I found little to no research on LMX as applied to global virtual teams. Therefore, this study added to the literature and further substantiated the validity of the LMX theoretical framework.

Nature of the Study

The nature of this quantitative MANCOVA analysis study is to determine the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderates this relationship. The study was quantitative and involved examining LMX quality as a moderator in the relationship between knowledge sharing and global virtual team performance. Because the goal of investigating the RQs is to identify a moderator to global virtual team dynamics, a qualitative design will not be appropriate (Rogelberg, 2008). Furthermore, the concepts investigated as a part of this research were quantifiable using existing, validated instruments. Although it was possible to collect qualitative data instead of quantitative data, furthering current research by collecting more data using prevalidated measures was more valuable to the field of management.

The methodology for this study was a MANCOVA analysis to examine knowledge sharing as a continuous independent variable, performance as a continuous dependent variable, and LMX quality as a continuous variable that moderated the relationship between the two. The presence of solely continuous variables ruled out any potential use of categorical analysis, such as analysis of variance (Rogelberg, 2008). Furthermore, MANCOVA analysis was optimal, as opposed to correlational analysis, because the goal was to examine the predictive power of knowledge sharing (independent variable) on global virtual team performance (dependent variable) and how a third variable, LMX quality (moderator), influenced this predictive power (Rogelberg, 2008).

Definitions

The phenomenon under examination was the relationship between individual leader-member relationships and perceptions of knowledge sharing habits and performance within global virtual teams. Based on the problem and purpose of this study, the following key terms were fundamental.

Knowledge sharing: Knowledge sharing is a means by which organizational managers assess productivity in workplace teams. This assessment is suggestive because the viability of workplace teams depends on the ability of team members to exchange resources to accomplish group tasks (de Vries et al., 2006). For virtual teams, knowledge sharing is the primary mode of resource exchange among team members because it is challenging, if not impossible, for members to exchange physical resources (Rockstuhl et al., 2012).

Leader–member exchange (LMX): LMX refers to the unique relationship dynamic between a manager and his or her subordinate (Graen & Uhl-Bien, 1995).

LMX relationship quality: LMX relationship quality refers to a LMX consistent with the underlying theoretical dyadic leader-member framework of this study (Graen & Uhl-Bien, 1995). The better the quality of a LMX, the better the quality of the leader–member relationship. Conversely, if LMXs are of low quality, the overall leader–member relationship will also be of low quality (Graen & Uhl-Bien, 1995).

Performance: Performance refers to either a perception of or satisfaction with team performance or to actual team performance scores (Skelcher & Sullivan, 2008).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are statements taken as accurate or plausible in a study (Leedy & Ormrod, 2013). Based on the selected methodology, theoretical framework, and research topics, the assumptions of this study were as follows. The first assumption was that participants answered the online survey honestly. I emphasized the anonymity of all information by informing participants that the survey would be taken on an online platform with no researcher–participant interaction. The survey site also did not reveal any personal details that were used for log-in purposes, such as an email address. All surveys were also coded for identification, thereby mitigating the need for personal details, such as participant names, for accurate data collection, correlation, and analysis. The second assumption was that LMX theory provided a theoretical foundation for understanding the relationship between individual leader-member dynamics, trust, and

knowledge sharing in the global virtual team (Graen & Uhl-Bien, 1995). The third assumption was that culture played a role in how participants answered the survey questions, as well as in their overall views of their global virtual team environments and related leader–member relationships.

Limitations

Limitations are potential weaknesses that are out of control, potentially because of the lack of resources, the research design, or statistical constraints (Leedy & Ormrod, 2013). First, I developed a survey by combining three existing survey instruments and tailored the questions to suit the global virtual team context, creating an original survey suitable for the purpose of this study. The online survey instrument used a 5-point Likert type scale, precisely adjusted to suit the participant type (i.e., managers answered slightly different questions than team members, etc.). The survey questions were a combination of the following three instruments: the LMX-7 questionnaire (Graen & Uhl-Bien, 1995), the KSB scale (Chennamaneni, 2006), and global virtual teams' performance measuring model (Gheni et al., 2016). Second, an applied sample was appropriate for this study because I examined the reported behaviors of already existing operational teams, as opposed to teams constructed randomly by a researcher in a laboratory setting.

One limitation was that the correlational analysis could show how the variables relate, but it was not possible to determine many specifics on why the variables relate regarding team makeup. I also had no control over the gender, or cultural makeup of any of the virtual teams studied. However, distributing the surveys online and not collecting identifying information ensured that participants completed the questionnaire

individually, and supervisors, teammates, or other workplace distractions were not influencing participants at the time of data collection.

Delimitations

This study included one delimitation. I delimited this study to a survey made up of the combination of three existing and validated measures, research journals, and documents. By combining these three existing survey instruments and tailoring the questions to suit the global virtual team context, I created an original survey suitable for the purpose of this study. The three data collection tools were sufficient to gain in-depth information about the phenomenon.

Significance of the Study

Considering there was a potential negative impact on communication barriers to global virtual team performance, I examined knowledge sharing and how individual leader–member relationships, organizational structure, and leadership style influence the relationship. This analysis provided a more comprehensive understanding of ways managers can influence the dynamics of teams in a work environment that lacks face-to-face interaction and consists of increased cultural diversity. This research and the improvement of LMX quality illuminate the problem of global virtual teams underperforming or negatively affecting business success (Rockstuhl et al., 2012).

The results of this study are significant to management practices by examining managers' influence on knowledge sharing in teams. This study can provide organizational managers with information on what and how LMX quality moderates the predictive relationship between knowledge sharing and global virtual teams'

performance, where knowledge sharing is assumed to produce higher team performance. This probe into a LMX framework can assist organizational managers in making the necessary changes and implementations to structures, strategies, and policies (Solli-Sæther & Karlsen, 2014). Organizational managers can use the knowledge gained in this study to facilitate greater knowledge sharing in their global virtual teams, thereby improving both business and global virtual team success, as well as bettering interpersonal relationships within global virtual teams (Yeo & Gold, 2014). Thus, this study was significant for social change because improved business performance and successful global virtual teams can translate to an improved global economy, leading to general social upliftment.

The results of this study can also benefit organizations using global virtual teams because the information from this research can lead organizational managers and management teams to reconsider their leadership styles concerning the virtual team context. Organizational managers may recognize the needs of virtual teams as not being identical to face-to-face teams. Furthermore, managers can apply the knowledge gained in this study to assess the functioning of their virtual teams and determine what social factors result in less-than-desired performance levels. Based on the information obtained in this study, organizational managers can assess their virtual team dynamics critically, thereby improving team performance.

Advancing Scientific Knowledge

Previous research was inconclusive on ways the quality of LMX in global virtual teams influenced or moderated the KSBs and team performance (Cai et al., 2013; Hsu &

Chang, 2014; Seba et al., 2012; Solli-Sæther & Karlsen, 2014; Yeo & Gold, 2014). Therefore, in this study, I examined LMX quality as a potential moderator of the predictive relationship between knowledge sharing and performance, where I assumed that knowledge sharing led to higher team performance. One potential implication of the results is an improved understanding of how managers can positively influence the social climate of virtual teams. This process can lead to improved knowledge sharing that generally results in higher performance, which is helpful to global businesses.

The results of this study also provide a better understanding of how leader–member dynamics influence team interactions in a context that lacks physical proximity and contains noticeable cultural diversity among team members, which enhanced the LMX theory. Focusing primarily on face-to-face teams and international teams who recognize diversity across teams but not within teams has limited researchers' understanding of how LMX relationship quality can influence global virtual team dynamics (Rockstuhl et al., 2012). As global virtual teams become increasingly prevalent, organizational managers must understand how they differ from face-to-face teams and the leadership tactics that are most effective in encouraging high team performance.

Summary

Despite their growing prevalence in the international business sector, global virtual teams still suffer lower performance than teams who operate face-to-face because of the barriers in fostering knowledge sharing among team members (Boies et al., 2015). I examined how the LMX may facilitate knowledge sharing in global virtual teams by

characterizing LMX quality as a moderator between ratings of knowledge sharing and ratings of performance in global virtual teams. An examination of LMX quality, knowledge sharing, and performance involved administering a validated survey via Qualtrics, which I developed by combining three existing survey instruments and tailoring the questions to suit the global virtual team context. Given the significant role that managers play in cultivating positive collaborative environments in face-to-face teams, examining how LMX relationships influence global virtual team dynamics is vital to global businesses (Boies et al., 2015; Brahm & Kunze, 2012; S. Braun et al., 2013). Gaining a better understanding of fostering affirmed LMX relationships in a virtual context may be necessary for improving the functionality of global virtual teams.

Chapter 2 includes the literature review. The topics discussed in the review included the theoretical framework, LMX theory, the effect of management and leadership style on the team and organizational performance, and individual difference variables that influenced managers. Also included was a discussion about global and culturally diverse teams, knowledge sharing as it related to team performance, and leadership and team dynamics in virtual teams. The third chapter includes the methodological plan of this study, including the research methods and design, sampling procedure, data collection, data analysis, ethical considerations, and validity and reliability. Chapter 4 will include the results and findings, and Chapter 5 will include the conclusions.

Chapter 2: Literature Review

Differences in culture and communication can affect global virtual teams' performance due to the global nature of their workforce (Boies et al., 2015; Brahm & Kunze, 2012; S. Braun et al., 2013). Because global virtual teams are increasing in the business market, solutions to such matters are necessary (Boies et al., 2015; Brahm & Kunze, 2012; S. Braun et al., 2013). One of the reasons for these issues is that many members of global virtual teams are often widely distributed geographically, which means team members are in different time zones, at different locations, from different cultures, and speak differently (Scott, 2013). The lack of face-to-face contact can result in a lack of relationship or miscommunication due to limited tone of voice or body language, which usually accompany physical interaction and can help to build understanding (Knapp et al., 2014). This lack of relationship or miscommunication can lead to team members struggling with trust, conflict, and potentially divisive subgroups (Scott, 2013). Trust between members plays a crucial role in the success of a global virtual team (Germain & McGuire, 2014). The distribution of the workforce regarding time can also cause delays in communication between senders and receivers, which may create misunderstandings or delay processes required for optimal performance (Zakaria & Al Safi, 2013).

Language can also play a fundamental role in miscommunication. Because global virtual teams have members from different countries, many, if not all, may be communicating in a language other than their mother tongue, which can negatively influence meaning creation and understanding (Harzing & Pudelko, 2013). Even when

teams consist of first-language speakers, coming from different cultures can influence how they communicate or present information, which may create confusion (Harzing & Pudelko, 2013). Language is such a fundamental component to a good team performance that researchers have indicated cultural differences do not play as significant a role in global virtual team operational problems as language (Kiely et al., 2014).

The cultural, distribution, and communication differences in global virtual teams also influence one of the most vital factors for business success and successful team performance: knowledge sharing (Chen & Lin, 2013; Pinjani & Palvia, 2013). A more in-depth discussion on knowledge sharing appears later in the chapter. However, researchers have not conducted detailed research about applied global virtual team samples or leader-member behaviors concerning knowledge sharing patterns. In addition, researchers had not studied ways LMX relationships in global virtual teams can influence or predict knowledge sharing and team performance. This lack of research, combined with a desire to study LMX relationships in global virtual teams, led to the development of this study. This quantitative MANCOVA analysis study was conducted to determine the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderated this relationship. I wanted to understand how current leadership and manager-member relation strategies could be improved or changed to reach better levels of knowledge sharing, global virtual team performance, and business success.

Literature Search Strategy

To develop the RQs and support the need for this study, I consulted numerous sources related to both the topic and the desired theoretical framework and methodology.

I used various search engines, journal platforms, and library databases, such as PsycNET, CrossRef Metadata Search, Google Scholar, ProQuest, Research Gate, SAGE Journals, Science Direct, and Wiley Online Library, to collect research data. The key search words and phrases used, either in combination with others or individually, included *communication/miscommunication, culture, cultural diversity, environment, exchange, functioning, perceptions, global virtual teams (GVTs), global, groups, impact/role of leadership, individual differences, international companies, issues/problems, leader-member exchange relationship quality, Leader-Member Exchange Theory (LMX), methodology, performance, psychic distance, quality of interaction, quantitative, team creativity, performance, and problem-solving, team dynamics, team knowledge sharing patterns, trust,* and *virtual workplace*. Of the sources consulted, which form part of this literature review, 9% were published before 2013 and primarily included seminal works on which later researchers based their studies, and the remaining 91% consisted of newer works published between 2013 and 2016.

The rest of this chapter includes a review of the literature organized under various headings or subcategories. First, I discuss the theoretical framework. Then, the remainder of the chapter includes discussions around topics or subcategories, such as the effect of leadership and leadership style on the team and organizational performance and cultural dynamics. The chapter ends with a conclusion summarizing the main points found in the literature review. This summarization includes any noted gaps discovered during the review process and a brief discussion on how this study adds to the literature and, at least in part, how it filled noted gaps within the research.

