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A Survey Comparison of Virtual and In Situ Leadership Competencies

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Walden University
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Abstract

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MS, Florida Institute of Technology, 1996

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Dissertation Submitted in Partial Fulfillment

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Abstract

Leaders support many workplace configurations that do not rely on the collocation of leaders and followers and may exhibit different interaction competencies with employees. There was limited understanding about these leadership competencies required in virtual work environments. The purpose of this nonexperimental study was to examine the relationship between the percentages of time spent weekly as a virtual leader (IV) and 6 leadership competencies (DVs), such as a leader's vision and values. The theoretical framework was based on Sandstrom and Smith's legacy leadership model. Study participants were randomly selected from LinkedIn.com forums ($N = 93$). Data were collected using the Legacy Leadership Competency Inventory LLCI instrument and analyzed using linear regression to assess the effect of percentage of work time as a virtual leader on a summative score for all answers on the LLCI and each of 5 competency indicators. Significant relationships between the IV and 2 DVs were identified: supporting leadership inspiration through communication and diverse team leadership. Findings may assist managers to improve leadership development, hiring, and support with global teams. One recommendation would be to extend the study participation to more diverse population groups to obtain better data. Implications of positive social change could be a reduction in costs to employers based on improved leadership competencies leading to more effective management. Employees could benefit from more enlightened leadership leading to a healthier workplace. Finally, customers might benefit from lower costs from more effective organizations.

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Dedication

I dedicate this dissertation to Nathan Walker. I am so lucky to have enjoyed your encouragement and partnership. Thank you for the truly tireless support. I also dedicate this dissertation to Dr. Debra Haney. Friends like you make me unbelievably rich.

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Developing a dissertation is a unique pursuit, and I am fortunate to have been helped by so many people. Dr. Robert Parent was my first mentor, and I learned so much from him about encouragement and authenticity in leadership. Many thanks to Dr. Branford McAllister for his help and support as well. Dr. Robert Kilmer also served on my committee, and I appreciated his contributions. I am thankful for the support from Dr. Jeannine Sandstrom and Dr. Lee Smith, who developed the instrument used in this study. Special thanks also go to Darin Stephens, Brian Laird, and Tawnya Lubbes for building memories and friendships together. Thank you to my family and friends, of whom there are too many to name, who have encouraged me along this very long and interesting adventure. I am very fortunate to be supported by a loving community.

One final acknowledgement belongs to the very engaging, hardworking, and supportive Dr. David Gould. As a mentor and motivator, Dr. Dave is my hero. Thank you for your attention, scholarship, honesty, and encouragement. I feel very fortunate to have learned from you.

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Chapter 1: Introduction to the Study

As businesses become more global in scope and operation, leadership must change to accommodate business processes that involve teams around the world. Technology, especially information and communications technology, requires new skillsets and abilities to effectively lead teams to meet business goals. Global leaders are now often required to conduct business without the benefit of face-to-face communications or informal conversations that typically occur in an office environment. However, foundational literature in business leadership is based on in-office environments before the advent of virtual teams, rich communication platforms, and technology-moderated global leadership. Current journal articles address the concept of virtual teams, technology-based communications, and team management, but qualifying the different needs for virtual leaders remains as a gap in the literature. The information of whether virtual leaders are different from face-to-face, or in situ, leaders is limited.

The study background includes short discussions that following chapters explore in detail, which include research foundations, the problem statement, and the theoretical frameworks supporting an exploratory leadership competency study. I continue by presenting research questions, hypotheses, and variables, along with definitions and assumptions used throughout this document. This chapter concludes with a discussion of the significance of the study in the field of leadership development.

Background of the Study

The nature of business is changing to include virtual teams that use technology to moderate and facilitate their communication and workflows (Barnett, Jones, Bennett,

Iverson, & Bonney, 2012; DeRosa, 2009; Halal, 2009; Henttonen & Blomgvist, 2005). Leadership competencies defined for *in situ*, or physically present, organizational leaders may not effectively support virtual team leaders in an environment where physical contact is rare or nonexistent. Many business leaders may need to reevaluate current leadership competency models considering virtual work environments, employee expectations, and emerging global business models. Researchers and business leaders developed most leadership theories and frameworks when in situ leaders were the only types of leaders available. Although previous researchers provided a strong social science foundation for leadership research, workplace environments are now more varied (Dennis, Meola, & Hall, 2013; Smith & Torppa, 2010). Tied to the advancement of technology, virtual workplaces are relatively new phenomena, and these new work environments have uncovered a gap in the leadership competency development literature (Bell & Kozlowski, 2002, Hartley, 2016). Examining self-assessed leadership competencies is one method to discover if virtual leaders are significantly different from their in-situ counterparts.

Workers are changing, too. The expectations related to readily accessible technology, high volume communications, and social networking have made the newest generations of workers more willing to use technology-moderated communication within the work environment (Chen & Lin, 2014; Espinoza, Ukleja, & Rusch, 2010; Myers & Sadaghiani, 2010; Poeppelmann & Blacksmith, 2015). Studies indicated that leaders may have unique challenges when managing workers with high technology fluency because the work styles of previous generations may not apply to this emerging group (Bell &

Kozlowski, 2002; Brake, 2006, Snyder, 2012). Workers, both virtual and in situ, are more likely to find themselves in a multicultural work environment, a challenge that many leaders are unprepared to address when conflict arises among workers in a virtual environment (Reilly & Lojeski, 2009).

Recent research has indicated that businesses are changing to become more global and virtual (Bowen & Inkpen, 2009; Bueno & Tubbs, 2012; Morgan, Paucar-Caceres, & Wright, 2014; Speechley, 2005). Technology-moderated communications are at the heart of virtual workplaces, and researchers have established that virtual employees have different needs than those located in a multiperson office environment, specifically around communication styles and trust development (Krumm, Kanthak, Harmann, & Hertel, 2016; Saunders & Ahuja, 2006). Researchers often recommend further consideration of virtual leadership models, but the literature is currently speculative and not supported by empirical studies (Richardson, LaFrance, & Beck, 2015; Thorn, 2012). Considering the recognized importance of leadership development to organizational success across the social sciences, the increased number of virtual workplaces requires meaningful data to definitively establish leadership competencies for virtual work environments and explore the existing research gap (Alldredge & Nilan, 2000; Overbee & Suvanujasiri, 2012).

Problem Statement

While the number of virtual work environments is growing rapidly, current understanding of virtual team dynamics and leadership is still unclear, and organizations lack an understanding of the competencies that make strong virtual leaders (Cavanaugh,

Sabatini Fraone, & Kacher, 2014). The problem was the limited understanding about leadership competencies and activities required in virtual work environments.

Most leadership studies have focused solely on environments where the leader is in situ; that is, the leader is in a physical location, present and available for employees to communicate directly with the leader. However, virtual leadership implies that this is not the case for the leader or the workers and that leaders are not available for ready communication (Faraj, Kudaravalli, & Wasko, 2015; Korzynski, 2013; Lee-Kelley, 2006). Leadership competencies identified in previous studies may not be the same as those needed for effective virtual leaders, and more research was necessary to determine if a relationship exists between virtual leadership activities and leadership competencies.

Purpose of the Study

For this quantitative study, I correlated the percentage of time worked as an online leader with leadership competencies. Existing literature has already established that technology-moderated virtual teams are business phenomena different from previous in-office or in situ work environments, with unique success criteria and employee expectations (Rhoads, 2010; Saunders & Ahuja, 2006; Vakola & Wilson, 2004). However, primary research literature is rare or nonexistent regarding the competencies of virtual leaders and how they differ from in situ leaders. The purpose of this quantitative nonexperimental study was to examine the relationship between the percentage of time spent weekly as a virtual leader and leadership competencies.

Theoretical Foundation

To develop a quantitative study, I sought to be inclusive of leadership types and styles, including components of transformational leadership (Bass & Avolio, 1993; Bennis, 2009), transactional leadership (Burke, 2010), and situational leadership (Aleksic, 2016; Hersey, Blanchard, & Natemeyer, 1979, Kerns, 2015, & Oostrom, Born, Serlie, & van der Molen, 2012). Discussion is included in Chapter 2 for each of these leadership styles. In conducting this investigation, I focused on competency-based leadership as discussed in the existing research. Regardless of the organizations and participants involved the study, the theoretical foundation of the study was independent of emphasis on leadership styles, and included multiple leadership models. The study instrument also focused on competencies, not necessarily leadership styles.

The theoretical base for the study was the legacy-leadership competency model developed by Sandstrom and Smith (2008), who designed this model to provide a meaningful assessment of leadership competencies for scholar-practitioners. In the development of the instrument based on the model, the authors synthesized existing research on leadership competencies into five core competencies:

1. Holder of vision and values
2. Creator of collaboration and innovation
3. Influencer of inspiration and leadership
4. Advocator of differences and community
5. Calibrator of responsibility and accountability (Sandstrom & Smith, 2008)

This competency set is one of many competency frameworks in the research of leadership development, but it was unique in its approach to systemically organize competencies into a cohesive whole and was supported by a statistically sound instrument. While there is some debate on the value of competency models for leadership development in the literature, the majority of the models examined by researchers were incompletely structured and specific for a single organization or industry (Clement, Hall, O'Connor, Qu, Stefl, & White, 2010; Garman & Johnson, 2006; Overbee & Suvanujasiri, 2012; Richards, 2008; Ryan, Spencer, & Bernhard, 2012). With their more inclusive approach toward competency identification and self-assessment, Sandstrom and Smith's (2008) model considered multiple leadership competency components, including personal qualities and professional actions in their model development. As a global competency model for use in a technology-proficient organization, Sandstrom and Smith's legacy leadership framework was an effective and appropriate choice for my study.

The independent variable (*IV*) was the self-reported percentage of the leader's time as a virtual leader, from 0% to 100%. The dependent variables (*DV*s) were the outcomes on a competency instrument in five competency dimensions and one composite score, used to determine if there was a relationship between virtual leadership work percentage and difference in any of the five competency dimensions or in the overall instrument

Research Questions and Hypotheses

The research questions were related to Sandstrom and Smith's (2008) legacy leadership framework developed into the legacy leadership competency inventory (LLCI). Each of the *DV*s was related to the area measured by the instrument. The instrument includes five different competencies, and additional test was conducted for the overall instrument score. For each competency, there was a null hypothesis indicating there was no measurable relationship (Sandstrom & Smith, 2011b). For each of the hypotheses, the null hypothesis was not rejected if the *t*-statistic derived using simple linear regression failed to exceed the critical value of *t* (or if the associated *p*-value is greater than the level of significance), indicating no significant relationship was demonstrated for that competency category.

RQ1: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI (*DV1*)? *DV1* is the *composite score* for the entire instrument including all the competency components.

$H_{0(composite)}$: There is no relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

H_1: There is a relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

RQ2: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency *for holder of vision and values* (*DV2*)? *DV2* is the score of *holder of vision and values.*

$H_{0(vision)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *holder of vision and values.*

H_2: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for competency of *holder of vision and values.*

RQ3: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation* (*DV3*)? *DV3* is the score in *creator of collaboration and innovation.*

$H_{0(collaboration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

H_3: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

RQ4: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership* (*DV4*)? *DV4* is the score in *influencer of inspiration and leadership.*

$H_{0(inspiration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

H_4: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

RQ5: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community* (*DV5*)? *DV5* is the score in *advocator of differences and community.*

$H_{0(differences)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

H_5: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

RQ6: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability* (*DV6*)? *DV6* is the score in *calibrator of responsibility and accountability.*

$H_{0(responsibility)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

$H_{6\ (responsibility)}$: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

Nature of the Study

The research framework of the quantitative study was a model developed by Sandstrom and Smith (2008) that included elements of both transformational leadership (Bass & Avolio, 1993) and situational leadership (Hersey, 1984). Sandstrom and Smith selected a framework of five core competencies and several subcompetencies for developing a research basis and the statistical reliability of their related instrument. Chapter 3 includes additional discussion and validation of this instrument. Surveys are an effective method for gathering sociological data and are well-represented in the research literature, and self-assessments are commonly used in business settings to help survey participants better describe themselves and others (Beitler, 2006; Bryman, 2012; Creswell, 2008; Darr & Catano, 2008; Groves, Fowler, Floyd, Couper, Lepkowski, Singer, & Tourangeau, 2009; Rea & Parker, 2005; Zakaria & Taiwo, 2013). After consideration of the different survey options, a self-assessment survey delivered in an electronic format is an effective method for reaching participants, many of whom were geographically dispersed and may not reside close to an office environment (Cavanaugh et al., 2014).

I used a quantitative survey approach to obtain leadership competency data. Quantitative approaches are preferred over a qualitative or mixed-methods approach due to informal feedback received from potential organizations; time-constrained managers were more interested in short, quantitative instruments that could be distributed electronically and completed in 30 minutes or less. The LLCI is a short, online self-assessment questionnaire of 50 questions that can be completed in 10 minutes or less, a requirement expressed by various organizations when asked to potentially participate in the study. I collected data anonymously from online self-selected professional groups of leaders and virtual leaders. Each completed survey provides an index for each of five competency categories, and there is an overall score. The *IV* was self-reported percentage of the leader's time as a virtual leader from 0% to 100%, while the dependent variables were related to the responses on the entire survey and each competency section. The categories of the survey included an overall score (*DV1*), and responses in each of the five competency areas: *holder of vision and values* (*DV2*), *creator of collaboration and innovation* (*DV3*), *influencer of inspiration and leadership* (*DV4*), *advocator of differences and community* (*DV5*), and *calibrator of responsibility and accountability* (*DV6*). Data were analyzed through simple linear regression to identify relationships between the percentage of time worked as a virtual leader and competency scores.

Definitions

Competency: Outcomes-relevant measures of knowledge, skills, abilities, and traits and/or motives (Garman & Johnson, 2006; McClelland, 1973).

In situ: Literally, from the Latin phrase *in place*, used in this context to identify leaders who are collocated with their employees or team; preferable to the terms face-to-face or collocated because larger organizations and teams may be situated in several locations, preventing interactions except on occasion (Searle, 2000).

Telepresence: Technology-based interactions using high levels of interactive technology with visual and auditory cues closely aligned to face-to-face contact designed to simulate real-time interactions (Rhoads, 2010).

Virtual leader: A leader responsible for the success of a geographically dispersed team with a common characteristic of technology-moderated communication (DeRosa, 2009).

Virtual team: A distributed group of people working together across distances to achieve a common purpose via technology (Brake, 2006).

Virtual work environment: A geographically dispersed team environment where work processes are conducted "through use of the telephone, e-mail, electronic bulletin boards, chat groups, electronic databases, or teleconferences" (Berry, 2011, p. 188).