Theoretical Foundation

The theoretical framework for this study was the LMX theory developed by Graen in 1975 (Graen & Uhl-Bien, 1995). The focus of the LMX theory is on individual relationships between superiors and subordinates in the workplace and the ways each unique relationship influences team dynamics and performances (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013). In particular, the focus of the theory is on how managers may best maintain their leadership authority by employing specific techniques, such as designating pivotal jobs or roles to specific employees (i.e., relying on and developing strengths within the workforce), negotiation, and trust-building (Changing Minds, 2018). This kind of focus on leadership promotes a give-and-take relationship between managers and team members who can work to the benefit of individuals, as well as a team or company (Changing Minds, 2018).

During the years since the creation of LMX theory in 1975, numerous researchers have used, adapted, or added to this theory by applying its principles on its own or as part of a broader theoretical framework (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013). Moreover, researchers have used the theory to study aspects related to leadership and the effect of and dynamics between managers and workers (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013). LMX theory differs from other leadership theories, such as transformational leadership or servant leadership, as it mainly addresses a manager's influence on employee attitudes and team outcomes

(Erdogan & Bauer, 2014). Researchers can use the LMX to determine an individual's performance, OCB, and job satisfaction (Hu & Liden, 2013). Although LMX has had a positive influence on group level, relational separation factors, and OCB, when group dynamics consisted of broader differences or higher levels of separation, LMX was not as effective (Harris et al., 2014). Therefore, managers need to learn how to improve leader–member relationships in distributed or diverse teams (Harris et al., 2014). Further, when managers are ethical in their conduct and relations, LMX and managerial effectiveness improves (Hassan et al., 2013; Yukl et al., 2013). Good leader–member relations can lead to better communication and more involved decision-making across such virtual teams (Gajendran & Joshi, 2012).

Some researchers have added to the original LMX theory model over time. For example, Liden and Maslyn (1998) assessed the LMX theory regarding its possible unidimensional versus multidimensional forms and determined that LMX presented as multidimensional. The model consists of affect, loyalty, and contribution, which are categories that formed part of previous LMX studies. Liden and Maslyn added a new area, professional dimensions, which could also form a crucial part of the leader–member relationship. Rockstuhl et al. (2012) further extended the LMX theory to include the role of national culture as a moderating factor. Rockstuhl et al. found that culture resulted in different responses. They emphasized OCB, job satisfaction, trust, performance, and organizational commitment. A complete discussion of this area of culture as a moderating factor appears later in this chapter.

The LMX theory was a useful model on which to base this research. Although most researchers studying LMX focused on work environments and LMXs in physical or face-to-face capacities (Erdogan & Bauer, 2014; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013), some researchers have conducted research using the LMX theory concerning the virtual work environment (Gajendran & Joshi, 2012; Jawadi et al., 2013). But the LMX theory had not been applied to the specific functioning of global virtual teams. The gap in research applies to how LMX relationship quality in the team influences the relationship between team members' knowledge-sharing behaviors and team performance. This study adds to the literature and further substantiates the validity of the LMX theoretical framework.

Literature Review Related to Key Concepts and Variables

Different organizations and teams require various types of managers and leadership styles to reach their full potential regarding both turnover and individual performance (Ziek & Smulowitz, 2014). Although individuals respond differently to diverse types of leadership, some leadership techniques have worked more successfully than others. In global virtual team environments, leadership takes on a unique role where global virtual team managers often must synchronize work and aid communication across time and geographical distances, which other types of managers do not need to apply. Work synchronization and global affinity mean that global virtual team managers must be extraordinarily competent in both their work and their abilities to manage and communicate with different individuals (Ziek & Smulowitz, 2014).

Various managers are present in global virtual teams, and their different competencies (e.g., question-asking skills, cognitive and creative abilities, and capacity to set and meet visions) all positively influence group performance. For global virtual team managers, traditional business models usually consist of assigned managers due to the nature of virtual business environments (Ziek & Smulowitz, 2014). However, managers often naturally emerge out of the global virtual team itself, which indicates not only the need for managers in global virtual teams but also the naturally fluid interaction and dynamics of leadership within the virtual workplace (Ziek & Smulowitz, 2014). To apply leadership skills and styles into the global virtual team environment effectively, managers must understand how these aspects work and which may most positively aid global virtual teams.

Transformational Leadership

One of the most often studied and applied leadership styles in recent years has been transformational leadership. This type of leader encourages interactive and mutual exchanges between managers and team members to accomplish tasks or solve problems (Carter et al., 2013; Zhu et al., 2013). These leaders are far less authoritative or dictatorial, and they tend to promote teamwork and idea generation. But employees still require clear directions and final decisions from their managers while enjoying and participating in discussions and having their input valued (Bellé, 2013). Employees are more likely to go beyond their job descriptions when managers combine transformational leadership with other leadership styles (Bellé, 2013). Further, managers can use the components of transformational leadership—inspirational motivation, intellectual

stimulation, or control condition—to gain the desired outcomes, depending on the team and the necessary output results (Boies et al., 2015).

Transformational leadership positively correlates to worker and team job satisfaction and to team performance, which relates to levels of trust between employees and their managers (T. Braun et al., 2013). However, inter-team trust levels have little effect on team performance, suggesting that LMXs played a more significant role in performance outcomes compared to member–member exchanges (T. Braun et al., 2013). Additionally, although the quality of leader–member relationships mediate the influence of transformational leadership on performance, the frequency or levels of change within an organization moderate this positive effect (Carter et al., 2013). The higher the change frequency, the stronger the leader–member association with transformational leadership (Carter et al., 2013). Thus, employees rely more on both directions from their managers and the perception of their value within a company during shifts at an organizational level (Carter et al., 2013), which applies to the changing and uncertain nature of the virtual workplace.

Transformational leadership emerged as not only working to improve group dynamics and individual performance but also requiring specific management skills by the manager to function correctly. Transformational leadership can engage employees more fully in the work process and environment, which can not only be beneficial for traditional business models but may also aid individuals in the virtual workplace. However, the virtual environment provides more challenges for this leadership approach, as personal or physical contact with employees is limited to nonexistent. Therefore, it is

beneficial to address how other leadership styles may further aid the global virtual team experience and benefit their performance.

Other Leadership Styles

D. Wang et al. (2014) termed *shared leadership* as like transformational leadership. D. Wang et al. found teams tend to be more efficient when leadership becomes a collaborative effort among those involved and does not rely on a hierarchical understanding or presentation of leadership. Thus, the nature of the task or problem and the set of skills of an individual within that group could lead to emergent leadership without the need for an assigned manager (Ziek & Smulowitz, 2014). Allowing for the possibility of such a leadership style to occur, particularly in the virtual work environment, may help organizational managers gain the most from individuals within a collaborative setting (D. Wang et al., 2014; Ziek & Smulowitz, 2014). Though employees need to have at least some direct guidance from clear managers, mainly when final decisions are forthcoming, decentralization of leadership in virtual environments benefits performance (D'Innocenzo et al., 2014). Therefore, the shared leadership style may work best for individuals who could work independently while still needing to maintain communication and positive organizational performance, which applies to the virtual nature of virtual teams (Hoch & Kozlowski, 2014).

In addition to shared leadership, empowering and directive leadership styles have also influenced teams over time (Lornikova et al., 2013). Although teams under directive leadership initially produce better outcomes, those under empowering leadership styles perform better over the long term. Managers need to balance leadership styles and

produce a more inclusive working environment to gain the most from their workforce. Further, trust, in the form of authentic leadership, could play a significant role in gaining employee support and participation. Authentic leadership can also influence such areas of leader–member relations and work environment as staff empowerment, performance, and job satisfaction (Wong & Laschinger, 2013). Managers can accomplish authentic leadership through applying manager transparency, using balanced processes, being self-aware, and maintaining high ethical standards (Wong & Laschinger, 2013). These are a means for improving and encouraging healthy and productive work environments that could apply to any work environment, even a virtual one.

Perception is another aspect to consider when discussing the effect of leadership or leadership styles on the team's or the organization's performance, regarding how workers perceive their managers and how managers perceive and present themselves or their leadership styles. Managers who present as more formal or held a psychological notion of power or superiority over their employees negatively influence employee communication and performance (Tost et al., 2013). Worker participation in team processes is also contingent on workers' need to feel that managers considered their contributions valuable (Tost et al., 2013). Therefore, managers should ensure they incorporate inclusive leadership styles and they do not hold notions of superiority (Tost et al., 2013). Managers should also not present themselves in such a way that would prevent workers from approaching them or providing contributions within the team (Tost et al., 2013). Manager approachability is particularly important for managers of global virtual teams because there is little to no physical interaction between members, and

communication needs to be transparent and participatory. Therefore, managers must balance various styles to gain the most from their team members.

Tost et al. (2013) focused on how employees viewed managers, how managers presented themselves, and the effects of such perceptions and presentations on worker productivity. Although a considerable amount of research existed on employee views about leadership and organizational and project management but not about what conditions managers required for members to accomplish tasks (Verburg et al. 2013). In the global virtual team environment, specifically as they related to the software development industry, excellent communication, personal leadership style and goal setting, manager competency, and trust were all necessary for managers to lead their teams successfully and achieve positive results (Verburg et al. 2013). Corporate and technical support emerged as required areas in task management. Moreover, the better these variables were understood about manager support in a virtual or dispersed work environment, the more likely it was for managers to be successful in their leadership and team performances (Verburg et al., 2013).

Research indicated that leadership and leadership styles played a significant role in global virtual team and other team or organizational performance (D'Innocenzo et al., 2014; Hoch & Kozlowski, 2014; Lornikova et al., 2013; Tost et al., 2013; Verburg et al., 2013; D. Wang et al., 2014; Wong & Laschinger, 2013; Ziek & Smulowitz, 2014). Research evidence relating to the quality of LMXs within the broader team context and to the ways such relationships can affect team knowledge sharing and performance was

lacking. Therefore, I built on these previous works by adding this aspect and dynamic to the broader discussion of leadership and leader-member interaction.

Individual Difference Variables That Affect Managers

Individuals have different personalities, worldviews, interests, and perceptions, and managers must consider individual differences and how best to motivate and lead team members, but they must also consider their individuality and how it can play a role in how they lead others (Bellé, 2013; Boies et al., 2015; Fan et al., 2014). Similarly, every organization has a personality and constitutes different dynamics or needs based on the type of business and the employees (Erdogan & Bauer, 2014; Ruppel et al. 2013; Schneider et al 2013). Therefore, one must understand what possible differences may occur on an individual and an organizational level, as well as to use these differences to advance an organization (Beck & Cowan, 2013).

Beck and Cowan (2013) studied how managers could use differences to their advantage and discussed the approach to business and other factors of human interactions concerning *spiral dynamics*. Spiral dynamics refers to how each aspect of an individual's life affects work, personal life, and other factors while forming deep-rooted strange attractors that constitute the basis or most profound building blocks of their values, beliefs, and ethical structures (Beck & Cowan, 2013). Differences from genetics to psychosocial issues played a part in *difference creation,* and managers should learn how best to understand and work with and within such differences (Beck & Cowan, 2013). Beck and Cowan (2013) also noted that although managers must build on and learn from

previous managerial or leadership styles, each period needs new and innovative structures to develop to meet the dynamic needs of an increasingly diverse workforce.

Similarly, Chemers (2014) discussed the integrative nature of modern leadership. Whereas Beck and Cowan (2013) focused on how best managers could learn to manage differences within their organizations, Chemers (2014) addressed different leadership styles, particularly how such styles pertained to differences in gender, cultural settings, and worldviews of managers. Chemers (2014) reviewed modern leadership trends, approaches, and styles to determine if a clear understanding of leadership could develop from any shared areas. Chemers (2014) addressed the effect of cross-cultural interaction and the ways globalization of the workforce influenced leadership. Both Beck and Cowan (2013) and Chemers (2014) substantiated the idea that differences existed in the modern workplace, and managers could understand such differences; therefore, they could use these to promote better performance and outcomes in the work environment.

Related to the idea of individual organizations playing a role in leadership, Schneider et al. (2013) studied organizational culture and climate. A researchers studied the ways such areas influenced the leadership and management of modern corporate environments; particularly how national culture could determine organizational culture. Additionally, Moran et al. (2014) addressed culture as an individual factor influencing leadership, both regarding the manager's culture and cultural backgrounds. I will address this aspect in detail in a later section of this chapter regarding how managers could manage individuals with different.

Beck and Cowan (2013) and Chemers (2014) both established differences of such fundamental natures as cultural, which indicated how managers both approach leading and need to manage individuals within their teams. Lai, Lam, and Lam (2013) considered OCB within team contexts on both a group and an individual basis. The authors found more individualistic teams developed better OCB at an organizational level, whereas more collaborative teams exhibited improved OCB on an individual level (Lai et al., 2013). OCB refers to how invested, loyal, and or committed an employee may be regarding their place of employment (Lai et al., 2013; Min-Huei, 2009). Such behavior is voluntary and applies to any activities that employees conduct over and above their contractual obligations (Lai et al., 2013; Min-Huei, 2009). Podsakoff et al. (2000) further noted that OCB was not reliant on any measurable rewards system and could in no way be enforced or its omission punished by an organization.