Assumptions

This study included the primary assumption that all virtual leaders face a common environment, experienced similar types of problems, and that the measured leadership competencies were common among all managers in the study group. By definition, virtual leadership requires a technology infrastructure that is robust enough to enable technology-moderated communications, with the assumption that sufficient technology exists to enable effective virtual leadership. Leaders were self-selecting for this study,

reflecting the assumption that participations provided truthful and accurate information about their work styles, patterns, and instrument responses (Fan & Zheng, 2010). In addition, a consistent leadership culture was assumed throughout organizations for both virtual and in situ leaders.

As geography was not as important for this study as other research projects situated in an office or single campus environment in leadership competency development, consistent leadership traits were assumed regardless of geography or local culture. Positive leadership competencies for one geographically local culture may be somewhat different in other cultures; thus, one assumption was the commonality of leadership competency expectations throughout the organizations. For example, the in-office culture and dynamics in a company branch in Africa may be very different from a branch in the China, the United States, or Europe, just as the social culture in each of those areas is different. The same was true for different industries: expectations and leadership competencies may change slightly from one industry to another, but the assumption was that leadership competencies were consistent among industries and organizations. I assumed in my research that an effective leader shared common competencies with effective leaders in other organizations and industries. The results of this study may be considered generalizable for organizations and cultures like North American companies with technology based communication strategies.

Scope and Delimitations

The study was a single survey of self-identified leaders employed in multiple companies who were members of online leadership groups and forums. Participation was

voluntary, and no protected classes or participants younger than 18 years of age were included in the study. The specific positions and team characteristics of the participants varied, as well as the tenure held by the leader within the organizations. Communication was conducted electronically, so geographic distance of the leaders or their teams had minimal impact on their ability to respond to communications.

Participants were enrolled in the study through a website link where demographic data were collected and a thorough explanation of the study was provided along with a discussion of data protection measures and benefits for the participants. After participants agreed to the data use and confidentiality agreement, participants continued to the instrument to complete the survey online. The raw data from this instrument were provided to me for the study and the participants received a personal summative report of responses as compared to general leadership responses if they requested it in the survey.

Limitations

Language itself often limits survey instruments, especially those measuring competency or capability concepts (Rea & Parker, 2008). The instrument was in American English and used common terms and vocabulary that were not considered technical or specific to the virtual workplace. The conceptual language used gave meanings to the words for each item, which may be a limitation to the reliability and applicability of this study to other cultures and geographies. As a single instrument, significant data support the validity and reliability of the outcomes, but it was still only a single instrument, and limited the full scope of responses for a deeper discussion of leadership competencies in virtual workplaces. The study was also limited by the leaders'

self-assessment of their competencies and perceptions of their roles in their organizations. Finally, research in leadership competencies is still emerging, especially in the fields studying millennial workers who appeared to have a different set of leadership expectations and competencies. This study included some millennial workers, but did not focus on generational differences in leadership styles. This study was not designed to make any distinctions among the core belief systems and work-life expectations of leaders, but was limited to leadership competencies in a work environment.

To address these limitations, participants accessed the survey through a website with both video and text introductions to the study and explanations to help participants understand the survey items and answer demographic questions consistently. As a study addressing a literature gap, consistency in understanding the participant group and a solid understanding of leadership competencies will help establish a more meaningful data set.

Significance of the Study

Significance to Theory

There was a lack of scholarly literature, research, and codified knowledge related to virtual leadership competencies although several researchers indicate that there might be a different set of competencies for successful virtual leaders (Al-Ani, Horspool, & Bligh, 2011; Bourhis & Dubé, 2010; Brake, 2006; Merriman, Schmidt, & Dunlap-Hinkler, 2007; Reilly & Lojeski, 2009; Zimmerman, Wit, & Gill, 2008). Instead, authors spoke in broad generalities that did not provide an effective, constructive approach toward discovering if there were virtual leadership competencies separate from

previously developed leadership competencies. The study addressed the literature gap with data to advance the field of leadership competencies in virtual work environments.

Significance to Practice

By exploring percentage of time spent leading virtually and leadership competencies, organizations may be able to affirm their leader hiring, training, support, and evaluation processes, even if no difference is discovered (Spencer-Scarr, 2010). New leadership models, including virtual leadership competencies, will help inform organizations as they explore and develop better processes that meet the needs of their virtual leaders. For organizations forming virtual work environments, the study supported essential decisions regarding team skillsets and composition. Learning more about leadership competencies in virtual teams can also positively affect newly developed virtual communities.

Leadership is an expanding topic and technology is often a catalyst for new industries, new business models, new workforce groups, and new perspectives on leading at every level. Leaders must change to meet these needs and expectations in the lives of organizations, and this research supports one of those advancements, from in situ management styles to virtual management styles (Bell & Kozlowski, 2002). Knowing more about the competencies of effective virtual leaders and how they differ from previous competency models supports a better fit within the virtual work environment and among employees and leaders.

Significance to Social Change

Social change results in an improvement in the lives and conditions of groups and individuals, and this study is a mechanism for improving the work environment for virtual workers and leaders. Understanding virtual leadership competencies may support better professional and personal development in organizations where there is limited understanding of virtual work environments. Leaders may receive the support they need to create a more flexible or diverse workplace by including virtual management as a work option for employees (Clemons & Kroth, 2011). As business globalization increases, positive social change can occur when new employees are hired remotely in a region with limited employment opportunities, all facilitated by technology-moderated communication and effective virtual leadership.

Summary and Transition

The idea of identifying, modeling, and supporting effective leaders is the driving force behind thousands of studies. Previously, researchers conducted these studies in organizations where the leader was physically present and able to directly assess employee performance if necessary. In virtual workplaces emerging through creative uses of communication technology, leaders in virtual environments may not see their employees in person more than once or twice a year, if at all. While several studies exist on the difference communication technologies make on brain development, social skill development, and maturation processes, researchers have not yet turned their attention to the competencies needed to identify effective virtual leaders.

The research determined if the time spent leading virtually is related to leadership competencies, which contributes to the literature around leadership competency development in emerging work environments. In this research, self-selected leaders participated in a quantitative study specifically designed to examine research-supported leadership competencies with a statistically valid and reliable survey instrument.

The following chapters included one approach for determining if there was a relationship between percentage of time spent on virtual leadership activities and leadership competencies. Chapter 1 is an overview of the background, rationale, and approach to explore leadership competencies. Chapter 2 includes the foundations of leadership competency concepts, and explores the current literature by examining leadership competencies, virtual work environment, virtual leadership, and a framework for examining leadership competencies through a quantitative survey instrument. Chapter 3 includes methods for conducting a study to determine if there are differences between virtual and in situ leaders. The study contributes to positive social change by improving business leadership strategies that more accurately reflect the business opportunities, leadership selection, personnel development, and virtual team support through research-based practices and methods. Chapters 4 and 5 review data collection, data analysis, and findings of the study, along with any recommendations and conclusions.

Chapter 2: Literature Review

Work relationships, especially those among workers or workers and their leaders, all exist on a wide spectrum of interactions ranging from peripheral involvement on work tasks to over-involvement commonly called micromanagement. Work interactions between leaders and employees rely heavily on leadership competencies or outcomes-relevant measures of knowledge, skills, abilities, and traits and/or motives (Garman & Johnson, 2006; McClelland, 1973). To further explore the concepts of leadership competencies, this chapter includes a literature review of the historical and current development and understanding of leadership competencies and applications. Summaries of texts and recent journal articles in this chapter provide a basis for the research on leadership competencies.

With the growth of virtual work environments in businesses, the need for leaders effective in virtual work teams continues to grow (Berry, 2011; Brake, 2008; Cavanaugh et al., 2014). Understanding the characteristics of virtual leaders provides a basis for developing meaningful selection, support, and development practices for businesses pursing virtual teaming strategies. Previous researchers emphasized in situ work environments, and business changes have created a gap in the literature that begins with understanding whether there is a meaningful difference between in situ and virtual leaders. I used a quantitative survey instrument to compare the leadership competencies of leaders, both virtual and in situ. I also examined the relationship, if any, between percentage of time spent leading virtually and competencies. The study purpose was to explore and potentially understand if there is a relationship between the amount of time

as a virtual leader and leadership competencies (Dennis et al., 2013; Rhoads, 2010; Saunders & Ahuja, 2006; Slade, 2015).

By exploring different types of research frequently studied in the literature, discussions in this chapter include transformational leadership (Burns, 1978; Galvin, Gibbs, Sullivan, & Williams, 2014; Yukl, 2009) and situational leadership (Hersey et al., 2004). Competencies, which are operational definitions of both skills and aptitudes, encompass multiple leadership types and business practices, and have developed into a robust field of study (Clark, 2012; McClelland, 1973; Morris & Williams, 2012; Quintana, Mora Ruiz, & Vila, 2014). Sets of competencies were evaluated for global leader competency development with various cultural backgrounds using both quantitative and qualitative techniques, but no studies exist for leaders in a virtual context (Maratbekova-Touron, 2009; Overbee & Suvanujasiri, 2012). The section on virtual work environments, another major component of the literature exploration, includes discussions of virtuality, multiculturalism, and trust development (Berry, 2011; Chang, Sy, & Choi, 2012; Lee-Kelly, 2008; Wilson, O'Leary, Metiu, & Jett, 2008). This section also includes the intersection in the literature of leadership competencies and virtual work environments, and the common threads for creating shared vision and effective cross-cultural communication (Cavanaugh et al., 2014; Clemons & Kroth, 2011; Thorn, 2012). The final section in this chapter includes a discussion of the legacy leadership framework developed by Sandstrom and Smith (2008), which serves as the core theoretical model of the study.

The literature review also includes sections on virtual environments and virtual leadership. Modern iterations of virtual workplaces are very different from the initial virtual work environments, and these differences will be explored through texts and recent journal articles. In the past, technology-based communication was limited to phone, telefax, and email, while more recent innovations in technology-moderated communication include videoconferencing, synchronous and asynchronous online work environments, social media, and flexible work arrangements that allow employees to be *virtual* workers as well as in situ workers. For that reason, a discussion of virtual environments is included along with a section on virtual leadership. As noted in Chapter 1, there is a gap in the primary research literature regarding virtual leadership; so, this section includes concepts from several sources to explore the differences between previously researched in situ leadership competencies and virtual leadership competencies.

Literature Search Strategy

Most research included in this document was obtained through Academic Search Complete, ProQuest Central, and EBSCOhost, using a variety of search terms and strategies, and span a period from 2010 to 2016. The online databases provided a wide variety of peer-reviewed journals and the business and management journals were the sources for most of the included articles. Specifically, the ABI/Inform Complete, Business Source Complete, Sage Premier, and Gale Virtual Reference Library databases were most helpful. Both ProQuest Central and Academic Search Complete databases provided several articles, too. In all cases, articles were delimited by being peer reviewed,

published within the last 7 years from the beginning of the search period (especially when search terms did not yield many articles), and reviewed for appropriateness before being included in this study. Search terms included *leadership*, *competencies*, *virtual business*, *virtual workers*, *leadership styles*, *technology-moderated*, *global teams*, *virtual teams*, *on-line communication*, *survey development*, and *building trust on-line*.

Like the journal articles, seminal literature complements the study of leadership, leadership competency development, and virtual team development. For example, leadership concepts were explored through review of texts by Burns (1978), Bass and Avolio (1993), Fullan (2003), Hersey (2004), Howell and Costley (2005), Lombardo and Eichinger (2011), and Yukl (2009). Virtual team leadership topics in seminal literature were more difficult to find, especially those texts based on strong research models, but a few examples exist as examples of seminal texts in this area, including Brake (2008), Clemons and Kroth (2011), DeRosa (2010), Espinoza, Ukleja, and Rusch (2010), and Li and Bernoff (2008). Leadership competency topics were presented in texts by Burke (2010), Eitzen and Zinn (2011), and Sandstrom and Smith (2008).

Another source of peer-reviewed literature in this dissertion is through research summarized by online journals and leadership special interest group notifications. The *Journal of Technology-Moderated Communication*, the *First Monday Peer-Reviewed Journal on the Internet*, Cavanaugh et al.'s (2014) *National Workplace Flexibility Study*, and the *Journal of the Social Science Research Network* were all delivered to my email in a summary form in special interest group mailings. In articles from these sources, only peer-reviewed articles were included in this study. Overall, 169 references (127 articles

and 42 texts) are included in this document, with 72 articles and 9 texts published after 2011.

Theoretical Foundation

Several theoretical foundations are included in this chapter, the most prominent being Burns' (1978) theory of transformational leadership. According to Burns, transformational leadership relies on connecting with the moral values of followers and then providing opportunities for workers to learn, demonstrate expertise, and use their energy and skills to address business problems. In practice, this means that leaders seek to maintain a constant awareness of the importance of task outcomes, organizational vision, and goals, and that followers are supported in their personal growth as they seek to reach the outcome, vision, and goals. This leadership approach creates a systemic pattern of reinforcing behaviors, where the organization supports its employees as an extension of its mission and vision, and employees support the organization as an extension of personal growth and believing in the mission and vision. Yukl (2009) also suggested that transformational leadership is extremely important in dynamic, change-oriented leadership fields, fields often related to virtual team environments. High rates of business change require employees' individual contributions to overcome challenges and demonstrate innovation to meet business goals.

Another foundation was Hersey's (2004) theory of situational leadership. First introduced in 1979 by Hersey et al., the situational leadership model has been revised several times. This theory provides a framework for leaders to work with followers using supportive and directive behaviors through directing employees with low competence and

high commitment, coaching those with some competence and commitment, supporting employees with high competence and variable commitment, and delegating to team members with high competence and high commitment. In this theoretical model, leaders change their style to work with their team members, based on individual members' abilities, commitment, and task complexity (Hersey, 2004).

The third theoretical model is the foundation for the specific model used in this dissertation, leadership competencies. In 1973, McClelland questioned the reliability and validity of intelligence and aptitude tests in his paper. At the time, the United States had invested in the idea of standardized tests to assess and track students into colleges and employment. McClelland (1973) realized the power that the resulting test scores had over the lives of students attempting to enter colleges and employment. By critically assessing the concept of intelligence and aptitude tests, McClelland indicated several objectives when looking for a better mechanism to explore human potential. The researcher felt that competencies could establish evidence for intelligence and aptitude to infer effective skills and behaviors for specifically defined roles (McClelland, 1973).

What resulted was a path of inquiry that changed the way social scientists looked at performance, learning development, employee *fit* in a job, and leadership abilities. In short, it was the beginning of the field of competency research. Instead of searching for the right assessment scores on an instrument to identify the best student, teacher, or employee, McClelland (1973) believed there were combinations of abilities, defined as *competence* or *competencies*, that may make a person successful, including communication skills, patience, moderate goal setting, and ego development.

Since McClelland's (1973) article was published, researchers have continued along his line of inquiry in businesses by examining the competencies of workers (Clark, 2012; Djurovic, 2011; Groves & Feyerherm, 2011; Rhee, 2008) and leaders (Byrd & Thornton, 2013; Morris & Williams, 2012; Overbee & Suvanujasiri, 2012). One notable article by Garman and Johnson (2006) described the ideas of leadership competencies by reiterating the definition of competencies in a business leadership setting as outcome-related through measuring the different skills, knowledge and abilities, but also the traits and motives of the leader (Garman & Johnson, 2006).

A static set of roles, tasks, or descriptions does not adequately describe the fluidity of the leadership role, but by describing competencies in more general terms, both leaders and employees had more flexible options for solving business problems and adapting to changes in the work environment. Green and McCann (2011) placed more specific concepts around leadership competencies, including honesty, respect, integrity, and trust, as well as practicing those expectations that the leader wished to find in subordinates. Each of these competencies encompassed broad areas of behaviors and could be identified by related *commitments*, which were specific, measurable, and demonstrable examples of competencies. For example, while one competency might be *inspire a shared vision*, and the corresponding commitments would include the ability to imagine future possibilities, as well as enlist others in sharing those imagined aspirations.

The core theoretical foundation for this dissertation is Sandstrom and Smith's legacy leadership competency model, and includes concepts from transformational leadership, situational leadership, and leadership competencies. Sandstrom and Smith's

(2008) model of future-organization-oriented leadership is an appropriate framework for studying leadership competencies, regardless of level of virtuality or leadership type. Additionally, the framework provides a perspective of a changing organization, not just a static workforce or set of leader competencies. Sandstrom and Smith noted that leader competencies are changing as the workforce changes, and that workers require different leaders due to rapid business changes, workforce shifts, and career opportunities for employees. Based on a praxis model incorporating leadership and competency development components, the legacy leadership model is composed of five sets of competencies, called practices. These practices are described in detail in the following sections.

Literature Review

In reflection of the theoretical foundations of this dissertation, the following literature review includes four categories: leadership competencies, virtual work environments, virtual leadership, and a detailed description of the legacy-leadership competency model. Each of these areas of study contributes to the study of leadership competencies and comparing virtual and in situ leader competencies. In each area, both seminal and more recent peer-reviewed literature is considered, compared, and contrasted with business practices and organizational goals.

Leadership Competencies

Competencies are not usually static characteristics. Changes in business environments mean that the types of leaders must change as well, including the abilities to build connections through support networks, identify relationship opportunities, and

envision opportunities to improve systems for a more coherent organization (Clark, 2012). Clark observed that the increasingly rapid pace of development in cultures, communities, and businesses has increased the complexity of the human systems, and leadership must change to more effectively address emerging situations. New relationships between leaders and leadership groups may be the source of new ideas for solving problems, especially when latest-generation technology is an integral part of business systems. The fluid nature of competency growth and importance is significant as well, because competencies can be learned and demonstrated by adults in leadership roles. Rhee's (2008) research on emotional and social intelligence competencies indicated that adults could learn new competencies through a qualitative research project spanning 2 years and 26 graduate students. Sixteen leadership skills were assessed every 6 to 8 weeks, and interviews were structured to assess both self-perceived leadership competencies. Some of the competencies measured in the study included goal setting, action on problems, information analysis, technology use, relationship development, and making sense of business environments.

Finding leaders with the right competencies is a challenge for many businesses. Global businesses that are growing quickly need to find leaders that fit the existing environment while it is in considerable change. Maratbekova-Touron (2009) described the challenge of introducing a leader competency model in a multinational company that acquired substantial business holdings in several countries and doubled its employee size. The original competencies for the company had been developed for a distinct and separate culture in France. With many of its holdings in Anglo-Saxon countries, the

growing company needed a more global competency model to represent the 30 companies now represented by its workforce. Even though most employees were no longer French, the need to maintain a culture consistent with French leadership values was reiterated by the organization's leaders, making competency models effective methods for exploring leadership abilities.

Even more significantly, the company also moved to decentralize its operations, which changed the foundation of the business processes. An interesting note for this qualitative research project was the expansion of French management practices and competency development into other countries and cultures, and the author noted that most other competency model development projects are an expansion of United States competencies. By using a research approach much more specific to the organization, the company sought to understand competencies from a French nationalist perspective, including researching high respect for authority, particularism and vagaries in business activities, the ability to work within a high-context culture, and the ability to minimize leader-work task fragmentation and build inter organizational trust (Maratbekova-Touron, 2009). Results from implementing the new competency model have not been published.

Richards' (2008) work in several Australian companies challenged the effectiveness of using a more popular competency-building approach when developing new leaders in organizations. The context of the study was in multiple organizations marketing a competency-development approach as the best method for preparing emerging business leaders. However, the interviews she conducted with senior business

leaders identified several gaps that a competency approach does not fill in the development of effective leaders. Richards noted that developing leaders was far more complex than training, due to business changes and the need to adapt to new situations, and raised doubts about the effectiveness of competency models (Richards, 2008). Like Maratbekova-Touron (2009), Richards (2008) also noted that the competency models crafted in the United States might be inadequate outside of the United States context. She described the shortcomings of competency models as a gap in the essential qualities of leaders, especially when considering personally defining conceptual mental models, termed *qualities*, such as integrity and intellectual capability.

Richards (2008) found that senior leaders were more interested in qualities than competencies, at least for senior leadership appointments. As a comparison, competencies focused on grouped skills, such as managing a diverse work team or developing strategic business opportunities in the marketplace. According to Richards' research, building essential trust in leadership candidates is a gradual process that includes the core components of shared understanding and expectations, such as those described by Lewicki, Tomlinson, and Gillespie (2006) in business contexts. Trust in an employee's qualities, not competencies, may be the deciding factors when considering promotions to new leadership appointments.

Another area of the literature that addresses leadership competencies is managerial development. Dragoni, Tesluk, Russell, and Oh (2009) noted that increased workplace changes and the need for more flexible managers with multiple competencies have driven a whole industry around competency-based leadership development. While

work experiences are one way to assess the competencies and qualities of a specific leader, many skills and competencies require direct training and professional development. Dragoni et al. evaluated the gap in the literature to "address a key theoretical concern for leadership development theorists who have called for greater understanding of and evidence on how developmental assignments translate into actual behavior-based 'end-state' outcomes such as managerial competencies" (Dragoni, et al., 2009, p. 731). In their research, both aspiring leaders and their supervisors were surveyed regarding development through work experiences and through professional development. Two major learning goal orientations were examined: (a) learning the foundations of a new competence through professional development, and (b) demonstrating that competence to achieve career goals or avoid negative judgments of work quality.

The researchers found that managerial assignment quality was positively correlated to managerial competency development. Job assignments perceived as developmental in the sample organization were more frequently assigned to emerging leaders with stronger learning goal orientations. In other words, the more rigorous assignments which yielded more meaningful competencies were given to employees demonstrating an interest in more challenging learning through professional development. Dragoni et al. (2009) also found that interest in challenging learning opportunities could also be correlated with more frequent developmental assignments.

When considering leadership competencies and understanding the effect within the work context, many organizations believed competency development must be unique to the organization and context. One example of this specific organization competency

development process comes from 3M, which developed an executive-level global competency model. Alldredge and Nilan (2000) provide a snapshot of the changes in organizations over a decade ago when competency models were new concepts for most businesses. Each competence area developed through interviews and best practices was accompanied by competency labels, competency definitions, and behavioral anchors. In a scholar-practitioner approach, the researchers could bring together teams of business leaders to clarify essential competencies that represented the ways 3M viewed business and its leadership teams. The researcher found that debate sparked by the sematics and interpretation of the different competencies allowed for more lucid understanding of leadership beliefs, while at the same time building camaraderie that led to discussing future opportunities. Like Maratbekova-Touron (2009) and Richards (2008), Alldredge and Nilan agreed that a generic set of competencies was not as valuable to the organization as a unique competency model or framework that is carefully constructed as part of the existing culture and business models.

In a more recent study by Byrd and Thornton (2013), organizational changes prompted the company in their research to identify the best methods for employee development in interpersonal skills. The company was a manufacturing company that was launching a new product, and existing line employees who were already familiar and successful with the organizational culture and context could advance their careers through training in support of the new product. For the employees chosen to participate in the leadership training, a deeper understanding of management and interpersonal communication competencies was viewed as an essential component of the successful

product rollout. The employees' previous experiences allowed them to use important knowledge about the manufacturing processes to make successful decisions and assist new line workers to develop similar decision-making skills. Another outcome of competency discussions was a clearer understanding of the systemic importance of different roles and functions throughout the organization.

What emerged from the quantitative study was an interesting correlation between two sets of assessment data using a reliable and valid instrument of leadership competencies and an interpersonal skills inventory; only two existing interpersonal competencies, belonging to the organization and enjoyment with work activities, could be correlated with the established leadership competencies expected by company leadership. Other variables, such as pragmatic, intellectual, or humanistic orientations toward leadership, were not found to be as significant for success in the new product line organization.

The results discussed by Byrd and Thornton (2013) bring an interesting question to the discussion, especially when considering the qualities mentioned by Maratbekova-Touron (2009) and Richards (2008): Is cultural intelligence (often termed *CQ*) a leader competence that can be measured or impacted by professional development or learning processes? In their work, Groves and Feyerherm (2011) examined the cultural intelligence of 99 culturally diverse leaders and 321 of their subordinates. The researchers sought to understand the effect of cultural sensitivity and awareness when considering more common leadership competencies in highly diverse organizations.

Cultural intelligence is most important when discussing leadership roles in culturally diverse organizations and work environments.

However, workplaces are becoming more diverse, as described by a wide variety of authors. Part of the diversity is driven by more globalized workplaces (Eitzen & Zinn, 2011; Harper & Leicht, 2006), and part of multicultural work environments is caused by new technologies that allow almost-instantaneous communication anywhere the Internet is available in some form (Li & Bernoff, 2008). Regardless of the mechanisms, leadership competencies are moving to include more global objectives, including cultural intelligence qualities. If a company has hired employees to engage more diverse marketplaces that are moving to be more global, then cultures in the organization will, by necessity to reach its audience, become more diverse, and leaders need to accommodate diverse workers and cultures.

Many organizations are unsure what global leadership competencies include. In their development of a global leadership competency model, Tubbs and Schulz (2006) identified five personality dimensions commonly associated with successful global leaders called the "Big Five personality dimensions: extroversion, agreeableness, conscientiousness, emotional stability, and openness to experience" (Tubbs & Schulz, 2006, p. 30). Beyond those dimensions, however, are competencies that take the personality dimensions and apply them to successful leadership behaviors, including understanding the big picture, demonstrating a positive attitude, leadership in times of change, effective communication, innovation and creativity, and creating a culture of teamwork and followership. Based on their qualitative research in several industries,

these characteristics are the foundations for designing competency models in the contexts of specific organizations.

Using a similar model, Overbee and Suvanujasiri (2012) examined the validity and reliability of using a competency model to evaluate leader competencies. So, while Tubbs and Schulz (2006) proposed a meaningful model for global leader competency development, Overbee and Suvanujasiri could validate that such a model was an accurate representation of business leadership in global companies. In their quantitative study (N = 511, significance determined through confirmatory factor analysis), the competencies were listed as leading change, astute in business processes, results-driven, able to build coalition through communication, and effectively lead others. Global competency models appear to hinge on the ability to manage change and creatively address business challenges that appear when the cultures of the customers and the employees become more diverse.

In Hajro and Pudelko's (2010) examination of successful multinational team leaders, their findings from more than 70 interviews from five multinational corporations indicated a slightly different set of competencies. By using a problem-centered interview, any bias on existing competency models was eliminated during the analysis, which was a research criticism of both Maratbekova-Touron (2009) and Richards (2008). Instead, the competencies that were discussed as the most important (by frequency) were knowledge management and transfer, cross-cultural awareness, motivation, social competence, goal setting, and decision-making. In contrast to Tubbs and Schulz (2006), this finding appears to include both personal dimensions of a leader, such as motivation and social

competence, as well as competencies, such as cross-cultural awareness and goal setting. Unlike Tubbs and Schulz or Overbee and Suvanujasiri (2012), the concept of knowledge management appears as the primary team leader characteristic and functional competency in Hajro and Pudelko's findings. This may be significant for both global leaders and virtual leaders because the ability to share knowledge and encourage others to share knowledge could heavily affect the global and/or virtual workplace.

Lombardo and Eichinger (2011) use a different model for competencies with five different components. First, there is a core set of management competencies that apply to working as a leader with people, businesses, and even change management. Building on management competencies, very strong leaders in an organization may have common characteristics that support extraordinary success. Additional competencies could support advanced characteristics or competencies that give the leader a unique edge or advantage. This is different from those competencies that are more specific-organization culture-based competencies, which may have more to do with industry than with the specific organization, such as nonprofits, public or private sector, or in higher education. Superior performers may have unique competencies different from those in the organization, such as relationship-development competencies that lead to sales in any business where the leader is placed.

The final set of competencies could be related to "functions, business units, and situation" (Lombardo & Eichinger, 2011, p. 202). From their experience, a complete competency model for an organization should include each of those types of competencies. Even more significant is their distinction between the levels of employees

and competencies included in their model. For example, the organizing competency is a relevant competency for individuals, managers, and executives, while addressing ambiguity is a competency most often exhibited by executives. The authors' research in multiple organizations is from primarily North American companies, but Lombardo and Eichinger were careful to include validation from other countries and multiple industries in their research. Such a broad perspective makes their work more globally focused than just the North American perspective.

Globalization within businesses, though, may require its own set of competencies. In a reflection of the previous authors, Hellwig (2007) presented an interesting idea. As economies and policies are interconnected in the global marketplace, examining the leadership competencies of the policy makers and political leaders provides an essential understanding of global business. Even more affirming, the data were collected in France, not the United States or Canada, and is contextualized by a culture that is perhaps more engaged in the political activities of leaders daily. Using a public opinion polling method, Hellwig explored competencies from the observer perspective as opposed to self-assessments within an organization.

France's economic environment has changed multiple times over the last few decades, including privatization, deregulation, and market liberalization, which are all driven by public policy and specific leaders in both public offices and businesses. Hellwig (2007) found that a more global perspective in businesses creates a disconnect between economic openness, and globalization makes it more difficult for members of the public to understand responsibilities of policy makers and understanding of their

roles. The importance of this study is that understanding the types of competencies needed for global leadership and policy creation for economic purposes becomes unclear. Globalization changes the context and method of evaluating the correct bundles of abilities and actions to make successful decisions in a global workplace. That may mean that even the most effective policy maker or leader taking an organization into the global marketplace is at risk for poor trust and confidence from subordinates and other leaders in the organization.

In summary, leadership competency models are more than just skill sets or abilities. Instead, in 1973, McClelland developed an idea that competence may be more important as a measure than intelligence, and while his work emphasized education and job selection, the field of competency research has emerged in many different industries and research fields. Most competencies are defined as behavior groups with actionable components, such as motivating others, which includes positive behaviors that can be measured and may have a financial impact for the employee and work team. As companies become more culturally diverse and global; however, the need to clearly understand the success characteristics of leaders may be both more important and more difficult to measure. Many competency models have been developed in a North American context, which may not apply to global businesses or industries. Technology is increasingly important in globalized businesses, making information a key component of many leadership competency models. However, with the advent of technology in globalized business models, the ability to manage and lead at a distance may be impacted, which is the focus of the next sections on virtual environments and virtual leadership.