Lai et al. (2013) findings indicated that individuals within collaborative or team environments often relied on the combined team dynamic to meet their required *organizational citizenship* without necessarily buying into the organizational culture. Those distanced from team dynamics must see themselves as part of the much broader organizational collective to exhibit relevant OCB. These findings may have value for this study, as these helped me to understand how best managers can attempt to include distanced team members into the organizational climate. Schneider et al. (2013) and Lai et al. (2013) requested more research into how individual nature could influence leadership and organizational culture. I attempted to meet this request with this study.

Although the previously mentioned researchers dealt with underlying differences or means of developing united organizational cultures within a diffused workforce (Lai et al., 2013; Min-Huei, 2009; Podsakoff, et al. 2000), other more common and manageable factors should receive consideration (Lai et al., 2013; Min-Huei, 2009; Podsakoff et al. 2000). Such factors include gender, the level of managers' managerial experience, culture, worker motivation, ability, role perception, situation, and ethics (Kuntz et al., 2013; McShane, 2015). Kuntz et al. (2013) considered how individual differences, such as gender or culture, influenced leadership and how individuals interpreted and experienced organizational constructs. The study consisted of cross-cultural samples collected from Russia and New Zealand; culture, particularly social culture, emerged as playing a role in how individuals experienced different areas of work and leadership, as well as how they coped with and classified ethical issues and leadership (Kuntz et al., 2013). These findings can be helpful for managers of global virtual teams in understanding how location and culture may influence interpretations and performances.

McShane (2015) addressed motivation and situation. As a researcher, McShane, determined how these factors influenced individual performance and behavior in a corporate setting. McShane considered methods created to understand different personality types, such as the Myers-Briggs Type Indicator, and believed that such methods would aid managers in identifying individual strengths and weaknesses within themselves and their teams, thereby improving performance and job satisfaction.

In contrast, H. Wang et al. (2014) determined how the LMX could influence and mediate employees' psychological capital, particularly regarding authentic leadership. H.

Wang et al. (2014) tested 794 workers and their immediate managers to determine that employees with lower levels of psychological capital responded better to the authentic leadership style. The test indicated that managers should adapt their leadership styles to suit the different natures of those they led.

Another difference that could play a role in leadership relates to cognitive and affective trust (Zhu et al., 2013). Zhu et al. (2013) related these differences in trust to transformational leadership approaches and found that puissant trust positively mediated outcomes, whereas cognitive trust had a negative or neutral result. Although a discussion on issues about trust appears later in the chapter, the ways individuals develop trust between managers and members differs from person to person. Trust can influence the ways managers approach such development within their exchanges with their employees, as well as between team members.

Issues surrounding social exchange and the levels to which individuals possess factors or resources such as cognitive abilities could play a role in how managers approach leadership and individuals perform specific tasks (Farh et al., 2014). Farh et al. (2014) studied 168 team members to determine how the lack of an individual's resources or other meaningful factors could influence team performance. When both leader-member and team-member exchange occurs from those with more resources to those with less, performance was good (Farh et al., 2014). However, if there was a lack of LMX, performance suffered (Farh et al., 2014). These findings indicated managers faced ensuring fair distribution of resources among team members and ensuring those members with higher abilities assisted those with lower abilities (Farh et al., 2014).

Numerous individual differences regarding individuals' personalities, demographics, and abilities, along with the unique nature of each organization, play a role in how managers approach team management and influence leadership styles. Paying attention to such individual factors and attempting to determine how best to apply and change leadership styles and strategies to benefit the individuals within an organization, as well as team and individual performance, are essential. This adaptation of leadership style is of added importance for managers of global virtual teams, as the lack of direct contact between team members can easily cause problems if managers do not adequately address, aid, or meet individuals' needs, strengths, and weaknesses.

Global and Culturally Diverse Teams

As mentioned in the previous section, culture plays a significant role in how individuals see the world and interpret information. Managers of global virtual teams must manage such differences in culturally sensitive ways while still promoting and reaching organizational goals and outcomes. Thus, global virtual team managers must manage and determine team performance through such variables as interactive effects of team workflow, network structure, and cultural diversity (Tröster et al., 2014). Tröster et al. (2014) found that dense task networks increased team effectiveness, but a relatively centralized network assisted with performances.

Should a team be more culturally diverse, a dense task network was more effective but needed combining with a far more centralized network for performance to reach optimum levels (Tröster et al., 2014). Therefore, although diverse employees could produce good results, their managers must ensure their work held a sense of unity across

different sections. This process required effective and transparent leadership, as well as the manager's understanding of various network systems, task requirements, and team dynamics (Tröster et al., 2014).

The sooner managers can manage to improve culturally diverse teams' cultural intelligence and develop a shared set of values, the sooner the teams can function as a unit rather than as separate parts (Adair et al., 2013). Behavioral and metacognitive cultural intelligence positively aids shared value creation in diverse groups, whereas motivational and metacognitive cultural intelligence has an adverse effect on more homogenous groups. These findings indicates that culturally diverse groups would benefit most from improved cultural intelligence, which is more necessary in the development stages of a team than for teams with less diversity in the population. Therefore, managers must determine to what extent their team would require cultural intelligence development to achieve the best results.

Similarly, Gröschke et al. (2013) discussed means of managing and leading culturally diverse teams and introduced the Diversity Perspective Questionnaire to measure how organizational managers viewed diversity and the management thereof. Gröschke et al. (2013) found that when organizational managers addressed diversity regarding reinforced homogeneity, color-blindness, fairness, access, and integration and learning, it became easier to navigate and manage their diverse workforces. Javidan and Bowen (2013) discussed the need for managers to have a *global mindset*, where managers needed must work with people from different cultural backgrounds and positively influence them to meet organizational goals. Therefore, Javidan and Bowen (2013)

determined that managers would need to understand such factors as demographics and education to gain the most out of their diverse workforce. This determination, to an extent, supported Adair et al. (2013) assertions that managers and employees within culturally diverse teams would need to improve their cultural intelligence.

Cavusgil et al. (2014) addressed issues surrounding culture and other related factors in international business management. A researchers focused on the effect of globalization and the need for businesses to function on an international level to incorporate differences in language and culture within organizations. Cavusgil et al. (2014) noted the shift of business and trade models from local to international formats developed changes in financial systems, technology, and knowledge. Moreover, managers must consider these factors when working with employees on an international level. These factors can also aid in improving business models, where managers must make the most of their culturally diverse interactions and workforces (Cavusgil et al., 2014).

Paulus and van der Zee (2015) noted other potential benefits of a diverse workforce and addressed these benefits regarding contemporary issues or rapid changes in the industry in creative ways. Paulus and van der Zee (2015) noted more research was necessary to determine to what extent diverse workforces contributed to organizational output; however, even from limited research, diverse, multicultural teams could positively influence organizations. Similarly, Kirton and Greene (2016) addressed issues regarding how managers would have to cope with the ever-changing nature of diversity in business and how to ensure good equality and diversity policies within their

organizations. The focus was on the British and European markets, which broadened research on a topic previously relegated to the United States (Kirton & Greene, 2016). Kirton and Greene (2016) noted the increasing need for good cultural and diversity understanding around the world, and not just as it would influence the United States, due to the virtual and physical plasticity of the modern workforce.

Not only has the nature of the business changed with developing technology and the increasingly diverse workforce, but so has the nature of leadership within such business models. For example, Thamhain (2013) studied how the nature of leadership changed due to developing global organizations, focusing on issues regarding cross-functional collaboration and project integration. Thamhain (2013) found positive trends, outcomes, and responses to the global virtual team approach to corporate globalization. Organizations should work on improving work orders, project summary plans, and management guidelines to gain the most from using diverse virtual teams (Thamhain 2013).

Ferraro and Briody (2016) discussed the effect that diversity had in the global marketplace and addressed issues concerning how business leaders could approach collaborating across cultural and geographical lines. Ferraro and Briody (2016) addressed how to navigate the increasingly complex nature of the global organizational environment efficiently. A researchers established that culture and business were both evolving processes, and each could learn from and adapt to the other. These evolving processes and adaptations indicated that embracing cultural differences within the work

environment could assist in not only improving the business effect but also furthering cultural understanding and acceptance.

Gilson et al. (2014) considered technological changes from 2004 to 2014 about globalization and diversification in business. A review of 10 years' worth of research on virtual teams indicated both the rise in such teams and the improvements in technology over this period (Gilson et al., 2014). The focus of the review was on how these changes influenced organizational and academic approaches to research design, team input, leadership, and trust. The review indicated that further research into how these developments affected such aspects as member mobility, team adaptation, and creativity would be necessary (Gilson et al., 2014).

Due to the relatively new nature of such areas of study, Gilson et al. (2014) indicated it would be a while before clear understandings on how to navigate such areas emerged. Gibson et al. reviewed the literature on virtual and global teams to understand better the complex nature of both the virtual work environment and the broader global incorporation of diverse teams in reaching organizational goals. Gibson et al. (2014) found few researchers had studied both the virtual and global nature of teams and the implied differences in culture and technological availability. Therefore, the proposed study partially filled this gap in the research.

This area of research becomes even more crucial when realizing how rapidly the nature of work has changed, with little to no evidence of such changes slowing down (Global Workplace Analytics, 2016). One of the main ways in which business has changed involves telecommuting (Global Workplace Analytics, 2016). Telecommuting

influences international businesses and even smaller work environments have begun to see an increase in employees opting to use such means to complete their work (Global Workplace Analytics, 2016). The Global Workplace Analytics (2016) indicated the virtual workforce and work environment were increasing at a steady rate, having increased by 103% between 2005 and 2016. The reasons for this increase were a wide variety of factors, including the choice or need for distance work and whether certain companies promoted telecommuting (Global Workplace Analytics, 2016). The report indicated that between 80% and 90% of U.S. workers would value telecommuting as an option for work. Moreover, such an approach could include many benefits for both employees and organizations (Global Workplace Analytics, 2016). Therefore, developing clear virtual work policies and means of leadership for global virtual teams would be in the organizations' best interests.

Through a variety of studies and literature reviews, researchers determined that globally and culturally diverse teams could promote creative perceptions of problems and broaden organizations' global appeal and presence (Global Workplace Analytics, 2016). As researchers reviewed also noted that such teams could assist organizations in gaining a highly specialized workforce by allowing them to tap into previously undetermined employee avenues Cavusgil et al. (2014), Ferraro and Briody (2016). However, such teams have unique problems, which organizational managers would need to navigate and address to ensure excellent communication and performance across the global divide. The request for finding solutions to these problems gave credence to this study.

Knowledge Sharing Related to Team Performance

Knowledge sharing forms the backbone of good team performance. Without transparent and open lines of communication, teams are unlikely to produce their best levels of work. This area becomes even more influential when managers must manage knowledge sharing in a global virtual team environment. Distance and time can hinder the communication and knowledge sharing process (Cogliser et al., 2013; Kiely et al., 2014; Scott, 2013; Verburg et al., 2013). Therefore, managers must ensure the best use of group exchange structures (Cogliser et al., 2013).

In a study of 233 undergraduate business students in 50 virtual teams, Cogliser et al. (2013) confirmed the need for correct structure use. A researchers found generalized structures worked better in promoting exchange in virtual team environments and prevented team members from becoming isolated within the virtual work environment. Trust, cooperation, and sharing of information could improve member productivity (Cogliser et al., 2013). A discussion of such factors appears in more detail later in this section.

Goh and Wasko (2012) and Gardner et al. (2012) studied virtual knowledge sharing. Goh and Wasko (2012) used the LMX theory to determine how LMX relationships influenced knowledge sharing in a virtual work environment. Goh and Wasko found the dynamics within the team influenced knowledge sharing, and the type and amount of resources made available for sharing played a vital role in team members' willingness to share information with other team members or their managers. Gardner et al. (2012) noted that knowledge integration capability might improve by improving issues

around interaction and knowledge sharing. Developing a systematic approach toward projects from the beginning phases through completion would assist team members in knowing what managers expected of them (Gardner et al., 2012). Therefore, organizational managers could improve individual delivery, performance, and communication between members and between members and managers (Gardner et al., 2012). However, numerous factors are at play when attempting to ensure proper knowledge sharing among global virtual teams, and managers must ensure they understand and manage such factors in the best way possible.

Cultural Dynamics

As discussed in the previous section of this chapter, culture plays a vital role in how individuals interpret messages and the world around them. Due to the likely multicultural landscape of the global virtual team environment, managers should ensure miscommunication infrequently occurs during collaborative projects. Chen and Lin (2013), as with Adair et al. (2013), highlighted the importance of cultural intelligence in promoting knowledge sharing. Using social cognitive theory, Chen and Lin (2013) found the more culturally competent a team, the more knowledge sharing occurred. The focus was on the role that metacognitive, cognitive, motivational, and behavioral cultural intelligence played in knowledge-sharing activities. Chen and Lin found that all aided in knowledge sharing and improved team effectiveness either directly or indirectly. The findings indicated that team performance could and would improve if managers made better use of these means of cultural intelligence and developed higher levels of cultural intelligence among their members.