Virtual Work Environments

Whether global or local, virtual work environments are frequently moderated by communications technology to achieve business or organizational goals. Berry (2011) defined virtual teams as a geographically dispersed team environment where work processes are conducted "through use of the telephone, e-mail, electronic bulletin boards, chat groups, electronic databases, or teleconferences" (p. 188). Many virtual teams span conventional or traditional geographic boundaries, but with the influence of globalization, virtual teams are now able to cross cultural and time-related boundaries as well. For example, employees of a single company can work in Germany, England, and the United States simultaneously on a project by sharing resources electronically in conjunction with audio and video communications in a synchronous communication environment. While different time zones are being accommodated in the moment, another type of time boundary is crossed when documents held in the shared knowledge management system are retrieved from historical archives of similar projects in the past. Virtual work environments have unique characteristics and challenges, and this section includes current research around virtual teamwork. In the next section, the discussion is continued but with an emphasis on virtual team leadership.

Virtual working is an emerging field, and the definition of *virtuality* is redefined each time new technologies emerge and work styles change. Wilson et al. (2008) questioned the earlier definitions of virtual relationships that are based exclusively on geographical distance. Instead, as the comfort level with electronic communications in business transactions becomes more fluid and natural, different types of communication

styles are emerging in offices. Thus, the concept of proximity is not a complete view of how close or far others are when experiencing team interactions, making the physical sense of distance less important than the ability to communicate effectively through technology devices.

Distance is not the only factor of virtuality that can be considered in technology-moderated communications. Instead, the research of Wilson et al. (2008) and Barnett et al. (2012) suggested *perceived* proximity is more accurate as a description of virtual collegiality, and used a simple quadrant matrix of two variables, high and low perceived proximity (Y axis), and high and low physical proximity (X axis). In their examination of groups, two groups emerged as paradoxical, especially when considering previous research that emphasized distance as the essential factor for team virtuality; physically close but perceived as far away, and physically distant but perceived as very close. For the close-but-far group, the independent nature of different teams within the same organization, or even the individual functions of personnel in teams, caused a sense of distance, even when workers were sitting adjacent to one another. The opposing situation, far-but-close, can be found in geographically dispersed colleagues working on a development project who require ongoing communication and sharing to accomplish their tasks. In this case, shared work goals and demonstrations of shared expectations encouraged trust relationships to form within the team.

There are two other factors that can encourage a sense of closeness, regardless of physical distance: communication and identification. Communication frequency can be

used by team leaders and members to encourage interactions and even to begin building mental images of a person's workspace and styles.

> After communicating by phone and email for several weeks, distant members of a project team might, for example, develop mental images of each other's work spaces, workloads and work habits. The more detail they can envision about each other and the other's local context, the closer they seem. (Wilson et al., 2008, p. 985)

Identification, simply put, is the ability to connect with other team members by sharing common characteristics and experiences. Building this mutual understanding can include the sharing of personal lives, professional interests, and expectations, and increases the ability to trust others to make similar decisions on another's behalf (Fejzic, Barker, Hills, & Priddle, 2016).

Another factor explored by Wilson et al. (2008) is the attitudes related to working in virtual teams. Lee-Kelly (2006) sheds some light on both the personal locus of control and attitudes that individuals have when working in virtual teams. Lee-Kelly's research was conducted in two stages, first by using a survey methodology (108 acceptable responses), then following the survey with 12 case study interviews to validate and explore responses from the surveys. Lee-Kelly chose virtual teams to examine the concept of locus of control, which is the degree to which people perceive the ability to self-adjust their environment for success through personal actions. A more internal locus of control describes people who believe they can control their feelings, reactions, and situations through their own efforts, while a more external locus of control describes

people who feel that their success is dictated by fate, the environment, and factors beyond their control. In a virtual team, workers demonstrate various loci of control, which may make a leader's job more difficult. In more distributed or virtual teams and work environments, leadership requires different skills to understand workers' attitudes and expectations, workers' ability to complete project tasks, and the leadership contributions for a successful work environment.

As virtual teams may include members who are having a difficult time coping with a virtual environment, the attitude of employees in virtual work teams was also important in this study. Lee-Kelly's (2006) study found that there are distinct groups in virtual teams who are either largely positive about working through technology-moderated communication or demonstrating a great deal of discomfort or uneasiness with working online. An interesting note emerged around job conflict:

> Of note is the dominant attribution by externals that role conflict issues are caused by 'others'. This was demonstrated by their persistent use of the third-party pronoun 'they'. Those exhibiting internal personalities tended to use the first person collective pronoun 'we' in describing their perceptions of role conflict and its possible impact. (Lee-Kelly, 2006, pp. 240-241)

This supports the work by Wilson et al. (2008) and Carney, Dolan, and Seagle (2015), who included individual factors, such as openness to experience and experience with dispersed work, as key components of their model.

Chen and Lin (2014) and Dixon and Panteli (2010) took a different view of virtual teaming through technology-moderated communications and explored the

complementary nature of face-to-face and virtualized communications. Collocated team members are often becoming members of virtual teams, too. This blending of work activities increases connectivity with geographically dispersed coworkers and can expand the interactivity of team members who work in multiple collocated and virtual roles.

Through an interpretive case study methodology, Dixon and Panteli (2010) used archived records, operational data, and email exchanges, in conjunction with meetings, informal discussions, and interviews, to collect information. The sample population was selected from a wide variety of organizations and sectors in the United Kingdom, and a consortium was formed to examine the development of virtual environments in each member organization. Dixon and Panteli also found, like Lee-Kelly (2006), that an individual's background and virtual work experience largely determined the attitude that was taken toward technology-moderated communication and virtual working. One unique finding to their work was the sense of discontinuity, especially among team members with multiple priorities and sets of expectations when team members are unsure if they are team members or not. Multitasking and multiteaming create an emotional discontinuity for the team members involved in multiple projects and groups. The researchers also found that employees struggled with the requirements to learn several additional systems to communicate effectively throughout their different job roles. Common communication platforms were a key success factor as well as standardized practices within the organization for work completion.

When working on a virtual team, expectations become very important to both leaders and their direct reports. Bosch-Sijtsema (2007) used a case study methodology in

two multinational European organizations to explore expectations in virtual job roles, especially when team members have a low history of working together, come from multiple organizations, and represent multiple organizational and cultural backgrounds. In many cases, this is not the same as co-located employees who are hired based on both previous performance and perceived cultural fit. Dress codes, shared language interactions, daily working routines, visual and relational cues regarding the business and goals, and even organizational charts help solidify the team's sense of relationship. In a more virtual work environment, these perspectives are less tangible and become more social and psychological, in part due to the artificial constraints of computer-mediated communications.

Virtual teams are often characterized by job role uncertainty, role conflict, and expectation mismatches, and can also suffer when conflicts in virtual teams remain undiscovered and unresolved for longer than similar situations in collocated teams (Chang et al., 2012; Gilstrap & Hendershot, 2015). In the case study, poor communication in one organization led to poor performance and lessened team member motivation as expressed through interviews. Another challenge emerged when an organization's leadership did not demonstrate clear expectations and maintain focus on those expectations in a consistent manner. In both organizations, vague performance goals led to performance struggles for the individual workers. In one organization, the lack of clear goals was communicated as a source of significant frustration, less commitment to the organization and the project, and eventually departure from the organization for several members. For leaders of virtual teams, the messages presented by

this research may indicate important competencies for effective team wide collaboration (Cowan, 2014; Krumm et al., 2016).

Bosch-Sijtsema's (2007) two study organizations were also two different kinds of projects with distinct durations of 1 year or 3 years. Dineen (2005) examined the effect of two different types of teams, *stable* and *fluid*. According to the author, organizational change can lead to the transformation of teams to go from a temporary, single-focus team to a more general, longer-term team. Dineen found that virtual teams displayed a more fluid sense of participation in projects and teams.

Dineen (2005) used graduate-level business students ($N = 99$) in a university to model both stable and fluid environments and could examine reactions and performance between the two environments. Job tasks, or group work assignments, were clearly described, and participants were grouped into teams of various sizes, usually between three and five students. There were two groups that alternated in each segment of the multi-month course to give each participant an experience with stable and fluid groups. Half of the groups remained stable during each segment, while the other groups experienced one or two member shifts per week. The author found that, for employees who had never worked in a virtual team before, the experience resulted in higher learning levels during the course. Confidence levels for this group also increased significantly regarding working in a virtual team. To the point of the research; however, experience in stable teams was perceived to be more effective, more cohesive, and reflected a higher ability to complete work assignments in the group than the fluid team organizations. In both teams; however, the introverts demonstrated a higher sense of influence when

participating in virtual teams. Sixty-nine percent of the participants preferred stable teams to fluid teams and reported higher trust and expectation factors as reasons for this preference.

Hardin, Fuller, and Davison (2007) took the idea of team performance introduced by Dineen (2005) to the global workplace where multiculturalism and ideas about good performance vary around the world. Also, placed in the university setting, Hardin et al. examined the values of virtuality where members from both individualistic cultures and collective cultures worked together on common teams. Reflecting thoughts from Wilson et al. (2008) and Lee-Kelly (2006), conflict management styles are very different for individualistic cultures where individuals believe that their individual ability to solve problems is important and collective cultures where individuals are part of a team that solves problems. Guenard, Katz, Bruno, and Lipa (2013) and Hardin et al. (2007) suggested that individualistic societies, which encourage persuasion and debate to overcome disputes, are not as successful in more collectivist cultures where loyalty to the group is more important than an individual's perspective. Individual dissent is not accepted well, but group decision-making and accountability are encouraged.

Hardin et al. (2007) found, when students from the United States and Hong Kong (N = 243, United States n = 119, Hong Kong n = 124, mean age = 27, 46% male, 54% female) responded to surveys regarding their online education experience to complete projects, the perception of individual self-efficacy was significantly higher among students from the United States group for both individual and virtual team work. Alternately, group self-efficacy was significantly higher for the students from Hong

Kong, who displayed a more collectivist culture. For the participants, working in cross-cultural groups could create additional conflicts because expectations and self-perceptions of efficacy and success, both individually and within the group, are likely to be significantly different as well.

Moving from the academic world to the business world of virtual work and geographically distributed teams, Saunders and Ahuja (2006) examined temporary and ongoing distributed teams. By defining temporary teams as focused on a single, finite task, the distinction is made from ongoing teams, which are much longer in term. Ongoing teams often complete repetitive tasks to address multiple or recurring goals that may change over time, such as annual reporting or periodic product improvement.

Whether the team has emerged as a functional team, a management group, a project-focused team, or an ad-hoc team, Saunders and Ahuja (2006) felt there was enough of each of these that are geographically dispersed to make comparisons that will support a theoretical model. Communication and conflict resolution both play a part in the different types of teams, and longer-term teams rely more heavily on communication and trust development to accomplish their goals while shorter term teams rely less on communication and more on task-focused progress reporting. Conflict, then, becomes more related to member support for ongoing teams but related to effectiveness and productivity outcomes in more temporary teams. The implications for leadership of these two types of teams are important, too, because the focus of the team may be heavily related to ongoing or temporary team mindsets. According to the authors, temporary teams approach tasks differently than ongoing teams. Shorter-term work is staffed by

availability of team members, but longer-term teams require more formal roles that allow for expertise development and repetitive tasks. Helping team members transition from one type of team to another may present unique challenges for both the employee and the leader.

Virtual teams, however, exist in an environment of continuous change, which also obscures the reasons and durations for virtual teams (Vakola & Wilson, 2004). In their mixed-methods approach to explore the effect of continuous change on virtual teams, the researchers sought to understand the impact of organizational change on virtual team members as compared to the perceptions of the senior management around organizational change expectations. Three construction industry companies participated, and each company had its own practices, technology resources, political structures, and change practices.

The key finding was that change processes significantly impacted information sharing and on-the-job learning. These two practices rely heavily on organizational culture, and the interviews with senior executives confirmed that the organizations would benefit from a better understanding of the human aspects of their businesses. While each organization had various levels of technology integration, there was a commonality for a change because the industry required technology and infrastructure development to increase collaboration in virtual teams and promote trust and social interactions (Vakola & Wilson, 2004). When the authors evaluated the organizations with a systemic perspective, the systems containing formal, documented systems, such as goals, operations, and technology, did not share many connections with leadership, politics, and

culture. This lack of connections may contribute to significant challenges when achieving organizational goals and supporting or increasing employee satisfaction (Kunnanatt, 2016).

If information sharing and on-the-job learning suffer in virtual environments, a next logical step is to consider best practices in the literature to support virtual teamwork. In Staples and Webster's (2007) research, the authors consider best practices from a social cognitive theory perspective, a field of psychological study for considering the interactions among cognitive factors, the external environment, and behaviors. Staples and Webster argued that the change from an in-office environment to a virtualized work environment will have a significant corresponding effect on cognitive and behavioral factors. In their case study approach, 39 team members were interviewed across several organizations in addition to collecting work samples, artifacts, and communication documents. The findings, like those by Vakola and Wilson (2004), were that communication was important for a significant reason: to overcome the lack of in-person interactions and engage other workers in informal opportunities to share and collaborate. Being able to organize effectively, perform in an area of expertise, and effectively use communications technology in support of team goals were also discovered as meaningful skills. Virtual team leaders, then, may need to be aware of these best practices to encourage them among team members.

Berry (2011) went one step further and described the difference between effective traditional (in situ) team member skills and virtual team member skills. According to his research, two team characteristics are peculiar for virtual teams: that the members of the

team may be geographically dispersed, and that computer-mediated communication is the primary medium for communication, rather than face-to-face, to accomplish work tasks. Even more importantly, the authors suggest that there is a degree of virtualness that is part of many team environments simply because electronic collaboration tools are available in so many organizations.

A truly virtual team, then, is one that is solely supported by distance technology interactions, and there are advantages to being entirely virtual (Long, Cunningham, Carswell, & Braithwaite, 2014). According to Berry (2011), "one of the key advantages is that virtual workers are able to collaborate, develop work products, and communicate without regard to either time or space because interactions can occur without face-to-face or real-time interactions" (p. 188). Berry noted that virtual teams often share significant advantages in both communication and knowledge sharing, mainly because the artifacts of previous decisions and interactions are maintained and available to the entire team in most cases. Due to the diversity and task focus of many virtual teams, communication tended to be more focused and honest, as opposed to colored by the local politics and informal communications shared by collocated peers. Berry also indicated that there are always potential problems with virtual teams, including a sense of isolation or unclear conflict resolution when problems do arise, reflecting the points by Lockwood (2015), Lee-Kelly (2006), Hardin et al. (2007), and Bosch-Sijtsema (2007). When there are competing local and virtual priorities in work tasks, the lack of perceived connection with the virtual team members may result in the local work priorities taking precedence. Without proper administrative planning in the organization, effective leadership, and

success-enhancing technology, many virtual teams struggle with meeting expected performance standards (Hartley, 2016; Warren, Dooley, Pyle, & Miller, 2015).

Leaders need to exhibit different competencies for ongoing virtual team success as well. Berry (2011) suggested four critical virtual team leader competencies: communication, defining expectations for team members, allocating resources, and demonstrating and modeling the behaviors that team members are expected to follow. These may not be the core of leadership training programs and evaluation programs, but for virtual teams, these competencies can be the differentiating factor between success and failure.

In addition to leadership, computer-mediated communication is an essential resource for virtual teams and often differs from face-to-face communication in the workplace (Korzynski, 2013, Mageau, 2012; McCreery, Schrader, Krach, & Boone, 2013; Rhoads, 2010; Wang, Meng, & Wang, 2013). After all, just as language is an artificial construction to enable communication, computer-mediated communication adds another layer to the ability to express ideas and thoughts. Without nonverbal cues, such as tone, pitch, and inflection, essential details may be lost between the communicators, making electronic communications less than effective.

As media becomes more rich and adaptable to the human needs for effective communication, usually through teleconferencing-type resources such as Skype, Google Hangouts, and SameTime technologies, the more easily mutual understanding, or convergence, is built between different parties. Convergence technologies are more closely aligned to face-to-face contact, and extremely rich media called *telepresence* can

simulate real-time interactions remarkably well through presence and visual tracking (Rhoads, 2010). As more people become familiar with these tools, Rhoads argued, the more comfortable they become building trust through that medium. Trust formation, based on shared expectations of others' work and behaviors, may be negatively affected by technology-moderated communications, but it can improve to the level of face-to-face interactions. As cultural elements change to make technology and rich communication resources more common, there are still many opportunities emerging in the field of virtual teaming that will continue to assess the different modalities of working in both virtual and face-to-face environments (Martin, Furr, Hayes Lane, & Bramlett, 2016; Morgan et al., 2014, Poeppelmann & Blacksmith, 2015).

Rhoads' (2010) descriptions of convergence media raise an interesting point about Internet collaboration and behaviors online. Spencer-Scarr (2010) explored the problematic aspects of technology-mediated collaboration in a work-focused environment. The differences between individual workers create miscommunication, and the author notes that personal differences, such as demographics, ethnicities, and cultures tend to increase team conflict, foster miscommunication, and prevent effective interpretation of communications (Han & Beyerlein, 2016).

Other layers of confusion emerge when an online collaborator develops an artificial persona or facade that is a carefully constructed picture of how the collaborator wishes to be perceived. This can be demonstrated in the real world with highly publicized figures, including religious, political, or entertainment celebrities. In an online environment without actual contact, the persona can be maintained more effectively than

in the real world. Trust development relies on frequent communication and shared expectations, and a highly-structured persona could prevent the type of behaviors that encourage a sense of sharing and communal building toward the work goal (also noted by (Ardichvili, 2008).

Spencer-Scarr's (2010) findings noted that technology-moderated work teams must use individual identities honestly and effectively, because continual work together will require trust to overcome differences that prevent communication. Another consideration is the historical context of the Internet work environment, because communications online are both instantaneous and available historically.

> Participants need to be aware that whatever they do in 'Cyberspace' will be bound by both instant and eternal time. Therefore, the initial presentation of a 'persona' should provide sufficient information to convey openness to the development of 'trust-relationships' and the information should be able to stand the scrutiny of 'eternal time.' (Spencer-Scarr, 2010, p. 11)

For leaders, the idea that team members can potentially hide behind a sense of anonymity and personas is a new challenge that does not have a real-world analogy. According to Spencer-Scarr, the opportunity is more available to uncover personas or facades in the face-to-face work environment, but in the online collaboration environments many businesses use today for virtual teams, a challenge of leadership is to encourage transparency to build trust to effectively overcome differences in team communications.

In summary, the virtual workplace is not a static environment. Even the name of a virtual workplace is changing in the research to a more encompassing term: flexible

workplace. Many organizations are using virtual teamwork to augment existing teams when new projects require specialized expertise. Using technology-moderated communications, virtuality in the workplace is more common, and the model by Wilson et al. (2008) is a representation of how groups and teams collaborate in ways that make the perceived distance among the workers much smaller.

Virtual teams are not the same as in situ teams, although there are many common characteristics. Conflict resolution can be a challenge in virtual teams, and whether conflict is due to poor communication practices, the duration of the team, the differences among team members, the expectations of leadership, or the personas that people use online, the virtual leader must be aware that these conditions exist and have strategies to solve the conflicts that will arise. In the next section, a discussion of virtual leadership is presented to consider the ways leadership must change to engage virtual team members effectively (Richardson et al., 2015; Snyder, 2012).

Virtual Leadership

When considering the studies on virtual work environments and leadership competencies, the field of virtual leadership is largely underrepresented in current studies and theoretical models. Many authors who researched virtual teams noted that virtual team leaders needed to have a different set of competencies, but there is a gap in the literature regarding the differences between virtual leaders and more traditional in situ leaders. Spencer-Scarr (2010) noted it clearly by explaining that there is a gap in businesses to train leaders on how to build trust relationships emerging in virtual workplaces.

Another author, Berry (2011), echoed Spencer-Scarr's (2010) comment, by noting that a key difficulty for creating virtual work teams is overcoming the problems associated with global diversity, communication styles, time zones, and nationalities. Leaders must build effective teams by providing meaningful training and support in both technology use and cultural awareness, and then demonstrate these behaviors effectively. While both authors agree that virtual team leaders need to monitor, communicate, resolve conflicts, and support their teams differently, specific leadership models tailored to technology-moderated teams remains elusive in the literature. In this section, current literature related to virtual team leadership will be discussed to better understand the topic and the opportunity for future research.

In a recent qualitative study, Al-Ani et al. (2011) interviewed 16 employees in both virtual and in situ teams. Much like the concept of virtuality presented by Wilson et al. (2008) earlier, Al-Ani et al. did not emphasize the type or degree of virtual teaming but considered the role leaders play when supporting effective group processes and managing employees. Like other researchers, these authors recognized the gap in the literature, and noted that there is a wide range of studies without the clarity needed to describe leadership in distributed teams. Unfortunately, ambiguity over virtual leadership competencies has prevented a clear picture of the necessary skills that need to be developed to move from in situ teams to virtual teams.

Using six themes as an exploratory theoretical framework, Al-Ani et al. (2011) conducted interviews in a large Fortune 500 organization that was so significantly distributed and segmented that it behaved as several different organizations. These

themes were team distribution, technology, leadership roles, leader emergence, communication, and trust. Among the concepts of an effective leader that emerged from the data, one of the most essential characteristics needed by employees, both virtual and in situ, was strong project management competencies, including the ability to define goals, decisions, and milestones, and clearly determine results. Communication competencies were also important to the interviewees and were defined as listening, conflict management, patience with team members, and sharing information effectively. When considering responses from workers in more virtualized roles, study participants noted that virtual leaders' skills in the areas of common sense, organizations skills, a more open and fluid communication, and human relationship skills were more important that the skills needed for in situ leaders. Leaders in virtual teams were noted to accept advice and input before moving forward more frequently than in situ leaders, and communication skills for these leaders were significantly more robust than in situ leaders, partially because the technology facilitated rapid sharing and input collection.

Al-Ani et al. (2011) specifically stated that they did not bring up the concept of trust during the semi-structured interviews, although several respondents did mention it in their discussions. Hentonnen and Blomqvist (2005) looked at this topic directly using a web-based questionnaire and interviews through a mixed-methods research model in a large telecommunications company. According to the authors, trust is based on the expectation that an *actor* will support another with capability, goodwill, and a shared sense of responsibility. The authors note that traditional trust mechanisms, such as personal conversations, demonstrations of caring for others, and social similarity, are

largely absent at the onset of a virtualized team where the digital first impression made by an individual often colors longer-term trust factors. For virtual teams, trust is often created during first impressions and at the beginning of team-building exercises, whether through technology-moderated communications or in situ. The authors were quick to explain that when a virtual team has a very tight timeline, such as those teams noted by Saunders and Ahuja (2006) in the previous section, the compressed time for building trust causes something called *swift trust* to form among members. Swift trust is a situation where team participants adopt trusting relationships from familiar contexts and tend to use stereotypical concepts about others during interactions.

However, for this study, Henttonen and Blomqvist (2005) worked with 23 members of a long-term, global, and multicultural team. What they found was that trust-supporting behaviors were also embedded in larger competencies. Competencies that became important for virtual leaders included more personalized communication, proactive and meaningful information distribution, willingness to communicate, and demonstration of learning to solve work tasks. Committing to significant team decisions was easier, according to respondents, when regular communications and demonstrations of shared understanding supported the need for a commitment. The authors found that barriers to trust development included lack of communication, inability to reach leaders for responses to questions, and the failure of leaders to provide information when it was needed.

Getting one step closer to competencies for virtual leaders, Zimmerman et al. (2008) conducted a survey of 412 technical engineers in a single organization. In this

study, the authors discussed perceived requirements for virtual and in situ leaders through the perspectives of workers in both virtual and in situ teams. The sample was heavily European but still included members of teams from both the United States and Asia: Netherlands (*n* = 238), U.S. (*n* = 125), United Kingdom (*n* = 32), Malaysia (*n* = 13), and Germany (*n* = 4). Ethnic diversity is relatively high within the organization, which implies significant cultural diversity, as well. The instrument used was in English, which is the language of the organization, although the authors note that the interpretation of some of the behavior indicators on the instrument may have been confusing depending on regionalized interpretations of terms. Echoing the results by Al-Ani et al. (2011), several of the most important behaviors rated by the participants for virtual team leaders were in project management, including setting clear team goals, focusing on outcomes and work products instead of specific activities, collaborating and information among team members, and high levels of organization.

One other topic stood out as essential for virtual leaders: communication. The ability to communicate clearly in writing was an item that participants indicated was essential for virtual team management and leadership. Taken as a leadership competency, communication may not stand out as a unique requirement for virtual leaders, but when the additional clarification, specifically on *written* communications, is added, respondents indicated that virtual leaders should possess this trait to be more effective. Technology-moderated communications through written formats were supported by several task-and-relationship indicators in the survey as well, especially because demonstrating the ability to coordinate interactions and information sharing among team members in different time

zones and working through conflicts or inviting contributions from team members requires strong written communication skills.

However, communication skills are not the only core competencies for successful virtual leaders, as described by Andresson, Konradt, and Neck (2012). Just like in situ leaders, virtual leaders must also demonstrate integrity that encourages followership within the organization. What Andressen et al. suggested is much closer to transformational leadership through personal competencies typically termed *self-leadership*. Transformational leadership, with its emphasis on organizational change through clear leadership vision, individual employee opportunities to contribute to change and self-improvement, and strong multi-directional communication (Bass & Avolio, 1993; Burns, 1978; Yukl, 2009) may suffer when applied to the virtual work environment according to Andresson et al.

Demonstrating self-leadership may be an effective leadership competency set that could form the basis of virtual leadership success: "Self-leadership is a normative concept that provides certain behavioral and cognitive prescriptions while operating within and through the theoretical contexts provided by self-regulation, social cognitive, self-control, and intrinsic motivation theories" (Andresson et al., 2012). Virtual teams, however, can suffer from a lack of direct leadership interaction, and the authors explored the impact of self-leadership on both virtual and in situ teams through quantitative instruments reaching both leaders and employees ($N_{employee}$ = 681 employees in 129 teams; N_{leader} = 116 in 23 different companies distributed in nine different countries).

In their study, Andresson et al. (2012) found that self-leadership characteristics act to support motivation within the organizations regardless of the team environment. However, in virtual work environments, the effect of self-leadership on team motivation for transformational leadership was reduced significantly, although the motivation effect was still present in the data. Virtual team leaders appeared to have a moderating effect between transformational leadership and self-leadership, and that this effect prevents transformational leadership behaviors from influencing self-leadership than in collocated leader-team work environments. Self-leadership may be an important characteristic for potential virtual leaders, but the work by Andresson et al. suggested there may be a limit to the effect of self-leadership competencies exhibited in a team relying on technology-moderated communications, and was confirmed by Korzynski (2013) and Morgan et al. (2014).

For global teams; however, the only type of communications in many cases, are those moderated by technology. Examining concepts through the transformational leadership framework, Thorn (2012) described global leadership competencies through research conducted in the International Monetary Fund organization that had identified the need to develop more globally-proficient leaders in its organization. As much of the leadership competency development research was conducted in more local organizations, the author suggested that global leadership competencies should be examined in more global work environments for more valid and reliable models. Using a qualitative interview technique, 12 leaders were interviewed through a semistructured questioning approach. These leaders were considered exemplary in the organization and could

demonstrate information regarding potential competency models for the global organization, which is the reason for their selection into the study.

Like previous researchers in this section, creating a shared strategic vision and effective communication were high on the list of responses, but there were other competencies, too, including strategic vision characteristics, adaptability to changing business requirements, fostering teamwork among virtual team members, communicating effectively, and relationship building (Management, 2012; Thorn, 2012; Zemliansky, 2012). Interestingly, the concept of adaptability emerges in the global context here but not necessarily in the virtual leader context in other literature. Another note from the author is perhaps meaningful, too: Being a loner or asocial, uncooperative, and dictatorial are all described as competencies that will prevent effective and transformational leadership.

In their business text *Managing the Mobile Workforce: Leading, Building, and Sustaining Virtual Teams*, Clemons and Kroth (2011) described their own research conducted throughout the private sector with businesses both leading and emerging on the spectrum of virtual workplaces. While this is a business book, the content was determined through business leader interviews ($N = 39$) whose experiences framed the ideas presented in the text. At the highest level, Clemons and Kroth outline several competencies that were demonstrated through the interview content, including providing a consistent virtual presence, trust development, strategic leadership, virtual employee management, effective team development, and demonstrating motivational skills to the

team. Each of these has been discussed previously in some form or another, but what the authors developed in the text is the eight principles model for the mobile workforce.

By prioritizing three core competencies and then five competency demonstrations, the authors argue that leaders and teams using the model are more likely to achieve their business goals. Their foundational competencies are goal setting, goal pursuit, and managing expectations, which are like ideas presented by Al-Ani et al. (2011) and Zimmerman et al. (2008). The five additional competencies, building trust, demonstrating commitment, understanding people, completing enjoyable work, and caring for others, are presented in literature elsewhere except for enjoyable work (Clemons & Kroth, 2011). This echoes more conventional business wisdom but may have a background in the research already presented, such as the intrinsic self-motivation mentioned by Andresson et al. (2012) and Oostrom et al. (2012).