As noted earlier in the chapter, language is another area where culture plays an important role and can quickly lead to a lack of communication, understanding, and knowledge sharing between global virtual team members (Harzing & Pudelko, 2013; Kiely et al., 2014). Klitmøller and Lauring (2013) studied the interaction of virtual media and the relationship between culture and linguistic differences with knowledge sharing. The study included an ethnographic field of study in determining whether particular media worked better in bridging divides caused by cultural and linguistic differences (Klitmøller & Lauring, 2013). Specific media did emerge as helping to bridge the language divide more than others did and were more apt at promoting knowledge sharing (Klitmøller & Lauring, 2013). These findings can aid managers in ensuring the best choice of media for their specific global virtual team to gain the best results and team performance.

Other researchers have addressed culture as a determining factor for knowledge sharing in diverse teams Zhang et al. (2014). However, researchers should remember that culture is a factor, which means it interplays with various other factors, all of which influence team dynamics and performance. Moreover, managers should always view cultural issues alongside other influences to ensure the best outcomes for their teams. For instance, both Mueller (2014) and Zhang et al. (2014) addressed how cultural background influenced knowledge sharing among project teams. Mueller (2014) noted that time, structure, output orientation, and openness played a role in how teams shared information. Most of these factors, when used correctly or adapted for the best result possible, had positive effects on knowledge sharing and developing a knowledge culture

across an otherwise diverse team (Mueller, 2014). Zhang et al. (2014) used a mixed-methods approach to investigate cultural dimensions in multinational classroom settings. Although Zhang et al. focused on multicultural virtual students, the findings were generalizable to the virtual work environment, as Zhang et al. (2014) addressed such cultural subcategories or factors as collectivism or power distance.

Even within the idea of culture, the aspects to consider are numerous when determining how motivated individuals may be to share knowledge and how best to aid workers from different backgrounds to work together for the good of the team and organization at large. Because of the importance of culture regarding communication and knowledge sharing, particularly considering the areas of presenting, receiving, and interpreting messages, managers must pay attention to how they manage such communications. Managers should ensure they use the best technological aids and resources available to streamline the process.

Role of Trust

As noted previously, trust plays an essential part in both individual and team performances. Individuals should trust their fellow team members, as well as their managers (T. Braun et al., 2013; Germain & McGuire, 2014; Zhu et al., 2013). A lack of trust could quickly close communication and knowledge sharing and cause limited team effectiveness (Germain & McGuire, 2014; Kiely et al., 2014; Scott, 2013). Research mentioned the need for trust to develop quickly between team members; however, this was somewhat hard to achieve, especially in global virtual team environments (Germain and McGuire 2014). When organizations and individuals work to understand the

individual, team, organizational, and technological barriers, trust can develop faster (Germain & McGuire, 2014). This process can involve using virtual human resource development (Germain & McGuire, 2014). However, the issue of building trust in a virtual environment is a complicated matter reliant on numerous factors, and much research remains necessary on how best to assist members in building trust exchanges with each other.

Raab et al. (2014) addressed the issue of trust regarding manager involvement and the ways manager involvement influenced knowledge sharing and performance. Raab et al. (2014) found managers could have a moderating effect on trust levels and subsequent employee satisfaction regarding knowledge sharing within a team environment. Global and virtual companies and teams share information in different ways to more traditional or face-to-face teams, which calls for more research into better ways of aiding communication and developing trust over greater distances (Raab et al., 2014).

Similarly, Ferreira et al. (2014) posited that virtual or traditional workplaces that promoted knowledge-centeredness simultaneously promoted knowledge sharing. Only individuals who reported high levels of trust propensity were likely to partake in knowledge sharing (Ferreira et al., 2014). This finding indicated that managers must find ways to ensure those team members with low propensities toward trust would develop trust and partake in the team and knowledge sharing activities. Ferreira et al. (2014) did not address how managers could attempt this, and further research would be necessary for this area. To this end, this study included an attempt to determine changes and strategies that managers can implement.

Although Pinjani and Palvia (2013) did not note how managers could assist employees in trust development, they did attempt to understand what factors, particularly in global virtual team settings, could cause the trust to take longer to develop. Some contributing factors related to limited physical interactions and geographical distances led to slower rates of trust development and fewer instances of knowledge sharing and performance (Pinjani & Palvia, 2013). Therefore, fostering trust exchanges in physical settings emerged as being more natural, and managers of global virtual teams had to find ways to create trust-building moments for their virtual team members who did not have other means of forming such exchanges (T. Braun et al., 2013; Germain & McGuire, 2014; Zhu et al., 2013).

Shazi et al. (2015) attempted to address factors related to trust and trust development, particularly to determine whether trust could predict team innovation. Shazi et al. conducted a study involving 153 employees from two different firms and established that trust (or trustworthiness) was reliant on two main factors: ability and benevolence. When these two factors were present or at least perceived to be present within team interactions, these helped teams to increase connection and promoted idea generation and realization and higher team performance levels (Shazi et al., 2015). Shazi et al. (2015) also studied how integrity could be a factor in trust formation and what results it would have on performances and interactions. Integrity only contributes to idea generation (Shazi et al., 2015). Perceived benevolence and higher levels of integrity promoted knowledge sharing and could serve as predictors of work performance and team innovation (Shazi et al., 2015). These conclusions indicated that when team

members could see that others were able to contribute to and achieve team or organizational goals, and when members wanted the best for others within their team and were willing to provide help when required, they were more likely to be willing to share knowledge. The same sentiment would extend to how workers perceived their managers; when they trusted their managers, they were more likely to participate in doing the best for the team.

By understanding the complex nature of trust and how it can develop, particularly in global virtual teams, managers can better assist teams in improving their performance. Similarly, culture and, by extension, communication are also essential factors in improving knowledge sharing across global virtual teams and teams in general. Therefore, managers must develop their own and their team's cultural intelligence and communication skills to ensure adequate knowledge sharing across diverse people groupings. Knowledge sharing influences team performance. However, for individuals to be willing to take part in the knowledge-sharing process, they must first address various aspects around trust and culture.

Leadership and Team Dynamics in Virtual Teams

I addressed such areas of global virtual team functioning regarding LMX as leadership and leadership style, differences at both an organizational and an individual level that influence global virtual team leadership, the effect of diversity, and knowledge sharing among team members. Therefore, I have found LMX and global virtual team exchanges are involved. Further, more work is necessary to ensure correct and beneficial structures and strategies are placed to ensure improved LMX, communication, and global

virtual team dynamics. This section includes a discussion on how to navigate these complexities and to understand and improve team dynamics to gain the most from the global virtual team experience.

In their moderated mediation analysis of 179 project team members of 31 construction project teams, Buvik and Tvedt (2016) noted that the more committed team members were to a project, the higher their levels of trustworthiness and performance. Although they determined that trust plays a role in improving project commitment and, consequently, team performance, they found that more research into this area remained necessary (Buvik & Tvedt, 2016). The findings indicated that managers could improve team dynamics by appealing to individuals' project commitment, which could lead members to demonstrate trustworthy behaviors and develop positive team dynamics and performances. Hill and Bartol (2016) similarly noted that leadership could create virtual collaboration across a diverse and dispersed team. Empowering leadership promoted virtual collaboration and, indirectly, improved performances (Hill & Bartol, 2016). These findings reiterated Hassan et al.'s (2013) and Lornikova et al.'s (2013) assertions that empowering leadership could play a positive role in team dynamics. Hill and Bartol's (2016) study was especially valid for teams consisting of vastly dispersed members in a virtual work environment, which confirmed that leadership played a significant role in how well teams worked together across the virtual workplace.

Muhonen et al. (2013) addressed worker satisfaction and well-being about empowering leadership. A researchers focused on 483 Chinese and 254 Swedish participants from the same company to determine how inclusive leadership styles

influenced worker well-being. The study differed from others, as Muhonen et al. determined leadership influenced worker well-being and noted that culture mediated these relationships. These results indicated culture was an essential determining factor in worker performance and satisfaction; moreover, managers, particularly in global virtual team settings, must adjust their leadership styles and approaches according to the types of individuals who made up their teams.

Fan et al. (2014) found that leadership type influenced group creativity, along with how team members received and addressed instructions and shared information within their groups. A manager's motivational language could influence team dynamics either positively or negatively (Fan et al., 2014). This finding further substantiated the power that managers held, particularly in the global virtual team setting, to influence their team members' performances (Boies et al., 2015; McShane, 2015). Positive LMX development is an integral part of how managers can improve team dynamics (Jawadi et al., 2013). Jawadi et al. (2013) found that leadership played an important part in developing team relationships in global virtual teams. The roles that managers chose to take on in the virtual workplace could either help or hinder them in developing good LMX (Jawadi et al., 2013). Therefore, leadership style, along with the ability and trust development, played a significant part in ensuring good team dynamics, both in a leader-member and member-member interactive space.

Some leadership styles may not always have the desired effect or promote performance, particularly in the virtual workplace, as some styles do not sit well with the *modern* employee, or these styles are not well-suited to meeting the demands of the

virtual work environment. To that end, Robert (2013) conducted an empirical study on the effect of shared leadership within the virtual workplace. Robert noted that traditional leadership structures and approaches did not work well in the virtual workplace due to the different demands such a work environment placed on both managers and employees. Robert found shared leadership differed according to demographics, and the influence of such a leadership style was multilevel.

Researchers have promoted shared leadership as a good leadership style option for the virtual workplace (Hoch & Kozlowski, 2014; H. Wang et al., 2014; Ziek & Smulowitz, 2014). However, Robert (2013) found shared leadership positively associated with job satisfaction but did not necessarily lead to improved team performance. More research would be necessary to understand the effects of this type of leadership approach entirely. Robert found improved job satisfaction could improve team dynamics, which reemphasized the importance of authentic leadership in team environments.

Although leadership forms a vital part of developing good team relations, it is not the sole factor. Cogliser et al. (2013) noted differences in team exchange structure played a role in team dynamics and performances after studying how unified generalized, unified generalized with isolates, unified balanced, and unified balanced with isolated exchange structures each had various levels of positive or negative influences on performance. Cogliser et al. (2013) noted that when isolates were present, particularly concerning cooperative, balanced exchanges, they had an adverse effect on the virtual work environment. Therefore, Cogliser et al. (2013) established the need for individuals,

particularly those who were part of global virtual teams, to feel included in team processes.

Maynard and Gilson (2013) considered the relationship between shared mental models, task interdependence, and virtual team performance. Maynard and Gilson (2013) considered the influence of different media on these factors and the ways such relationships influenced team dynamics and performance by addressing how developing shared mental models could aid in improving team dynamics and communication. Therefore, the results indicated the need for a shared organizational culture and comprehensive leader-member, as well as member-member exchanges for virtual teams to perform at their peak (S. Braun et al., 2013; Moran et al., 2014; Schneider et al., 2013).

Related to the idea of exchange structures is the understanding of what constitutes a team, particularly in the virtual team environment (Caya et al. 2013). Caya et al. (2013) addressed this area by reviewing 121 instances of prior research and current data, highlighting issues around team effectiveness, and developing processes and states, and comparing the natures of virtual and traditional teams. Caya et al. (2013) noted that technological advancements and the global character of the modern workforce all affected how team members related to each other and changed the dynamic of the virtual team from that of the more traditional workforce. These findings can aid all those involved in the virtual work environment to understand better what constitutes a virtual team and begin to use the differences such teams present to their advantage.

Ruppel et al. (2013) addressed how communication and choices in communication technology affected how well virtual teams worked together. As

established earlier in this chapter, communication is vital to the success of the team and organizational performance, and both managers and members should value any means of improving communication processes, particularly in global virtual teams. Ruppel et al. found most organization leaders chose media to maintain workers' work-life separation and met task requirements above those that promised the most satisfactory work experience. These findings indicated that worker satisfaction and privacy played a role in performance and in developing sound workers (Ruppel et al., 2013). Congruently, good team dynamics allowed workers to maintain a sense of independence and personal identity within the overall organizational framework and promoted work efficiency and performance, even if the media used were less user-friendly (Ruppel et al., 2013). The idea that positive communication can have a connection to worker independence as much as other factors, such as culture and technology, may be a captivating avenue for future researchers.

I briefly mentioned distance earlier in the chapter as a factor that influenced how well virtual teams worked together. Distance in virtual work environments can refer to geographical distances (i.e., teams comprised of members from various areas around the globe), psychic distances (i.e., teams made up of members from local geographic locations, but who are not physically present with one another, or teams made up of members with diverse insights and ways of doing things), or a combination of both (Magnusson et al., 2014; Scott, 2013; Ziek & Smulowitz, 2014). Magnusson et al. (2014) described how psychic distance could promote positive worker contributions and noted

that member expectation, motivational cultural intelligence, and level of a team effort all contributed to how well members worked together, regardless of the distance involved.

Therefore, managers and members of global virtual teams must attempt to bridge the distance divide, regarding both geographic and psychic distance, to ensure favorable team dynamics and to improve team performance. One way of doing so would be to establish the nature or culture of the virtual team from the beginning of the process (Parke et al., 2014). Organizational groundwork mainly determines aspects such as knowledge sharing and team effectiveness. When all members of a team, be it virtual or traditional, understand their role within the more prominent structure and the requirements as team members from the beginning, it becomes easier for members to work together toward a common goal, irrespective of distance, culture, or communication (Parke et al., 2014). Parke et al. (2014) noted that even brief physical contact with team members improved team dynamics, but structured team building could lessen such improvements. This finding indicated that, when possible, global virtual team managers should attempt to have members engage with one another, but they should not force these engagements. This freedom of interaction seems to improve team dynamics by making previously virtual members more real to one another.