Brake's (2008) business text included some interesting models from the perspective of business management, including a model for global team technology selection. Although simplistic, the core of technology-moderated communication is the need to connect with other team members. The global team performance indicators, which are explained as those indicators influenced by effective leaders, are analogous to those presented by Clemons and Kroth (2011): engagement (goal pursuit), cohesion (goal setting), and clarity (managing expectations). Although emerging from the business literature, these competencies may be important to a deeper understanding of the expectations of leaders in virtualized work settings. There is written documentation about specific technologies that contribute to technology-moderated communication, but the

core, or those concepts *being communicated*, are the most important item, not the type of technology or technologies being employed at the time. Rhoads' (2010) concepts of communication richness are meaningless unless the concepts themselves resonate with the senders and receivers.

A business author and researcher, DeRosa (2009) examined the success factors of 48 virtual teams in 16 organizations ($N = 427$) to identify the essential leadership characteristics supporting the success. While communication emerged as a core competency, there were unique characteristics in the results for virtual teams, perhaps validating the concepts presented by Brake (2008) and Clemons and Kroth (2011) and noted that strategic thinking and coaching were core competencies for virtual team leaders (DeRosa, 2009).

Not commonly associated as a core competence for virtual leaders, the concept of coaching is an opportunity for deeper exploration. Rhoads (2010), however, suggested a similar concept: virtual leaders who can perform the roles of monitor, mentor, facilitator, and coordinator as well as maintain authority in a flexible work environment, may be able to perform extremely well in virtual environments (Rhoads, 2010). Additionally, DeRosa's (2009) study asked participants to identify key success behaviors for effective virtual leaders, and respondents provided a list of concepts similar to previous research: effectively manages change, fosters collaboration, communicates team goals, invites constructive feedback, empowers shared decision-making, and shares information effectively. The concepts presented by DeRosa are like those presented earlier by Andressen et al. (2012) in their discussion of transformational leadership qualities of

virtual leaders. In DeRosa's business text (2010) following the author's article from 2009, the author provided additional clarification by noting that leaders displaying the most effective competencies balance activities that support both a business focus and more interpersonal interactions, demonstrating strong communication and cultural awareness.

The topics surrounding virtual leadership are still emerging, and the latest concept to emerge in this field is the idea of *workplace flexibility*, which incorporates the concepts of virtual teaming with those of Berry's (2011) degrees of virtualness to describe that work environments may be both fluid and, perhaps, both virtual and in situ at the same time. For example, if two colleagues meet at a coffee shop (in situ) to have a quick videoconference with their boss and coworker (virtual), at what point is this a virtual team, and at what point is it an in-situ environment? Cavanaugh et al. (2014) conducted the National Workplace Flexibility Study to explore these topics and describe effective leadership characteristics in flexible team arrangements. Noting that many organizations already have some form of flexible work arrangements, many employees are not comfortable using different work arrangements for varied reasons. For example, the perception of flexible workers is that less work is accomplished; the lack of visibility in the office is negatively perceived by employees seeking promotions; and, managers and leaders, unskilled in supporting flexible work arrangements, discourage employees considering working outside the office environment (Cavanaugh et al., 2014).

Using an experimental approach with a pre-survey, focus groups, training, support activities, and post-survey, Cavanaugh et al. (2014) repeated the 3-month process in each

of the three participating organizations ($N = 408$, $n_{managers} = 121$). The training consisted of information and resources for learning how to best support and enhance flexible work environments through communication training, performance management training, a culture mapping exercise to redesign team activities and adapt the activities to include virtual team members, resources for technology optimization, and determining success measures. The training was also offered to nonmanagerial or nonleadership employees to foster a clearer understanding of the flexible work environments available throughout the organization and to shift the culture to support more flexible work arrangements among employees.

The researchers found that the experimental process improved leadership competencies, regardless of the team's use of flexible work arrangements, and the team leaders believed that they were significantly more equipped to lead flexible teams. The researchers concluded by noting that core competencies to better develop and lead flexible work teams may be something that can be taught in leadership and management in-house coursework. Workplace flexibility is suggested as one method for optimizing team performance through talent management (Cavanaugh et al., 2014)

The core competencies of virtual leaders remain unclear. The researchers in this section demonstrate confusion about which competencies should support virtual teams and how they might differ from in situ team leadership competencies. The need for effective communication exists in every team, virtual or not, but may be intensified when technology is managing, moderating, sanitizing, and extracting the information before delivering a message to a receiver. The literature is not clear around the qualities of

strong virtual leaders, their coaching and mentoring competencies, or multicultural awareness. Cultural misalignments can occur when team members cross time zones and continental borders, resulting in conflicts or communication gaps. Virtual leaders may need to have strong conflict resolution skills, but the literature does not yet hold the list of essential virtual leadership competencies. Instead, authors in this section provide a sense of the field boundaries, but no clear resolution is currently available when considering competencies for virtual leaders instead of in situ leaders (Galvin et al, 2014; Morgan et al., 2014; Snyder, 2012).

Leadership Competency Framework: Legacy Leadership

When evaluating different theoretical frameworks in the area of leadership competencies, many of the different models were directly related to specific types of leadership models, such as situational leadership (Aleksic, 2016; Hersey et al., 1979; Howell & Costley, 2005), transformational leadership (Bass & Avolio, 1993; Burns, 1978; Quintana et al., 2014), or global leadership (Bowen & Inkpen, 2009; Yukl, 2009; DeRosa, 2010). In a large, multinational and multicultural organization with some degree of technology-moderated communication for virtual work teams, there is no single type of leadership. Instead, there is a great deal of variety among the leadership approaches being used. The research is not an exploration of leadership *types*, but leadership *competencies*.

Sandstrom and Smith's (2008) model of legacy-oriented leadership is an appropriate framework for studying leadership competencies, regardless of level of virtuality or leadership type. Their model addresses both the externally-measured

competencies and the self-leadership competencies discussed by Andressen et al. (2012) in the previous section. Additionally, the framework provides a perspective of a changing organization, not just a static workforce or set of leader competencies. Sandstrom and Smith noted that leader competencies are changing as the workforce changes, and that workers require different leaders due to rapid business changes, workforce shifts, and career opportunities for employees (Sandstrom & Smith, 2008). Based on a praxis model incorporating leadership and competency development components, the legacy leadership model is composed of five sets of competencies, called practices. Discussed in greater detail in the following chapter describing data collection, the framework is assessed through a statistically valid and reliable instrument, the LLCI.

Competency 1: Holder of vision and values. The first practice in the legacy leadership framework is holder of vision and values, implying a clear understanding of the overall goal to be reached and who acts as an advocate of the larger purpose of the organization. In the previous sections, the concept of leadership vision as a competency is discussed by Green and McCann (2011), Andresson et al., (2012), and Thorn (2012). Sandstrom and Smith (2008) agreed that this is an essential competency for leaders, and that every leader in a successful organization is often expected to understand and execute vision-related tasks in their area of responsibility (Sandstrom & Smith, 2008). Burns (1978), one of the most influential writers on transformational leadership, defined leadership vision in a different context but equally effective manner. He noted that leadership is often a task of reaching for goals, often in changing circumstances, with a team in a way that allows both leaders and followers to work together.

Obviously, having a vision alone does nothing without other core capabilities that can transform the vision into concrete actions as well as personalize it throughout the team. The competency skills behind holder of vision and values include the capabilities to understand the reciprocal relationship of the organization, suborganizations, and individuals the ability to strategize; communicate effectively; and measure performance. Creating a strategic plan is a practical application of this competence in organizations, usually because the author of a strategic plan takes abstract concepts and constructs meaningful steps and measurements to pursue the vision. In terms of self-leadership, this competency is expressed most effectively by demonstration in a consistent manner by the leader with other leaders and followers.

A leader is effective at demonstrating and modeling vision and values competencies, especially around direction and commitment. By this, Sandstrom and Smith (2008) indicate that a key leadership competency is the ability to identify the correct direction for a team and then build commitment toward that goal. This is different from having a vision, because identifying direction and obtaining individual follower commitment is much more than just clearly stating and restating the overall organizational goals. Instead, the leader connects the goals to specific individuals on the team, based on their capabilities, and assigns tasks to best combine those capabilities.

The legacy leadership model also implies a more detailed understanding of the work to be done and the competencies of individuals on the team. Sandstrom and Smith (2008) noted that alignment with organizational goals and vision is extremely important, especially when communicating, strategizing, and measuring performance. The authors

called this process *integration*, which described the systemic connections that the leader enables to align processes in the organization for a successful output. O'Connor and Kotze (2008) also agreed, suggesting that the ability for leaders to try new approaches, learn from experience, encouraging best practices of others, and communicating knowledge rapidly through the organization in support of the vision is one of the hallmarks of a strong leader in an *integrated* organization where organizational vision and values are demonstrated. Integration, as Sandstrom and Smith (2008) used the term, is an actualization of the organizational vision in a localized environment with the materials that the specific team must offer.

Another role in the leader competency holder of vision and values, and all of the competencies proposed by Sandstrom and Smith (2008), is measurement. Developing milestones is the role of the leader in this model, especially milestones that are linked to organizational goals and objectives, organizational vision, and the specific team's capabilities. According to Sandstrom and Smith, an effective leader models alignment with the vision and values, integrates team members into a larger system that supports an effective outcome, and designs performance measures to communicate, support, diagnose problems, and reward successful performance.

Schlalock, Verdugo, Bonham, Fantova, and Van Loon (2008) suggested that such goals are also more effective when connected directly to the performance of individuals, not just teams or organizations. In the past, goals were often dictated by higher levels of leadership, but a more democratic approach has emerged that allows individuals and leaders to make the best decisions based on their understanding of the business indicators.

Unlike dictated and programmatic models of objectives, individuals are being measured against their personal outcomes in business and the community-based social indicators of successful business accomplishments.

As indicated by so many of the previous researchers, communication is enhanced when there are clear goals and meaningful communications that emerge around performance, both individually and in the team. The degree of virtuality is independent of the goals and objectives that are to be accomplished. In fact, being able to use such goals and objectives as a starting point for interactions among virtual team members and leaders may prevent the isolation that was indicated previously by Berry (2011). Additionally, global or multicultural teams may also benefit from clear goals that minimize conflict, a common issue with virtual and in situ teams and their leaders.

Competency 2: Creator of collaboration and innovation. Tubbs and Schulz (2006) introduced innovation as a leadership competency in the previous section, and the idea of leaders as innovators and collaborators is supported by Sandstrom and Smith's (2008) competency, creator of collaboration and innovation. In their model, a legacy leader is a person who seeks opportunities, makes connections between people to support new opportunities, and who identifies innovative approaches to problems facing the organization or team. By assembling teams of diverse workers, including different talents, gifts, and attitudes, the leader can develop a team that can collaborate to solve problems and meet business objectives. For this to happen, the authors argued, leaders must foster collaboration and interactions as a core competency of their leadership behaviors.

For someone who is demonstrating this competency, there are more opportunities than there are solutions, and team members are invited to the problem-solving process. One of the key behaviors related to innovation and collaboration, according to Sandstrom and Smith (2008), is building trust, a topic that has been mentioned as both a leader competency and an essential component of both virtual and in situ teams. The first practice that the authors recommend is that of self-observation or self-leadership, as Andressen et al. (2012) described. As a leader, following self-observation with behaviors designed to build trust allows the leader to create an environment that is more effective mainly because the leader more fully understands him/herself and the expectations of the members of the team. Innovation emerges when these expectations form a vision that can be shared and acted upon by both the leader and the team members. Self-knowledge and self-understanding gives the leader a clearer perspective on how to transform the vision and values into meaningful tasks but also how to best work with team members to accomplish the goals of the team.

Instead of a didactic or instructive approach to sharing ideas and tasks, Sandstrom and Smith (2008) also suggest that creating an innovative workplace requires a balance of information sharing, trust building, and leading by example. Sometimes one of the most effective ways to develop innovation and collaboration is to challenge the current thinking and assumptions and allow employees to develop new methods for solving problems. Role modeling is important for this competency, demonstrating a genuine interest in employee contributions. When considered with Bass and Avolio's (1993) premise that innovation, organizational change, and positive disruption of processes

improve upon systems, the ideas presented by Sandstrom and Smith can be considered valid leadership behaviors (Chen & Lin, 2014; Dennis et al., 2013; Wang et al., 2013).

Trust development is a key ingredient to successful innovation culture development, and the leadership competency to support innovation means that leaders must become adept at building trust with and among team members as well as cultivating personal flexibility when adopting new changes. In research conducted by Daly (2009), Sandstrom and Smith's (2008) assertion that innovation and trust are connected to innovation was supported when assessing leadership impacts on employees. In his mixed-methods study ($N = 252$, 8 work sites), Daly found an inverse correlation between leaders who built trust and the threat-rigidity response from employees, noting that leaders who were more autocratic and relied on mandates to create organizational change led to a significant increase in the threat-rigidity response of employees. Daly's research suggested that leaders can set the psychological climate by demonstrating consistency between words and actions to encourage employees to succeed.

Recent research from Gibbs, Rozaidi, and Eisenberg (2013), noted new organizational resources that rely on social media technology may encourage open communication and knowledge sharing. For leaders in distributed teams, building the trust required for innovation can be supported by online social media platforms, but this competence suggested by Sandstrom and Smith (2008) may require a different set of skills from previous leadership models for in situ leaders; however, the core skill of actively listening remains the same. Gibbs et al. (2013) considered the communication flow in distributed business work teams and found that knowledge sharing, as well as

knowledge obscuring, is often related to the levels of trust toward innovative practices in the business setting. Much of the trust built when developing an innovative distributed team comes from organizational communication that may be deliberately vague to appeal to varied stakeholder groups. However, such visions are difficult for leaders to transform into specific working plans for the team. Thus, leaders in virtualized organizations may need to be much more specific and avoid vague vision and mission statements in favor of fostering trust and openness (Carney et al., 2015; Korzynski, 2013).

Social media, used by more and more organizations for information sharing practices, may not be a successful knowledge resource if trust toward innovative practices is not encouraged. Gibbs et al. (2013) found that participants in social media must negotiate tensions between openness and closeness to share information with others in the organization, including leaders. Distributed workers displayed competencies that expanded the understanding of social networking, including visibility-invisibility on the social network, demonstrating engagement or disengagement, and managing sharing and control that social media allows.

Sandstrom and Smith (2008) noted that leaders seeking to encourage innovation must create connections among team members, build open dialogue that is clear and unambiguous, and build the skills of listening and questioning to both encourage trust development and facilitate innovative discussions. Whether through social media, direct conversations, or work team meetings, the most effective skill related to the practice of creating collaboration and innovation is listening effectively to active inquiry and reflecting.

Competency 3: Influencer of inspiration and leadership. The influencer of inspiration and leadership competency reflects behaviors and skills largely associated with transformational leadership and charismatic leadership. Sandstrom and Smith (2008) quickly pointed out that this is a leadership competency more closely related to leadership by demonstration rather than leadership being used to sell an initiative or influence others in directions they may not wish to go. Instead, influencing inspiration and leadership is more closely related to relational leadership, including personal encouragement to build the competencies and skills of those around the leader to build a team ethic, foster creativity and innovation, and support a meaningful vision by example. The authors noted that strong leaders are observed, admired, copied, and rejected by followers, but act as an influencer in the organization. This competency focuses more on the method of influencing others, not whether influence is occurring. Influencing inspiration, according to the authors, is demonstrating encouraging behaviors that support improved achievement among the team. The skills related to influencing inspiration include demonstrating self-development toward improvement as well as building supportive relationships that can foster similar development in others (Kunnanatt, 2016).

Burns (1978) described such a relationship between leaders and their team members in his ground-breaking work *Leadership*. Sandstrom and Smith's (2008) model included consideration that leaders influence others through their actions that support a shared goal and vision in a manner consistent with Burns. Goal-setting, demonstrating morality and ethics, sharing spaces and time with followers, explaining motivations and

values, and collaborating with followers is essential to high levels of positive organizational influence.

Instead of focusing more on motivation techniques and behaviors, Sandstrom and Smith (2008) considered the concept of inspiration much more meaningful, as the concept of inspiration indicates a more deeply-held interest in being successful in an endeavor than the concept of motivation which is usually associated with a task or a project. By demonstrating the competency of influencing inspiration and leadership, a leader is engaged in demonstrating a deeply held belief in a vision or mission that aligns with the work to be completed to reach that vision. There is a psychological component to this competency as well, as leaders must understand their team and be willing to share motivation on a regular basis.

In larger organizations or virtual organizations, this may be more difficult but it is not impossible. The leader must choose to communicate and support employees to develop their own inspirational characteristics and find inspirational rewards opportunities to encourage employees to do their best work. Inspiration, motivation, and rewards must all be meaningful and connected for long-term performance. Yukl (2009) agreed, and noted that rewarding employees, especially by the control of the leader, must demonstrate engagement with the employees and their needs and expectations. For example, offering more pay for working extra hours will not be successful if the employees' culture emphasizes a priority on spending time with family and social groups.

Rewards are part of a system of inspiration that feeds back into future success and leads to motivation to complete smaller tasks because both leaders and followers are

inspired to reach the larger goal. Often described in the popular literature as bringing out the best in others, influencing inspiration includes being genuine in interactions and feedback. These leader-follower interactions become the basis for future leadership development and delegation to employees who are interested in moving forward.

Competency 4: Advocator of differences and community. This competency matches well with the move toward more global and virtual business models, and Sandstrom and Smith (2008) provided a more systemic approach to leadership through this competency. Perhaps more than others, this competency may be closely related to inherent qualities of the leader. In reflection of the work by Dragoni et al. (2009) suggested that competencies are linked to fundamental behavior patterns of the individual leader. Hajro and Pudelko (2010), in their qualitative research ($N = 70$ from five multinational corporations in five countries in both Europe and the United States) on the competencies of multinational team leaders, noted that cross-cultural awareness and social competence were two of the key competencies that emerged from their interviews. Hajro and Pudelko wrote a great deal about cross-cultural awareness and the importance of rotational assignments and socialization to help foster a strong cross-cultural team. The benefits of a strong cross-cultural team include more effective knowledge transfer among workers in pursuit of the business objectives.

Sandstrom and Smith (2008) concurred, noting that competency four in their model includes promoting diversity as a method for building a stronger and more effective team. In addition to demographic differences, the authors advocated bringing

different strengths to the work table by first understanding the employees well enough to know the best people for solving specific problems or addressing tasks.

Regardless of the types of diversity available in an organization, understanding how to lead in a diverse workplace may require different competencies. Visagie, Linde, and Havenga (2011) explored the competencies for managing diversity through qualitative survey methods ($N_{employees}$ = 2,669, $N_{leaders}$ = 440, manufacturing industry) and found that the key skills supporting and advocating diversity were related to receiving open and honest feedback on performance as well as providing regular performance appraisals. This is consistent with Sandstrom and Smith's (2008) assertion that leaders should know their employees and colleagues well enough to include diverse personalities and abilities in each project or approach. The authors felt that advocating differences, actively promoting diversity, and demonstrating value within the organization for the strengths of individuals regardless of their backgrounds is a key leadership competence. Additionally, the authors believed that identifying shared interests and forging connections is a key component to building community within the workplace.

Community is defined in many ways, but Sandstrom and Smith (2008) suggested that a community is a system composed of strengths, perspectives, needs, and offerings. One way to understand these differences is through demonstrating inspiration (Competency 3), but intentional discovery of others' strengths and differences may also be possible through work experiences, performance indicators determined by the organization, formal psychometric assessments, and more comprehensive evaluation models. With that information in hand, leaders building a community system can

demonstrate respect for others and sensitivity, two global leadership competencies identified by Bueno and Tubbs (2012) in their qualitative study ($N = 26$).

The development of competency for diversity is a gradual process that progresses through interactions to result in a balanced understanding of the diversity challenges and opportunities to overcome differences to accomplish successful goal-setting in the organization. To be truly effective, cross-cultural collaboration includes conscious efforts to develop understanding of other cultures (Lockwood, 2015; Morgan et al., 2014; Wang et al., 2013). Thus, interactions between members of different cultures can appreciate the others' perspectives and develop new methods for collaborating (Bueno & Tubbs, 2012).

Creating a community of diverse people may also be a success factor for global and virtual workplaces, demonstrated by Gentry and Sparks (2011) in their managerial-level study spanning 40 countries ($N = 9,942$). As a global study, significant findings found across the study population also reflect the concept of diversity and community identified by Sandstrom and Smith (2008). Gentry and Sparks (2011) found that resourcefulness, change management, and building and mending relationships are core leadership competencies for cross-cultural team success.

Building and mending relationships implies a deep understanding of personal motivations and strengths in the leader's team and that the competence suggested by both Gentry and Sparks (2012) and Sandstrom and Smith (2008) can be facilitated through training and support and formalized instruments. Sandstrom and Smith noted that building relationships outside the immediate organization may be as important as building those inside the organization because it eliminates silos and reduces resentment

or competition among organizational divisions. A clearer picture of the roles and tasks of other organizational entities can help forge business relationships to better connect one diverse group to another. When communication becomes difficult, such as in virtual teams or global work environments, successful relationship building can still occur, but the leader must be more diligent and intentional to develop a deeper understanding of communities and personalities.

Competency 5: Calibrator of responsibility and accountability. The final component of Sandstrom and Smith's (2008) model is the competency of calibrating organizational responsibility and accountability and reflects the feedback that is part of each of these competencies. However, this competency is not just using traditional feedback mechanisms but goes one step further to connect feedback to team members' connections to the mission and vision of the organization. According to Sandstrom and Smith, the role of the calibrator is one of *setting the mark* in the organization for measuring success and defining the desired results. This process is not accomplished in a vacuum, but informed by the organization standards, mission, vision, values, morals and ethics, and existing behaviors. Leaders demonstrating the competency of calibration are constantly reviewing and revising goals to ensure accurate and meaningful organizational success indicators.

Visagie et al. (2011) indicated that feedback and performance appraisals were key competencies for global leaders, and such organizational tools for understanding employee progress are represented by a wide field in human resources research. Whether feedback is multisource, such as in a 360-degree review (Chang & Lee, 2013; Dai, De

Meuse, & Peterson, 2010) or in a simple goal-setting session, encouraging employees to self-monitor and improve performance is one of the roles of the leader. If the leader has a strong understanding of the vision and mission of the organization, encourages collaboration and innovation, leads and inspires others by demonstration, and has developed a diverse workforce, the individual employee still must decide whether to use the feedback to improve performance behaviors.

Chang et al. (2012) considered the influence of leader-team member dynamics on performance and found that work teams perform better ($N_{work\ teams} = 91$, $N_{individuals} = 347$) when many of the characteristics suggested by Sandstrom and Smith (2008) are presented. Their work indicated that leaders who demonstrate the competencies of the Sandstrom and Smith model, especially creator of collaboration and innovation and advocator of differences and community, foster an increased sense of trust among the study participants.

In the context of feedback leading to team performance, Sandstrom and Smith (2008) suggested that effective leaders in their model place people correctly in a manner that suits their strengths and skills; they evaluate their team members in a way that supports learning and growth, not in a punitive or ultimately negative process. This competency also includes the leader's role of consistently demonstrating clear expectations through actions, not just words. By being accountable, the leader also seeks to address problems effectively by focusing on the solutions, not on the individuals who either created the problem or failed at finding a solution.

Building trust may be the best antecedent to using feedback to change behaviors. Smith and Torppa (2010) found that organizational change based on feedback to employees can be accomplished, but trust plays an important role in a successful change: "In the present setting of face-to-face interacting teams with formal leaders, intrateam trust among team members, conceptualized as dependability and caring about the team, was significantly and positively related to team performance" (Smith & Torppa, 2010, p. 2). In their quantitative study ($N = 325$), they found that more meaningful and actionable feedback by leaders resulted in a higher willingness among employees to successfully participate in an organizational change that affected all employees in the organization.

Sandstrom and Smith (2008) regarded feedback, responsibility, and accountability as an effective way to maintain trust as well as provide opportunities for supporting personnel in a more effective manner. As in the previous competencies, the authors recommended evaluating the strengths and opportunities that can be provided for employees to make a more effective organization. Leaders are responsible for communicating roles and expectations clearly and often in the context of the organizational mission and vision.

In summary, this section includes the applicability of a theoretical model developed by Sandstrom and Smith (2008). In Chapter 3, the statistical validity and reliability of the associated instrument, the Legacy Leadership Competency Inventory, is covered in detail. The model that Sandstrom and Smith developed is comprehensive and is supported by a significant body of research around leadership development. Whether reviewing their competencies from a leadership perspective, a business psychology

perspective, or a leadership style perspective, Sandstrom and Smith's model is supported and is *style agnostic*, meaning that it does not endorse any type of leadership. Their framework can be applied to transformational, transactional, situational, path-goal, and cognitive resources theories, making it a meaningful approach for many different types of leaders and leadership programs. Finally, as a research tool, the model itself appears to be a summative construct for many different competency models that share concepts but differing levels of specificity. The five competencies are both measurable and meaningful for application in the various work environments available today, whether virtual or in situ.

Summary and Conclusions

This chapter included a review of the research supporting leadership competencies, virtual environments, virtual leadership, and the theoretical framework suggested for this study, Sandstrom's and Smith's (2008) legacy leadership model. These topics were chosen to provide a broad foundation of topics and evidence supporting an investigation of leadership competencies for virtual and in situ leaders. In the review of leadership competencies, the idea of a competency, first suggested in 1973, began the discussion of different approaches to measuring the combinations of skills, abilities, aptitudes, and behaviors that result in the concept of a leadership competency. Several different leadership competency models were discussed, along with the idea that competencies may exist within a cultural context, such as a nationality or business environment. A gap in the literature exists related to virtual leaders, which is increasingly

important as businesses use more virtual workers and teams. This study contributes to the literature by exploring the leadership competencies for virtual team leaders.

The topic of virtual environments, and subsequently virtual leadership, were both included as an overview of new business models that do not require employees to be in a specific location. Instead, technology often moderates the communications within the workplace. Such barriers to natural communication may make it difficult to engender trust among leaders and team members and may require new competencies that are not the same as previous in situ business environments. The final topic was a discussion of the theoretical framework included in this study, the legacy leadership model developed by Sandstrom and Smith (2008). Their model includes a corresponding research tool, the LLCI*,* which is discussed in detail in Chapter 3.

Chapter 3: Research Method

To address the purpose of the study and determine if there was a relationship in percentage of time worked as a virtual leader and leadership competencies, this study was designed as a quantitative survey self-assessment. Developing primary research in virtual leadership addressed a literature gap supporting virtual team development and design (Cavanaugh et al., 2014). Several researchers agreed that virtual leadership is an area that needs further attention to address growing and future business needs (Al-Ani et al., 2011; Wilson et al., 2008).

Most leadership competency research has been conducted in a single geographical environment or field of interest, such as K-12 education or a specific industry in North America. However, there was very little recent research available to inform general business leadership about the competencies of leaders who are managing a team from geographically different locations. Changes in business have led to global teams managed in one place while workers are in another (Al-Ani et al., 2011; Bazarova & Walther, 2008; Brake, 2006; Clemons & Kroth, 2011; Fong, 2005; Hargrove, 2001; Lipnack & Stamps, 2010; Merriman et al., 2007; Reilly & Lojeski, 2009; Thorn, 2012). New leadership models require a different set of leadership skills, but researchers in the field of business leadership and organizational change has not yet identified a core set of competencies for the virtual leader role. Most leadership competency studies are related to in situ environments where the leader is collocated with employees, and although there may be limited interactions with employees, the presence of the local leader is still emphasized in business operations (Berry, 2011; Cavanaugh et al., 2014; Noonan &

Glass, 2012; Golden & Fromen, 2011; Shirky, 2009; Staples & Webster, 2007; Vakola & Wilson, 2004). An exploration of the leadership competency differences between virtual and in situ leaders contributes to the field of business leadership by examining new ways to select, support, evaluate, and train virtual leaders.

This chapter includes a research design and rationale, along with a discussion of variables, methodological approaches, sampling strategies, and data analysis concepts to collect data from the target population of virtual and in situ leaders. The research design and rationale section includes information on quantitative variables and core components of LLCI for the study. In the methodology section, population and participant characteristics include foundations for sampling strategies and participant selection. Data collection explanations outline the flow of participant interactions in the study, and data analysis details delineate the use of collected data to address the study purpose and hypotheses.

Research Design and Rationale

Several different strategies are available to collect meaningful data related to leadership competencies, including qualitative and quantitative methods. Quantitative approaches to test hypotheses include experimental approaches and survey approaches. For an experimental approach, participants would complete an instrument both before and after an intervention, but the purpose of the study was to determine a relationship between leadership competencies and time spent as a virtual leader, not to understand an intervention's effectiveness. An experimental approach would also require more than 30 minutes to complete, and require repeated sampling to determine if there was a difference

in competencies before and after the intervention (Rea & Parker, 2005). Instead, a one-time survey instrument with a low time requirement and local delivery to the participant desktop was more appropriate to test the hypotheses. A quantitative single-event survey assessment was determined to be the most appropriate approach due to limited time constraints, distance among potential participants, and feasibility of the study.

To prevent participation objections due to lengthy survey completion times, concise instruments with limited participant time commitments were considered for this study. As many of the potential participants work virtually and perhaps globally, electronic instruments are the most appropriate data collection tools for geographically-separated participants. Mixed methods approaches, which are also time-consuming, are not feasible due to the global locations of participants and the time investment for each participant.