I found that various factors played a role in developing good global virtual team dynamics. Team dynamics can be influenced by the individuals within the team and their relation to such factors as knowledge sharing, cultural intelligence, and trust. These, in turn, can all influence performance in contrasting ways. Managers and leadership styles, distance, and communication also play a vital role. Therefore, managers must incorporate

actual mechanisms across numerous influencing factors to ensure proper team dynamics in the virtual workplace. Part of the objective of this study was to assist managers in achieving an understanding of virtual team dichotomies. Synthesizing the studies for Leader-Member Exchange theory, knowledge sharing, and team performance all yield to the research study questions used in this study, RQ1: To what extent does knowledge sharing influence global virtual teams' performance? and RQ2: To what extent does LMX relationship quality moderate the relationship between knowledge sharing and global virtual teams' performance?

Summary and Conclusions

In this chapter, I discussed problems around the topic of global virtual teams and their management. I also highlighted how to use the LMX theory to address such issues and promote comprehensive research into the various aspects related to the specific functioning of global virtual teams. The LMX theory was instrumental in understanding how LMX relationship quality within a team can influence the relationships between team members' KSBs and team performances. I also addressed the validity of the theoretical framework and methodology selected for the proposed study. I used literature to determine links and relationships between leadership styles, individual aspects, culture, and diversity of global virtual team members, approaches to knowledge sharing, and global virtual team dynamics. Although most researchers have noted the positive influence global virtual teams have on business operations (Magnusson et al., 2014; Parke et al., 2014; Scott, 2013; Ziek & Smulowitz, 2014), many have also indicated that global virtual teams had their own unique set of problems. These issues are related to the

areas of cultural diversity, communication, and team performance within the virtual workplace.

A few authors have also noted gaps in the literature (Klitmøller & Lauring, 2013; Magnusson et al., 2014; Parke et al., 2014; Rockstu1hl et al., 2012; Scott, 2013; Tröster, et al., 2014; Ziek & Smulowitz, 2014). Some of these gaps included the ways developments in research design, team input, leadership, and trust could influence member mobility, team adaptation, and creativity; the ways improved trust could positively influence project commitment; the ways global virtual team managers could aid members with low propensities for trust to develop trust in a virtual work environment; the ways worker independence could positively influence communication in global virtual teams; the ways individual nature could influence leadership and organizational culture; and the ways diverse workforces could contribute to organizational output. Although I did not address all the gaps in the literature in this study, I helped fill some of the gaps, especially regarding providing insight into the specific functioning of global virtual teams, predominantly regarding how LMX relationship quality within the team can influence the relationship between team members' KSBs and team performance. I also discovered changes to organizational structure, leadership styles, and leader-member relations that were necessary to ensure global virtual team and general business success.

Chapter 3: Research Method

I was interested in finding out whether current leadership and LMX need improving or changing. The RQs were designed to address the extent that knowledge sharing influences global virtual team performance and the extent that LMX relationship quality moderates the relationship between knowledge sharing and global virtual team performance. In the context of this research, LMX relationship quality referred to the effort that team members and managers employ and the general interactions between managers and their subordinates to develop LMX relationships, which is salient to culturally diverse global virtual teams (Liden & Maslyn, 1998). I conducted the present study with a sample of at least 210 members of global virtual teams of varying cultural backgrounds.

This chapter includes a detailed discussion of the rationale for choosing the research design for this study and the methodology, which includes the target population, sampling strategy, recruitment procedures, and data analyses procedures. This chapter also includes details on the variables considered in this study, as well as the ethical considerations to maintain throughout this study. This chapter ends with a summary of the essential elements of the methodology chosen.

Research Design and Rationale

The purpose of this quantitative MANCOVA analysis study was to discover the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderated this relationship. Qualitative researchers employ such methods as semi structured interviews to examine opinions, assumptions, or cultural

wisdom to provide further insight into hard-to-quantify areas (Fassinger & Morrow, 2013; Rogelberg, 2008). Due to the size of the population in this study, such interview processes were not a viable option. The information under study was quantifiable, meaning a qualitative approach was not necessary. Another methodological approach I considered and rejected was the mixed-methods approach, which involves combining the statistical value of quantitative research with the discussion and interpretation aspect of qualitative research (Fassinger & Morrow, 2013; Rogelberg, 2008). Due to the nature of this study, the dual approach would be redundant, as qualitative data was not necessary or viable to attain. Therefore, the topic, population, and purpose of this study all required using a quantitative study approach. Additionally, the focus of the RQs was to identify a moderator to global virtual team dynamics; thus, a qualitative design was not appropriate (Rogelberg, 2008). Furthermore, the concepts investigated as a part of this research are quantifiable through existing, validated instruments. Although collecting qualitative data instead of quantitative data was possible, furthering existing research by collecting more data using pre-validated measures of the LMX model was more valuable to the field of management.

The research design for this study was a correlational research design with a MANCOVA analysis to examine knowledge sharing as a continuous independent variable, performance as a continuous dependent variable, and LMX relationship quality as a continuous variable that moderated the relationship between the two. The presence of solely continuous variables ruled out any potential use of categorical analysis, such as analysis of variance (Rogelberg, 2008). The design was nonexperimental because this

study did not involve any manipulation of variables. I did not expose participants to control and treatment groups, and I did not consider random assignment and sampling of participants. A correlational research design involves investigating potential relationships between identified variables (Babbie, 2012). This study involved investigating linear and moderating relationships between pre-identified variables. Furthermore, as noted in Chapter 1, MANCOVA rather than correlational analysis was optimal for this study because the goal was to examine the predictive power of knowledge sharing (independent variable) on global virtual team performance (dependent variable) and how LMX relationship quality moderated this predictive power (see Rogelberg, 2008).

Methodology

This section includes a discussion of the population, sampling, and sampling procedures. Also included are the procedures for recruitment, participation, and data collection. This section further contains details on the instrumentation and data analysis plan for this study.

Population

The target population included team managers and employees who were part of global virtual teams. The estimated minimum sample size was calculated using the G*Power software sample size calculator shows that the estimated minimum sample size was 210 participating managers and team members (Faul et al., 2013). The participants remained anonymous throughout the study. The sample consisted of individuals from different nationalities and ethnicities functioning in culturally diverse virtual teams across the global footprint.

Sampling and Sampling Procedures

Approval from the IRB was obtained to recruit and use the intended sample for this study (approval no. 12-16-20-0093844). The sample included virtual team members who were part of global virtual teams. Data collected pertained to global virtual team members and individuals from all levels of virtual teams. Participation in this study remained voluntary and included participants from a variety of races and nationalities. I recorded the demographic characteristics of all participants as part of the preliminary data collection, including race, age, gender, nationality, native language, and years with the current company.

A convenience sampling technique received consideration. A convenience sampling method is a nonprobability sampling methodology with a focus on the availability and willingness of participants to participate in this study (Taherdoost, H. (2016). A drawback to using an applied sample is that there was no control for the demographic variables of managers or followers and the way they appear in global virtual teams. However, I used an applied sample for its significant advantages, which included that teams will be organic, preexisting, and not designed by me; moreover, leader–member and member–member relationships were pre-established. Thus, the results are more generalizable than a controlled laboratory design (Leedy & Ormrod, 2013). The number of participants required for this study was 210, as calculated using G*Power given a two-tailed correlational test with significance $p < .05$, a moderate effect size of 0.3, and statistical power of 0.95, which is frequently considered the minimum acceptable level of statistical power (Faul et al., 2013).

Procedures for Recruitment, Participation, and Data Collection

The self-reported measures of LMX, organizational structure, leadership styles, knowledge sharing, and performance, served as the data collection tools for this study. As this study involved examining virtual teams, all communication between this study's participants and I occurred electronically. Through the Qualtrics online survey platform, Qualtrics solicited survey respondents via a link sent to the Qualtrics respondent pool. The link included a note inviting participants to participate in this study relating to their feelings about their work. Those who clicked on the link proceeded to an informed consent page, followed by a demographic survey containing a question related to the number of years of employment with the company and were also asked to indicate their rankings in the global virtual team, as part of the management team or as a team member.

Depending on their responses, conditional formatting within the survey presented participants with items from each of the 5-point Likert-type scales related to LMX relationship quality, organizational structure, leadership styles, performance, and knowledge sharing, worded appropriately based on their positions in the team. I organized the survey to link to different questions, depending on the roles that respondents play within their global virtual teams. Each survey question, regardless of whom it had been designed, followed a 5-point Likert-type scale, where participants rated their answers from 1 (*very low/completely disagree/least applicable*, etc.) to 5 (*very high/completely agree/most applicable*, etc.). For example, participants who indicated they were a team manager rated the extent to which they perceived their exchanges with subordinates as positive on a scale from 1 to 5. The survey questions were designed to

align with this study's RQs and theoretical framework, and these were tailored for the global virtual team context from the pre-existing and validated LMX-7 questionnaire (Graen & Uhl-Bien, 1995), KSB scale (Chennamaneni, 2006), and global virtual teams' performance measuring model that researchers developed for global software development projects (Gheni et al., 2016) instruments.

Because there were no laboratory manipulations as a part of this applied study, data collection did not involve gathering the names of participants. Moreover, the only identifying factor was a random identification number assigned to each new participant that connected an individual's responses on each item. Some items were reverse coded to prevent mindless responses to survey questions. For instance, "When I learn something new, I want to share my knowledge with team members" may become "I do not want to share new knowledge with team members." Question order was also random, and interspersing questions from all three scales helped to prevent any unforeseen order bias that influenced responses.

Instrumentation and Operationalization of Constructs

Graen and Uhl-Bien (1995) developed the LMX-7 to measure the quality of the relationship between a manager and a member. The scale includes seven items measured on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The questions are about the efficiency of the work-related relationships between the manager and member, comprehension of job-related problems and necessities, and awareness about self-potential and willingness to support the employees (Maslyn & Uhl-Bien, 2001). Some sample questions include the following: "My manager understands

my job-related problems and needs," and "Regardless of the amount of formal authority my manager has, my manager would *bail me out* at his or her expense." The average of the responses given by participants determined the quality of the relationship between the manager and the member. A high average score indicated a high-quality relationship.

The LMX-7 scale is a widely used tool in many different countries and is both a valid and a reliable measure of the quality of the LMX relationship (Moss, Sanchez, Brumbaugh, & Borkowski, 2009; Schyns, Paul, Mohr, & Blank, 2005; Sue-Chan, Chen, & Lam, 2011). Özutku, Ağca, and Cevrioğlu (2008) adapted the LMX-7 scale to Turkish and concluded that this measurement tool, in line with the original one, was a single-factor structure with a Cronbach's alpha coefficient of .72.

In another study carried out in Turkey, Cerit (2012) used the Kaiser-Meyer-Olki test and Bartlett sphericity test for conducting the factor analysis of the LMX-7 scale. Cerit concluded a meaningful factor analysis with a result of .81 for the Kaiser-Meyer-Olki test and $\chi^2 = 1150.90$, $p < .001$ for the Bartlett sphericity test, which was a statistical analysis to test the hypothesis that the correlation matrix was an identity matrix. Researchers use it widely in factor analysis to indicate whether a factor analysis is appropriate for the tested variables. Cerit conducted a factor analysis to investigate the structure of the LMX-7 scale and found that it consisted of a single factor. The factor loadings of the items in the Turkish adaptation of the LMX-7 scales ranged from .658 to .913, and the factor variance was 68.31%. The total point reliability coefficients of the scale in the same study ranged from $r = .56$ to $r = .86$, and Cronbach's alpha was .92.

Researchers use the LMX-7 scale (Graen & Uhl-Bien, 1995) to measure loyalty, affect, contribution, and professional respect constructs. The results can be as follows, depending on the score earned: *very high* = 30 to 35, *high* = 25 to 29, *moderate* = 20 to 24, *low* = 15 to 19, and *very low* = 7 to 14. Scores in the upper ranges will indicate stronger, higher quality LMX (e.g., in-group members), whereas scores in the lower ranges will indicate exchanges of lesser quality (e.g., out-group members; Graen & Uhl-Bien, 1995).

The KSB scale used by Chennamaneni (2006) was used to measure the knowledge-sharing behavior of the participants. The KSB scale involved measuring three critical factors, namely psychological, organizational, and technological, which are believed to influence KSB (Chennamaneni, 2006). The KSB scale includes 7-items that was developed by Lee (2001) and Bock, Zmud, Kim, and Lee (2005). According to Lee (2001), the internal reliability of the explicit knowledge sharing scale is at .901, while Bock et al. (2005) reported the internal reliability of the implicit knowledge sharing scale at .758. Thus, the scale was reliable in measuring the construct of knowledge-sharing behavior. The items measured how frequently respondents shared work-related knowledge with their coworkers in the past year. The responses were measured based on a 7-point Likert scale, wherein 1 corresponds to very infrequently, and 7 corresponds to very frequently. The questions in this scale sufficiently answered knowledge-sharing behavior questions that aligned with this study's RQs.

To measure knowledge management performance, I used Part 12 and 13 of the global virtual teams' performance measuring model that researchers developed for global

software development projects (Gheni et al., 2016). These survey items are used to measure project efficiency and project effectiveness. For the project efficiency subscale, the questionnaire includes six items. Participants were asked to respond to the items using a 5-point Likert-type scale ranging from strongly disagree to strongly agree.

For the project effectiveness subscale, six items were also included, wherein participants were asked to respond on a 5-point Likert-type scale ranging from strongly disagree to strongly agree. I used this measurement in combination with the forenamed Chennamaneni (2006) scale, as well as additional questions created based on the LMX framework used in this study (Graen & Uhl-Bien, 1995). I chose this scale as it adequately answered and measured knowledge-sharing-related questions that aligned with this study's purpose and RQs. The measurement was also proven to hold high internal reliability, and its validity had been proven in the literature (Gheni et al., 2016). The internal consistency scores were above .70, while construct validity was more significant than .50 correlation for the two subscales. I kept these aspects of the survey. However, I tailored the questions to the global virtual team context and combined this scale with the two other instruments mentioned above, thereby creating an original survey. Permission to use these surveys, LMX-7 scale (Graen & Uhl-Bien, 1995), KSB scale (Chennamaneni, 2006), and global virtual teams' performance measuring model that researchers developed for global software development projects (Gheni et al., 2016) was obtained prior to conducting the survey on the Qualtrics platform, see Appendix A.

Data Analysis Plan

After data collection was complete, the next step involved importing data from the Qualtrics online survey results into the data analysis program, Statistical Package for the Social Science (SPSS). From there, the process involved normalizing the data to eliminate respondents who failed to answer all the questions, as well as searching for outliers, particularly participants whose reverse-coded item responses did not inversely correlate with the regular-coded items measuring the same construct. Running distribution tables helped to determine the general demographic makeup of the sample and running a MANCOVA analysis helped to determine whether a significant relationship existed between knowledge sharing and performance to examine LMX relationship quality as a moderator of this relationship.

This study involved using descriptive and inferential statistics to examine the relationship between variables considered in this study. Specifically, this study involved analyzing demographic characteristics using descriptive statistics to describe the samples collected in this study. A MANCOVA analysis was suitable to analyze the relationship of the independent variables to the dependent variables then to the co-variate in this study. For RQ 1, the independent variable was KSB, and the dependent variable was global virtual team performance. For RQ 2, the moderating co-variate was LMX relationship quality, the independent variable was KSB, and the dependent variable was global virtual team performance. I used a significance level of .05 for all analyses.

Threats to Validity

I assumed that the planned statistics were the most accurate statistical tests available, given the nature of the data. Some other types of statistics may have yielded results that were more accurate, but these remain unknown. This fact influenced the internal validity of this study. Additionally, given the theoretical basis of this study, the quantitative design was the best approach. Other methods may yield data that are more valuable, which can also influence internal validity.

External validity refers to the condition of generalizability. Many factors can influence generalizability, including (a) representativeness of the sample, (b) timing, and (c) researcher bias. Using many respondents in the research study will allow for the results to be generalizable and void of researcher bias or any threats to construct or statistical conclusion validity. Using quantitative data and statistical tests for analyses also restricts researcher bias. I did not consider my perceptions as a researcher at any point during this research study.

Ethical Procedures

This study included human participants. Thus, I followed ethical procedures throughout this study. Before beginning data collection, I sought approval from the IRB. The ethical procedures and IRB approval ensured the protection of confidentiality and anonymity throughout this study. Participant recruitment occurred through the Qualtrics respondent invitations, and data collection occurred using the Qualtrics online survey tool. In this way, I had no direct contact with or was privy to any personal information,

such as names or email addresses, of participants. Incorporating this method of distribution ensured higher levels of participant confidentiality and anonymity.

Anonymity and confidentiality were also assured through a randomly assigned and unique identification code that identified each participant. Although the release of participant identities did not occur, this was a workplace-related study, and participants may have felt concerned about answering honestly and completing this study, fearing that their supervisors may be privy to their responses. Therefore, I included text at the beginning of this study, such as in the informed consent form, reassuring participants that their responses on the measures had no bearing on their job or performance ratings, indication in the survey consent allowing for withdrawal from the survey if a respondent desired to do so, and no one besides me viewed their responses. All data was only accessible to me and remained on a password-protected computer. All data will be disposed of 5 years after the completion of this study through permanent deletion from the computer.

Summary

The purpose of this quantitative MANCOVA analysis study was to determine the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderated this relationship. The focus of this study was to determine whether current leadership and manager-member relation strategies need improving or changing to reach this end. A quantitative correlational design with MANCOVA analysis occurred in a study that included a sample of at least 210 members of global virtual teams of varying cultural backgrounds. In the context of this research,

LMX relationship quality referred to the effort that team members and managers allocate to LMX relationships, as this dimension of LMX is salient to culturally diverse global virtual teams (Liden & Maslyn, 1998). Descriptive statistics and MANCOVA analysis were suitable to test the hypotheses posed. The level of significance used was .05. Chapter 4 will include a presentation of the data gathered and analysis results. Data will be described using descriptive statistics, while the results of statistical analyses will be presented based on the RQs posed in this study.

Chapter 4: Results

The purpose of this MANCOVA analysis study was to discover the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderates this relationship. Virtual teams are necessary for greater collaboration and have been growing in popularity (Ebrahim et al., 2011). Although global virtual teams frequently possess expertise, the mode of communication used by team members, as well as cultural differences within the group, could stimulate or be detrimental to knowledge sharing (Verburg et al., 2013). In other words, team dynamics, cultural and language differences, and trust can all influence how knowledge is shared in a global virtual team. In this chapter, I describe the findings related to these factors that were studied in relation to the independent variable of knowledge sharing and its influence on the dependent variable of global virtual team performance, as moderated through LMX relationships. The independent variable for RQ 1 was KSB, and the dependent variable was global virtual team performance. For RQ 2, the moderating variable was LMX relationship quality, the independent variable was KSB, and the dependent variable was global virtual team performance. A significance level of .05 was used for all analyses. Illative analysis was accomplished by coding and labeling the variables to answer each of the RQs.

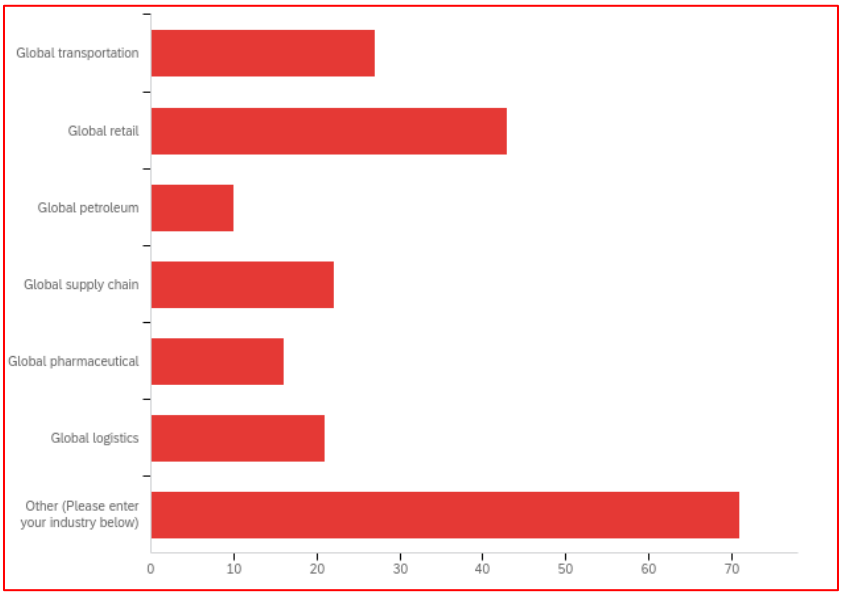
Data Collection

The research survey was administered via the Qualtrics online survey platform. Individuals from the respondent pool who clicked on the link proceeded to an informed consent page, followed by a demographic survey containing a question related to the

number of years of employment with the company and their rankings in the global virtual team as a management team member or as a team member. The survey link on the Qualtrics online survey platform was open until a total of 210 respondents took the survey, which followed the survey process described in Chapter 3. The survey measured the influence of KSBs on global virtual team performance from the perspective of the 210 respondents. The survey respondents were represented by 13% in global transportation, 20% in global retail, 5% in global petroleum, 10% in global supply chain, 8% in global pharmaceutical, 10% in global logistics, and 34% in other global organizations. This industry classification of respondents is represented in the graph of industry categories shown and indicated on the vertical axis and number of respondents shown and indicated on the horizontal axis in Figure 1. Figure 1 – Industry Categories Represented by Respondents indicates that all survey respondents were employed by a global organization and were eligible to participate in the research study of the influence of KSBs on global virtual team performance.

Figure 1

Industry Categories Represented by Respondents



IBM SPSS Statistics Version 27.0.0.0 was used to analyze the survey output with general linear multivariate statistical tests to determine the significance of RQ 1 and to determine the significance of RQ 2. Utilizing the general linear multivariate test MANCOVA, survey questions Virtual Team Product (VTP) 8–11 (i.e., virtual teams' final product meets customer needs, resolve customer issues, can be used by the customer, and achieves customer satisfaction) represented the dependent variable virtual team performance. The independent variable KSB was a computed variable made up of the transformed variables KSB2 and KSB63 (i.e., I would share business knowledge with team members and I shared business knowledge with my team members) as the computed variable, KSBWould-Have. The LMX relationship quality covariate was a computed variable consisting of the survey questions LMX1 (Do you know where you stand and how satisfied your leader [follower] is with what you do?) and LMX6 (I have

enough confidence in my leader (follower) that I would defend their actions), also as a computed variable, LMXSatisfiedConfidence. LMXSatisfiedConfidence as the covariate was not correlated with the independent variable, KSBWouldHave, but was correlated with the dependent variables VTP8–VTP11. Multivariate homogeneity of variance or the equality of covariance between the variables is verified by Box's M Test in Table 1 with a significance of 0.000, which is considered highly sensitive.

Table 1

Box's Test of Covariance Equality

Box's M	F	df1	df2	Sig.
149.068	2.775	50.000	16071.339	0.000

Note. Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

Study Results

The tests of between-subjects effects findings were highly significant for the four survey questions representing global virtual teams' performance and knowledge sharing, as shown in Table 2. Though the global virtual teams' performance variable, VTP10—virtual teams' final product can be used by customer—was less significant than the other variables, there was still a significant relationship with the computed independent variable, KSBWouldHave. Thus, for the first research question, "To what extent does knowledge sharing influence global virtual teams' performance?," the alternative hypothesis was accepted. This means that a significant relationship exists between knowledge sharing and global virtual teams' performance. For the second RQ, "To what extent does leader–member relationship quality moderate the relationship between knowledge sharing and global virtual teams' performance?," the alternative hypothesis

was also accepted. This means LMX relationship quality significantly moderates the relationship between knowledge sharing and global virtual teams' performance. Table 2 indicates the between-subjects effects of *p* values or significance to be 0.000 for all dependent variables with the computed covariance of LMXSatisfiedConfidence.

Table 2

Tests of Between Subjects Effects

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	VTP8 Virtual teams' final product is able to meet customer needs.	37.599[a]	8	4.700	11.310	0.000	0.310
	VTP9 Virtual teams' final product is able to resolve customer issues.	44.391[b]	8	5.549	9.950	0.000	0.284
	VTP10 Virtual teams' final product can be used by customer.	57.363[c]	8	7.170	15.482	0.000	0.381
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	56.912[d]	8	7.114	13.479	0.000	0.349
Intercept	VTP8 Virtual teams' final product is able to meet customer needs.	97.800	1	97.800	235.354	0.000	0.539
	VTP9 Virtual teams' final product is able to resolve customer issues.	69.574	1	69.574	124.761	0.000	0.383
	VTP10 Virtual teams' final product can be used by customer.	83.456	1	83.456	180.189	0.000	0.473
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	72.667	1	72.667	137.685	0.000	0.407
LMXSatisfiedConfidence (Computed Covariance)	VTP8 Virtual teams' final product is able to meet customer needs.	7.505	1	7.505	18.062	0.000	0.082
	VTP9 Virtual teams' final product is able to resolve customer issues.	17.411	1	17.411	31.221	0.000	0.134
	VTP10 Virtual teams' final product can be used by customer.	9.078	1	9.078	19.600	0.000	0.089
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	14.201	1	14.201	26.907	0.000	0.118
KSBWouldHave (Computed Independent Variable)	VTP8 Virtual teams' final product is able to meet customer needs.	14.079	7	2.011	4.840	0.000	0.144
	VTP9 Virtual teams' final product is able to resolve customer issues.	9.477	7	1.354	2.428	0.021	0.078
	VTP10 Virtual teams' final product can be used by customer.	25.264	7	3.609	7.792	0.000	0.213
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	19.386	7	2.769	5.247	0.000	0.155

(table continues)

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Error	VTP8 Virtual teams' final product is able to meet customer needs.	83.524	201	0.416			
	VTP9 Virtual teams' final product is able to resolve customer issues.	112.089	201	0.558			
	VTP10 Virtual teams' final product can be used by customer.	93.094	201	0.463			
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	106.083	201	0.528			
Total	VTP8 Virtual teams' final product is able to meet customer needs.	5904.000	210				
	VTP9 Virtual teams' final product is able to resolve customer issues.	5639.000	210				
	VTP10 Virtual teams' final product can be used by customer.	5582.000	210				
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	5707.000	210				
Corrected Total	VTP8 Virtual teams' final product is able to meet customer needs.	121.124	209				
	VTP9 Virtual teams' final product is able to resolve customer issues.	156.481	209				
	VTP10 Virtual teams' final product can be used by customer.	150.457	209				
	VTP11 Virtual teams' final product is able to achieve customer satisfaction.	162.995	209				

a. $R^2 = .310$ (Adjusted $R^2 = .283$)
b. $R^2 = .284$ (Adjusted $R^2 = .255$)
c. $R^2 = .381$ (Adjusted $R^2 = .357$)
d. $R^2 = .349$ (Adjusted $R^2 = .323$)

Summary

This chapter presented the results for the study. Based on the findings, there is a significant relationship between knowledge sharing and global virtual teams' performance and LMX relationship quality significantly moderates the relationship between knowledge sharing and global virtual teams' performance. The following chapter will conclude this dissertation with a discussion of interpretation of the findings, limitations of the study, recommendations, implications for social change, and a chapter conclusion.

Chapter 5: Findings, Limitations, Recommendations, Implications and Conclusion

Global virtual teams, which consist of people around the world with different cultural backgrounds, are not likely to have universal practices for knowledge sharing (Wang & Noe, 2010; Wang & Wang, 2012). However, there is a lack of research into this area influencing global virtual teams. Barriers regarding knowledge sharing can negatively influence a global virtual team's performance (Solli-Sæther & Karlsen, 2014; Yeo & Gold, 2014). Therefore, improving KSB in a multilateral, virtual context is critical to improving the performance of global virtual teams (Boies et al., 2015). I attempted to highlight the problem of low global virtual team performance and knowledge sharing across global virtual teams. One means of accentuating this problem and improving knowledge sharing across global virtual teams can include managers' attempts to improve the quality of LMX (Harris, Li, & Kirkman, 2014). However, there was a lack of literature surrounding this possible solution, which established the need for this study.

I conducted this quantitative MANCOVA analysis study to determine the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderated this relationship. The results addressed the gap in existing global virtual team research on how LMX relationships in global virtual teams influenced the predictive relationship between knowledge sharing and team performance. For the first RQ, the alternative hypothesis was accepted, indicating that a significant relationship exists between knowledge sharing and global virtual teams' performance. For the second RQ, the alternative hypothesis was also accepted, indicating that LMX relationship

quality significantly moderates the relationship between knowledge sharing and global virtual teams' performance.

Interpretation of Findings

The *p* value significance test is a measure of probability that an observation difference occurred by random chance. The lower the *p* value, the higher the significance or probability of an observed difference. This test provided the conclusions that the dependent variables VTP8–VTP11 related to team products and customer needs and satisfaction were significant when observing knowledge sharing since all *p* values ranged from 0.00 to 0.02, suggesting high probability. The same variables were also significantly related to LMX.

The theoretical framework for this MANCOVA analysis study was the LMX theory developed by Graen in 1975 (Graen & Uhl-Bien, 1995). The focus of the LMX theory is on individual relationships between superiors and subordinates in the workplace and the ways each unique relationship influence team dynamics and performance (Erdogan & Bauer, 2014; Gajendran & Joshi, 2012; Graen & Uhl-Bien, 1995; Harris et al., 2014; Hu & Liden, 2013). The focus of the theory is on how managers may best maintain their leadership authority by employing specific techniques, such as designating pivotal jobs or roles to specific employees (i.e., relying on and developing strengths within the workforce), using negotiation, and building trust (Changing Minds, 2018). As the theory purports, this kind of focus on leadership promotes a give-and-take relationship between managers and team members who can work to the benefit of individuals, as well as a team or company (Changing Minds, 2018).

Both KSBs and the degree of confidence a global virtual team member has with their manager or leader show an indication of being highly significant to global team performance. Future research into the global team member demographic factors of gender, age, country of origin, as well as country of residency, number of years of experience or number of teams as a member of global teams is needed. Additionally, future research can benefit from a closer look at the likelihood of sharing knowledge with global virtual team members as well as the type of information shared and the completeness of sharing all knowledge relevant to the team's mission, project, or goal.

Limitations of the Study

Limitations are potential weaknesses that are out of control, potentially because of the lack of resources, the research design, or statistical constraints (Leedy & Ormrod, 2013). The expected limitations were that a survey developed by combining three existing survey instruments and tailoring the questions to suit the global virtual team context, thereby creating an original survey suitable for the purpose of this study. The online survey instrument used a 5-point Likert type scale, precisely adjusted to suit the participant type (i.e., managers answered slightly different questions than team members, etc.). The survey questions were a combination of the following three instruments: the LMX-7 questionnaire (Graen & Uhl-Bien, 1995), the KSB scale (Chennamaneni, 2006), and global virtual teams' performance measuring model (Gheni et al., 2016). A research measure distributed to participants online with no interaction from me, as a researcher; codes were also used to limit any identifying information, such as participant names, for matching answers to respondents. Therefore, participants were ensured that a completed

questionnaire remained anonymous and that participants were not influenced at the time of data collection by supervisors, teammates, or other workplace distractions. Another limitation was that an applied sample was appropriate for this study because I examined the reported behaviors of already existing operational teams, as opposed to teams constructed randomly by me, as a researcher, in a laboratory setting. One limitation was that the correlational analysis can show how the variables relate, but it was not possible to determine many specifics on why the variables relate regarding team makeup. As the researcher, I had no control over the gender or cultural makeup of any of the virtual teams studied.

The survey respondent panel came from a third-party, Qualtrics, Mobile and website distributed channel limiting the survey respondents, contrasting solicitation from all available Qualtrics distribution channels such as, Email surveys, SMS surveys, Panel Management, Mobile and website, Social, QR Codes, MR, Receipt surveys, and Offline surveys. Another limitation resulted from a survey panel of 210 total respondents. The survey was ended when the total of 210 respondents was reached. The survey results and statistical outcomes might have been different if the survey panel had been with more respondents. The time of day the survey was published to the Mobile and website channel limited availability to those members of the Qualtrics respondent panel who were unable to complete the survey at the time of publication.

Recommendations

Leaders and global virtual team members have much more need to understand the dynamics of global virtual teams in order to better manage team subtleties and facilitate

the efficacy of global virtual team performance because the use of global virtual teams is in greater use globally by for-profit and not-for-profit organizations. Since global virtual teams seem to be increasing in numbers globally, the many factors immediate to team make-up and project scope and team management need further study to see gains in overall knowledge sharing among team members and to understand how to bring about even greater team performance.

Additionally, further research is needed to understand if participation as a member of a global virtual team requires team members to interact differently from a social perspective, communicate with unique or technologically advanced methods, share information about professional or business experiences, and require members to be more tolerant of the nuisances of other team members. In the pandemic and post-pandemic world of today global virtual team training might require adjustments and modifications. The survey panel responded in late summer of 2021, at that time 20% of the survey respondents had no training for participation on global virtual teams. As the COVID-19 pandemic continues to morph from variant-to-variant, global virtual teams should adapt and allow global virtual teams to evolve to maintain the same or more extraordinary performance results,

The leaders also might need to modify their management style to lead team performance to the same or greater levels of team performance experienced by face-to-face teams. Managing global virtual teams with severely limited or no face-to-face interaction, only audio and occasional video communication, and remote ‘work-from-home’ job and task activity administration to gain team support, collaboration, trust,

performance, etc. It is recommended that managers teach and coach global virtual team members more than in the face-to-face team environment.

Implications for Social Change

Global virtual teams have gained prevalence in both for-profit and not-for-profit organizations from the standpoint of economies of scale and organizational efficiency. With the onset of the COVID-19 pandemic in early 2020 and the variants of the disease in 2021 organizations have had to search for ways to continue project teams. Reflecting on the fact that an organization in pre-pandemic times may have managed project teams in a face-to-face meeting environment, this option for managing project teams ceased with a full-stop mandate from government for employees or members of organizations to no longer interact within the same physical space forcing organizations to seek alternatives for managing project teams. This immediate cession of face-to-face meetings brought on the need for project teams to meet in a global virtual format. The world experienced the innovation of new technologies like Zoom, WebEx, etc. that made it easier for project teams to become global virtual teams and as team members learned to navigate these new technologies global virtual teams became much more nimble, productive, and adapt at attaining team goals.

The aforementioned factors and causes for more significant numbers of global virtual teams within for-profit and not-for-profit organizations means that the social implications for change are significantly grander that when I began this study. This research introduces social change at an unprecedented juncture in world history. Organizations across the globe were faced with a requirement to embrace global virtual

teams in order to preserve the organization when face-to-face meetings were no longer permitted occur. This research was critical to social change bringing forth a greater understanding of how global virtual teams form, mature, and perform. As businesses, charitable organizations, local, state, and federal government, community and social organizations, and others were forced to adopt and implement a form of global virtual team framework, the social implications of this research become timelier and more relevant to a larger population than when the idea for research was conceptualized. The current world order of dealing with COVID-19 and the variants of the disease, as well as the predominant acceptance, evolution, and utilization of global virtual teams among organizations of all types necessitate that additional research immediate to the influences and impacts of global virtual teams is essential to promote even more significant social change.

The results of this study were significant to management practices by examining managers' influence on knowledge sharing in teams. Management styles such as transactional, transformational, authoritative, participatory, consultative, persuasive, collaborative, etc. have usefulness in global virtual team situations. The positive implication of this study was that it provided a practical and useful means for organizational managers to know what and how LMX relationship quality moderates the predictive relationship between knowledge sharing and global virtual teams' performance, where knowledge sharing is assumed to produce higher team performance. This probe into a LMX framework can assist organizational managers in making the necessary changes and implementations to structures, strategies, and policies (Solli-

Sæther & Karlsen, 2014). Organizational managers can use the knowledge gained in this study to facilitate greater knowledge sharing in their global virtual teams, thereby improving both business and global virtual team success, as well as bettering interpersonal relationships within global virtual teams (Yeo & Gold, 2014). Thus, this study was significant for social change identifying how leader-member relationship quality can improve global virtual team performance in business and not-for-profit organizations actively exploiting global virtual teams translating to an improved global economy, greater social interaction across our world, and essential to universal social upliftment within global virtual team proliferation worldwide.

The results of this study benefited organizations using global virtual teams because the information from this research led organizational managers and management teams to reconsider their leadership styles concerning the virtual team context. Another consequence for social change from this study is that organizational managers may recognize the needs of global virtual teams as not being identical to face-to-face teams and reach self-designed styles for improved team efficacy and collaborative discovery of furthering global virtual team interaction. Furthermore, managers can apply the knowledge gained in this study to assess the functioning of their global virtual teams and determine what factors result in less-than-desired global virtual team performance goals and will be able to critically assess the multiplicity of societal dynamics of their global virtual team.

Conclusions

The purpose of this study was to discover the extent of the predictive power of knowledge sharing on global virtual team performance and how LMX quality moderated this relationship. Utilizing the general linear multivariate test MANCOVA, survey questions VTP8–VTP11 formed the computed dependent variable virtual team performance. The independent variable KSB was a computed variable made up of the transformed variables KSB2 and KSB63 as the computed variable, KSBWould-Have. The LMX relationship quality covariate was a computed variable consisting of the survey questions LMX1 and LMX6 as a computed variable, LMXSatisfiedConfidence. LMXSatisfiedConfidence as the covariate, was not correlated with the independent variable, KSBWould-Have, and was correlated with the dependent variables, VTP8–VTP11 and was used as a moderating variable.

The global virtual teams' performance variable, VTP10, was less significant that the global teams' performance variables, VTP8, VTP9, and VTP11, was never-the-less significant between the computed independent variable, KSBWouldHave. Thus, for the RQ1: "To what extent does knowledge sharing influence global virtual teams' performance?" the alternative hypothesis was accepted. For the second RQ, "To what extent does LMX relationship quality moderate the relationship between knowledge sharing and global virtual teams' performance?," the alternative hypothesis was also accepted because VTP8, VTP9, VTP10 and VTP11 - LMXSatisfiedConfidence indicated the between-subjects effects of P-Values or Significance to be 0.000 for all dependent variables with the computed covariance of LMXSatisfiedConfidence.

This study provided further understanding about the factors that impact knowledge sharing among global virtual team members and the performance of global virtual team. The research also represents findings relating to global virtual team members and leaders. These understandings and findings will contribute to the knowledge base pertaining to the sociodemographic relationships of global virtual team knowledge sharing, global virtual team performance, and the interaction of leaders and members on global virtual teams. When team members could see that others were able to contribute to and achieve team or organizational goals, and when members wanted the best for others within their team and were willing to provide help when required, they were more likely to be willing to share knowledge. Similarly, when managers and subordinates had confidence in each other, they were more likely to participate in doing the best for the team. Managers and subordinates can better assist global virtual teams in improving their performance. However, national culture differences, organizational cultural differences, language problems, time-zone difference, team size, technical problems, lack of sufficient training, lack of trust, and information and communications technology are challenges in improving knowledge sharing within global virtual teams (see Table 3).

Table 3

Global Virtual Team Challenges

Answer	Respondent Percent
National culture differences	11.3
Organizational cultural differences	9.2
Language problems	10.7
Time-zone difference	17.6
Team size	11.9
Technical problems	19.9
Lack of sufficient training	7.4
Lack of trust	6.2
ICT (Information and Communications Technology) problems	5.9

Overall results from this study indicate that knowledge sharing had a highly significant impact to global team performance and LMX relationship quality within global virtual teams was a significantly impactful moderator to the relationship between knowledge sharing and global virtual teams' performance.

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Appendix A: Permissions

Dear Bob,

For me, it's OK to adopt our survey, please ask permission of my supervisor Ass. Prof. Dr Yusmadi if she don't have mind also. I attache the survey "61 question questionnaire" with this email. Also I attached our research paper
"Measuring the Global Virtual Teams (GVTs) Performance: Confirmation Study" which represents all the likert scale that we depended on to build our survey. My advice to you is to check all our research papers in "Research Gate" I think it will be useful for you.

Besr Regards,

Dr. Ali Yahya Gheni
[redacted]

PhD Holder From:
Department of Information Systems
Faculty of Computer Science and Information Technology
University Putra Malaysia

Lecturer at:
Department of Computer Science
College of Education for Pure Science (Ibn Al-Haitham)
University of Baghdad

On Tuesday, October 16, 2018, 1:53:12 PM GMT+3, Robert Goodson [redacted] wrote:

Dear Dr Yahya,

Thanks for the original work.

Can I have permission to use your 61 question questionnaire? If so, will you please send me the 61 question questionnaire and the likert scale you used?

Regards,

Bob Goodson

Yes, you can use the survey instrument included in my doctoral dissertation entitled, "Determinants of Knowledge Sharing Behavior of Knowledge Workers: Development and Test of an Integrated Theoretical Model,". Please make sure that you give full credits and indicate that you have our permission in your dissertation and any published journal articles based on your dissertation. You also need to send us a copy of your dissertation and related journal articles.

I wish you a fruitful and successful doctoral research project.

Sincerely,
Anitha Chennamaneni, Ph.D.
Department Chair & Associate Professor
Computer Information Systems
[redacted]

From: Bob Goodson [redacted]
Sent: Monday, September 17, 2018 1:46 PM
To: Chennamaneni, Anitha
Cc: Goodson (home) - FedEx Express [redacted]
Subject: [External] RE: [External] Requesting your permission

CAUTION: This email originated from outside of the University. Do NOT click links or open attachments unless you know the content is safe. If you believe this email is malicious or a phishing attempt, please contact ISO@tamuct.edu

Your survey is primary. Of course, I would need to cite the relevance and indicate the validity, which would mean referencing your work. The survey is ideal for my study, this is what I am requesting permission.

Regards,

Bob Goodson
1.901.434.9313 (Office)
1.901.230.0913 (Cell)

From: Chennamaneni, Anitha [redacted]
Sent: Monday, September 17, 2018 1:40 PM
To: Bob Goodson [redacted]
Cc: Goodson (home) - FedEx Express [redacted]
Subject: Re: [External] Requesting your permission

Are you planning to use just the survey instrument or the other content too? Please specify.

Appendix B: Questionnaire

Demographics							
D1	Gender	Male	Female				
D2	I have been employed with my current organization for:	Under 2 years	3–5 years	5–10 years	11–20 years	21–30 years	More than 30 years
D3	I have been employed in the transportation industry for:	Under 2 years	3–5 years	5–10 years	11–20 years	21–30 years	More than 30 years
D4	I was previously employed in another industry or by another company for:	Under 2 years	3–5 years	5–10 years	11–20 years	21–30 years	More than 30 years
Consider this statement for Questions 5 and 6: Face-to-Face Teams allow employees in the same company and in the same geographical locations to collaborate in face-to-face settings.							
F1	I have participated as a member on face-to-face teams.	Yes	No				
F2	I have participated as a leader on face-to-face teams.	Yes	No				
Consider this statement for Questions 7 and 8: Virtual Teams allow employees in the same company and in different geographical locations collaborate in virtual settings like conference calls, video calls, etc.							
V1	I have participated as a member on virtual teams.	Yes	No				
V2	I have participated as a leader on virtual teams.	Yes	No				
Knowledge sharing behavior							
KSB1	If given opportunity, I would share factual knowledge (know-what is important factual knowledge – e.g., what drug is appropriate for an illness) from work with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB2	If given opportunity, I would share business knowledge about the customers, products, suppliers and competitors with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB3	If given opportunity, I would share internal reports and other official documents with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB4	If given opportunity, I would share work experiences with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB5	If given opportunity, I would share know-how (know-how is skill and procedures – e.g., how to administer a drug) or tricks of the trade from work with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB6	If given opportunity, I would share expertise from education or	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	

	training with my team members.						
KSB7	If given opportunity, I would share know-why (know-why is understanding cause and effect relationships – e.g., understanding why a drug works) knowledge from work with my team members	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB8	To me, sharing knowledge with my team members is harmful.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB9	To me, sharing knowledge with my team members is good.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB10	To me, sharing knowledge with my team members is pleasant.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB11	To me, sharing knowledge with my team members is worthless.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB12	To me, sharing knowledge with my team members is wise.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB13	My boss thinks that I should share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB14	My colleagues think I should share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB15	Generally speaking, I accept and carry out my boss's decision even though it is different from mine.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB16	I have enough time available to share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB17	I have the necessary tools to share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB18	I have the ability to share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB19	Sharing knowledge with my team members is within my control.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB20	I am able to share knowledge with my team members easily.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB21	Even if I wanted to share, I do not have the means to share knowledge.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB22	Sharing knowledge with my team members improves the likelihood of getting a better work assignment for me.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB23	Sharing knowledge with my team members improves the likelihood	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	

	of getting a promotion for me.						
KSB24	Sharing knowledge with my team members improves the likelihood of getting a higher salary for me.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB25	Sharing knowledge with my team members improves the likelihood of getting a bonus for me.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB26	I expect to get more job security when I share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB27	When I share knowledge with my team members, I expect them to respond to my knowledge needs.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB28	When I share knowledge with my team members, I believe that my queries for knowledge will be answered in the future.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB29	I know that my team members help me, so it is only fair to help them out when they are in need of knowledge.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB30	My team members respect me, when I share knowledge with them.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB31	Sharing knowledge with my team members improves others recognition of me.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB32	My superiors praise me when I share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB33	I believe my status in the organization improves, when I share knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB34	Organizational members who share knowledge with others have more prestige.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB35	I share my knowledge to improve my reputation in the organization.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB36	Sharing knowledge with my team members makes me lose my unique value in the organization.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB37	Sharing knowledge with my team members makes me lose my power base in the organization.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB38	When I share knowledge with my team members, I believe I will lose my knowledge that no one else has.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	

KSB39	Sharing knowledge with my team members makes me lose my knowledge that makes me stand out with respect to others.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB40	I enjoy sharing knowledge with my team members.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB41	I enjoy helping my team members by sharing knowledge.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB42	It feels good to help my team members solve their work related problems.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB43	Sharing knowledge with my team members gives me pleasure.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB44	Members in our department keep close ties with each other.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB45	Members in our department consider other members standpoint highly.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB46	Members in our department have a strong feeling of one team.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB47	Members in our department cooperate well with each other.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB48	Our department encourages suggesting ideas for new opportunities.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB49	Our department puts much value on taking risks even if that turns out to be a failure.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB50	Our department encourages finding new methods to perform a task.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB51	Members in our department can trust department head’s judgment to be good.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB52	In our department, objectives which are given to us are reasonable.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB53	In our department, our boss doesn't show favoritism to anyone.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB54	Whenever I want to share knowledge, I can easily access tools and technology in our organization.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB55	In our organization, it is easy to use tools and technology to share knowledge.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB56	In our organization, tools and technology for	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	

	sharing knowledge is reliable.						
KSB57	Tools and technology for sharing knowledge is available when it is needed.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB58	Tools and technology for sharing knowledge can be customized to fit individual needs.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB59	I am satisfied with the overall quality of tools and technology for sharing knowledge in our organization.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB60	Tools and technology for sharing knowledge is intimidating to me.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB61	I hesitate to use tools and technology to share knowledge for fear of making mistakes.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
KSB62	I shared factual knowledge (know-what) from work with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB63	I shared business knowledge about the customers, products, suppliers and competitors with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB64	I shared internal reports and other official documents with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB65	I shared work experiences with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB66	I shared know-how or tricks of the trade from work with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB67	I shared expertise from education or training with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB68	I shared know-why knowledge from work with my team members	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB69	I use e-mail to share knowledge with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB70	I use discussion forum (using tools like electronic bulletin board, chat room etc.) to share knowledge with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB71	I use desktop computer conferencing (using networked PC simultaneously for discussion and information exchange with tools such as net meeting, instant	Rarely	Occasionally	Sometimes	Fairly often	Very often	

	messaging, etc.) to share knowledge with my team members.						
KSB72	I share knowledge by inputting it into knowledge repository/company databases (containing existing expertise, lessons learned, best practices etc.).	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB73	I use intranet (including corporate portal) to share knowledge with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB74	I use computerized directory on experts with specific knowledge to locate the expertise that my team members need.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB75	I use videoconferencing to share knowledge with my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB76	I use teleconferencing to share knowledge my team members.	Rarely	Occasionally	Sometimes	Fairly often	Very often	
KSB77	I share knowledge through face-to-face discussions with my team members	Rarely	Occasionally	Sometimes	Fairly often	Very often	
Virtual team performance (if you have only participated on face-to-face teams, please respond by selecting "No Virtual Team Experience")							
VTP1	Virtual teams are able to meet schedules.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP2	Virtual teams are able to meet budgets.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP3	Thinking of your virtual team experience or experiences, I can finish my task on time.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP4	Thinking of your virtual team experience or experiences, I can finish my task easily.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP5	Thinking of your virtual team experience or experiences, I feel excited to do my tasks.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP6	Virtual teams' final product is able to meet technical specification.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP7	Virtual teams' final product is able to meet appropriate level of functional performance.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP8	Virtual teams' final product is able to meet customer needs.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP9	Virtual teams' final product is able to resolve customer issues.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	

VTP10	Virtual teams' final product can be used by customer.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP11	Virtual teams' final product is able to achieve customer satisfaction.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
VTP12	How many projects have you participated in where project team was a virtual team?	1–10	11–20	21–30	More than 30		
VTP13	How many members worked with on your last virtual team?	1–10	11–20	21–30	More than 30		
VTP14	What was the duration of your last project in a virtual environment?	Less than 1 month	More than 1 month	More than 1 year			
VTP15	How many native languages where used by members of your last virtual team?	1–5	6–10	More than 10			
VTP16	How many different geographical locations were represented in your last virtual team?	1–5	6–10	More than 10			
VTP17	What were the most time differences between team member locations in your last virtual team experience?	Less than 1 hour	1–5 hours	More than 5 hours			
VTP18	In your last virtual team project, did you notice trouble with of the following? (Select all that apply)	National culture differences	Organizational cultural differences	Language problems	Time zone differences		
		Lack of trust	ICT problems	Technical problems	Lack of training		
VTP19	Have you received any training to work with virtual teams?	Yes	No				
Leader–member exchange (Please respond to the following from the perspective of your membership on a virtual team. If you have no experience as a member of a virtual team, respond accordingly.)							
LMX1	Do you know where you stand with your leader (follower) . . . [and] do you usually know how satisfied your leader (follower) is with what you do?	Rarely	Occasionally	Sometimes	Fairly often	Very often	
LMX2	How well does your leader (follower) understand your job problems and needs?	Not at all	A little	A fair amount	Quite a bit	A great deal	
LMX3	How well does your leader (follower) recognize your potential?	Not at all	A little	Moderately	Mostly	Fully	
LMX4	Regardless of how much formal authority your leader (follower) has built into his or her position, what are the chances that your leader (follower) would use his or her power to help you solve problems in your work?	None	Small	Moderate	High	Very high	

LMX5	Again, regardless of the amount of formal authority your leader (follower) has, what are the chances that he or she would "bail you out" at his or her expense?	None	Small	Moderate	High	Very high	
LMX6	I have enough confidence in my leader (follower) that I would defend and justify his or her decision if he or she were not present to do so.	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	
LMX7	How would you characterize your working relationship with your leader (follower)?	Extremely effective	Worse than average	Average	Better than average	Extremely effective	
LMX8	Are you currently a member of management or individual contributor in the organization?	Manager	Individual contributor				