Second, a quantitative approach was most useful when gathering data electronically in a survey format. A qualitative questionnaire could exceed 30 minutes per participant, especially as leaders would be interested in reviewing their responses prior to study inclusion. The sampling approach would require extensive national travel to interview participants for maximum data collection (Bryman, 2012, Rea & Parker, 2005). Based on time and geographic limitations, a qualitative approach was an inappropriate research method.

Variables

- *IV* was the self-reported *percentage of the leader's time as a virtual leader* during an average week.

- *DV1* is the composite score for the entire instrument including all the competency components.
- *DV2* is the score in *holder of vision and values.*
- *DV3* is the score in *creator of collaboration and innovation.*
- *DV4* is the score in *influencer of inspiration and leadership.*
- *DV5* is the score in *advocator of differences and community.*
- *DV6* is the score in *calibrator of responsibility and accountability.*

A simple linear regression was used to determined the relationship between percentage of leaders' time worked in a virtual leadership role and their measured competencies. Regression strategies are effective quantitative approaches when comparing or identifying relationships between multiple population variables (Wisdom, Calaveri, Onwuegbuzie, & Green, 2012). Regression provides an analysis of relationships between independent and dependent variables, and develops a *best fit* line when a relationship can be established between the variables. For example, if participant responses are suggestive of a relationship between percentage of time worked as a virtual leader (*X*) and a competency score (*Y*), a linear function is the result of that relationship.

Methodology

Population

The study population included English-speaking leaders in First-World countries who might participate in virtual leadership activities. While limitations were developed to make this study feasible, participants were from private and public sectors, any organization of any size, and across many industry or business sectors. The population

size was unclear due to variations in virtual or telework options offered by organizations as technology and business practices change. For example, within the U.S. government alone, the federal workforce offers telework options to more than 685,000 employees (Lister & Harnish, 2013). The number of leaders and managers (nongovernment positions) offered virtual working options is even less clear, but some researchers estimated there may be more than one billion workers who can engage in flexible working arrangements because of the advancement of high-technology communication at all levels of employees (Clemons & Kroth, 2011).

As a strategy to limit the sampling frame, participants were selected from online business groups in the business site LinkedIn. For example, all the groups *Virtual Leadership and Team Effectiveness* (1,145 members), *Organizational Leadership Capacity* (798 members), *Virtual Work Employers and Employees* (1,225 members), and *Leadership and Networking* (3,469 members) are described by LinkedIn.com as *very active*. The related group descriptions were consistent with the goals of this study and provided a sampling frame of 6,637 potential participants as of August 30, 2016. In the upcoming section on participant recruitment, participant identification from this sampling frame is provided in detail.

Virtual working is an emerging business practice and the number of virtual leaders is essentially impossible to determine effectively since many companies adopt virtual workplace practices, flexible work arrangements, and alternative work environments to suit changing business needs (Cavanaugh et al., 2014). Globalization has also increased the number of teams working across geographical areas, making

estimation of the population size difficult (Bueno & Tubbs, 2012; Eitzen & Zinn, 2011; Spencer-Scarr, 2010). Instead, the sampling frame was a subset of the overall population, consisting of leaders who have self-selected into online groups specifically for sharing ideas about virtual leadership and virtual workplaces.

Sampling and Sampling Procedures

This quantitative self-assessment study used an electronic survey to explore competencies and proficiencies in the workplace and compared the core competencies of virtual leaders to in situ leaders (Groves et al., 2009). Due to the virtual work nature of many of the participants, the research setting was unclear, but it was assumed that participants would complete the survey in their work environment that may be a home office, hotel room, or office environment (Bryman, 2012).

The study sample was selected through several online business groups focused on leadership and leadership development in both virtual and in situ work environments who speak English and have a level of technology proficiency that would allow them to complete a survey online. To find participants for the study, online groups of professional leaders were invited to participate using the LinkedIn business forums that included self-selected members who are interested in the topic of virtual leadership. Over the last few years, more virtual and in situ workers and leaders have joined online support groups for virtual workers through professional networking websites (Al-Ani, Horspool, & Bligh, 2011; Cavanaugh et al., 2014; Dixon & Panteli, 2010; Noonan & Glass, 2012).

Sample size and hypothesis testing are related. Simple linear regression assesses relationships between variables using a linear model:

$Y = \beta_0 + \beta_1 X$, where X is the IV, Y is the DV, β_0 is the value of Y where $X = 0$ (y-intercept), and β_1 is the slope of the best fit line.

Confidence is related to the probability of a Type I error (false positive). We are confident when the probability of making a false positive claim is minimized.

α (alpha) = level of significance = probability of a Type I error (false positive); 1-α = confidence.

For this study, α was set at .05 (Chang, Shyu, Tsay, & Tang, 2012; Miller, Watkins, & Webb, 2009; Tian, Miao, Xu, & Yang, 2009). Setting $\alpha = .05$ is often a research standard, but is also a convention for hypothesis testing to eliminate spurious results that are due to random population variations (Bryman, 2012; Norman & Streiner, 2000; Rea & Parker, 2008).

Power is the probability that a significant relationship between variables will be detected with a statistical test. Power is the ability to avoid a Type II error, which occurs when researchers fail to reject the null hypothesis when they should have rejected it (i.e., a false negative; incorrectly determining that there is no relationship when in fact there is). Power is the probability you will observe a relationship when it does in fact exist. A test has power when it is capable of detecting with high probability an effect (e.g., difference in means) that exists.

β (beta) = probability of a Type II error (false negative); 1 - β = power. The power in this study was 0.95. Therefore, β was set at 0.05. This indicated that there is a 5% probability that a false negative can occur within the data set. Norman and Streiner

(2000) suggested using this power based on Cohen's (1992) research for a variety of different studies.

Cohen's *d* is called effect size (ES) and is a way of using a percentage of standard deviation to calculate sample size. Cohen's *d* can be helpful in such effect size specifications when the population standard deviation is not known. According to Cohen (1992), effect sizes can be operationally defined as small, medium, and large. For simple linear regression, medium represents an effect of a size likely to be apparent to the naked eye of a careful observer (.15); small is noticeably smaller effect yet not trivial (.02); and, large is the same distance above medium as small is below it (.35). The benefit of Cohen's *d* is that it is comparable across different statistical tests.

A statistical sample size calculator, G*Power, was used to develop multiple sample size scenarios for this study. For $\alpha = .05$, $\beta = .05$, and $d = .15$, G*Power computes the simple linear regression sample size to be $n = 93$. More responses will simply increase power or confidence—a better chance to detect small effects in the relationships among the variables with only a small chance of a false positive.

Additionally, Fan and Zheng (2010) and Rea and Parker (2008) suggested that response rates for online surveys vary between 25% and 75%, depending on the interest group interest and comfort level in taking online surveys. With a 25% response rate, the number of invitations to participate should be at least 372. Sending 372 invitations is well within the total population being solicited for participation. Three solicitations for participation were distributed in 2-week intervals to encourage sample group members to

complete the survey. More information about the sampling procedures and sampling frame is included in later sections.

Instrumentation, measured concepts, and scoring. As noted in the previous section regarding the LLCI, the instrument for this study was a self-assessment instrument developed to examine leadership competencies in business contexts. Within the LLCI, each question is part of a group of questions that determine specific competency score through summation of responses. There are 10 statements for each competency distributed evenly throughout the instrument, and these statements provide a summative score for each competency. Additionally, a summative score for the entire instrument that encompasses all the individual competencies can be calculated. Three levels of competence are measured by the instrument by calculating the score for the overall survey: novice, proficient, and legacy leader. In the novice level, with scores between one and 20, the score indicates a minimum level of awareness of the leadership competency being measured and offers a strong opportunity for training or leadership performance support. The proficient level, with scores between 21 and 40, indicates a moderate level of understanding of the leadership competency being measured. A proficient score does not indicate mastery of a competency but provides a basis for further progress through learning and practice. A legacy leader score, between 41 and 50, indicates mastery of the competency and related best practices. Additionally, this score level indicates a high level of internalization of the competency being measured (Sandstrom & Smith, 2011).

The *IV*s were defined as self-reported percentage of the leader's time as a virtual leader, as indicated by a selection of 0% to 100% per week. Participants could select their choice through a drop-down box on the electronic survey, which is a standard approach for online surveys, especially when collecting IV data (Rea & Parker, 2005). Once a participant completed the survey, the instrument computed the values that informed the *DV*s by indexing the participant's score for each competency and an overall score. Each of the *DV* scores were obtained by the same instrument. Calculating the scores in this manner was consistent with the instrument design and previous studies using the instrument (Sandstrom & Smith, 2011).

Procedures for Recruitment, Participation, and Data Collection (Primary Data)

Study participants were self-selected through a sampling strategy using a randomized invitation distribution through several online groups available in LinkedIn.com, an online business-networking site. Several online groups have emerged for virtual workers, and those groups were an effective method for using nonprobability sampling to find participants for the study due to dispersed locations of participants and heterogeneity of work industries, organizations, and specific participant information (Groves et al., 2009, Rea & Parker, 2005).

To randomize the sampling approach, 372 participants in specific leadership oriented groups were sent an invitation using a random table generator to identify the position in the group list. After 2 weeks, a reminder was sent to the 372 invitees (Groves et al., 2009, Rea & Parker, 2005). Selecting participants from online groups provided several important functions: identifying self-identifying leaders, targeting global virtual

and in situ leaders, establishing English as a core language, and providing a minimum of technology proficiency required by the proposed assessment tool itself.

Prior to opening the study for the sample group, an informational and enrollment website was developed for potential participants. On the informational page, a video presentation describing the study presented the reason for the study, the time commitment involved, eligibility requirements, participants' rights, and the meaning of informed consent to participate. If, after watching the video or reviewing the transcript, the viewer wished to become a participant, there was a button to navigate to the enrollment page. The continuation button also served as notified consent and was clearly marked to indicate consent. The enrollment page collected basic demographic information, including name, contact information, experience level as a virtual or in situ leader, and organization type. The data collected was solely for administering the survey and determining participant eligibility. The LLCI questions appeared following the demographic questions. The survey typically takes between 10 and 15 minutes to complete and is appropriate for leaders at every level in an organization.

Survey data collected by the web-based survey tool was used in the analysis of virtual and in situ leadership competencies; additionally, a personalized report of individual survey results was delivered directly to the participant if they requested to receive one by providing an e-mail address. One suggested approach for encouraging survey participation is *paying* the participants in one form or another (Rea & Parker, 2005). While participants did not receive remuneration for participating, they received a detailed summary of their results following the survey when requested. Using this data,

participants could seek further personal development to improve leadership competency understanding and performance. Upon the project's conclusion, participants who provided their e-mail address were invited to review the study findings in a summary report available on the enrollment website.

The steps suggested by Ryan et al. (2012) for deploying the instrument include inviting participants, providing a website specifically for the purposes of enrollment, informed consent, and publishing summarized study data. Participants were in control of the process and could opt-out at any time and incomplete data were not kept in the study. On all pages of the survey, participants were reminded to contact my university e-mail address with any questions about the survey. The enrollment process included of two steps: an informational presentation and informed consent agreement, then access to the survey:

1. Invitation to participate to online groups with a link to the study website.
2. Welcome and information page with a video and overview to inform potential participants about the study and the process for contributing to the study and a *Click here to participate* button at the bottom of the page;
3. Informed consent form and demographic data collection with a *Submit to participate* button;
4. Participants completed the survey.
5. Participants received a thank-you message and, if requested, an e-mail that summarized participant-specific data and information about the study, data confidentiality, and where to find relevant training materials.

6. Once the study is complete, additional pages were added to the website with a summary of findings.
7. Participants were invited to review the website through an e-mail message if they provided their e-mail addresses.

Pilot Study

Pilot studies, designed to assess the experimental parameters, evaluate and adjust the instrument being considered for the study, or gather initial sample data for further evaluation, are not part of this study. The LLCI instrument was already evaluated through a pilot and validation study ($N = 152$) to determine its effectiveness (Sandstrom & Smith, 2011a). No additional pilot study was conducted for this study.

Instrumentation and Operationalization of Constructs

The LLCI authors gave permission to use the instrument for this study as noted by the permission letter in the appendix. To briefly review, Sandstrom and Smith's model includes five competency areas that are assessed using the legacy leadership competency inventory survey:

- Holder of vision and values
- Creator of collaboration and innovation
- Influencer of inspiration and leadership
- Advocator of differences and community
- Calibrator of responsibility and accountability (Sandstrom & Smith, 2008, p. 26)

Like many competency surveys, LLCI participants use a simple Likert-type scale to describe the frequency of activities that are related to each of the competencies, from

not at all to *consistently*. The research used to support the survey was designed through research related to competency development, including work by Burns (1978), a leader in the field of transformational leadership. The unmodified LLCI used in this study was developed on the premise that effective decisions have a long-term effect on the success of an organization, and higher competencies in the areas of developing other leaders and advocating organizational change in support of the vision and mission of the organization are critical success factors for long-term business growth (Sandstrom & Smith, 2008).

Data Analysis Plan

To review, the following research questions and hypotheses for this study are listed below:

RQ1: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI (*DV1*)? *DV1* is the *composite score* for the entire instrument including all the competency components.

$H_{0(composite)}$: There is no relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

H_1: There is a relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

RQ2: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *holder of vision and values* (*DV2*)? *DV2* is the score in *holder of vision and values.*

$H_{0(vision)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *holder of vision and values.*

H_2: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for competency of *holder of vision and values.*

RQ3: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation* (*DV3*)? *DV3* is the score in *creator of collaboration and innovation.*

$H_{0(collaboration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

H_3: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

RQ4: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership* (*DV4*)? *DV4* is the score in *influencer of inspiration and leadership.*

$H_{0(inspiration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

H_4: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

RQ5: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community* (*DV5*)? *DV5* is the score in *advocator of differences and community.*

$H_{0(differences)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

H_5: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

RQ6: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability* (*DV6*)? *DV6* is the score in *calibrator of responsibility and accountability.*

$H_{0(responsibility)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

$H_{6\ (responsibility)}$: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

Hypotheses were tested to determine if there is a relationship between the *IV*s and *DV*s of the five competency best practices measured by the survey and for the entire instrument for a total of six hypotheses. Data were analyzed using the statistical software R v3.3.3, and incomplete data responses were eliminated from the participant group (R Core Team, 2017). Data were analyzed using simple linear regression. The null hypothesis was rejected if the *t*-statistic exceeds the critical value of *t* (or if the associated *p*-value is less than the level of significance, .05), indicating a significant relationship is demonstrated for that competency category (Chang, Shyu, Tsay, & Tang, 2012; Miller, Watkins, & Webb, 2009; Tian, Miao, Xu, & Yang, 2009).

Threats to Validity

External Validity

By limiting the study participation to English-using online communities and leaders only participating in LinkedIn online groups, the study did not have the wide range of responses that would be needed for a more globalized study (Bueno & Tubbs, 2012). As leadership competencies are changing for business and technology changes, a small study such as this one cannot explore competency characteristics that can be

generalized for an extended period. Generalizability across situations is limited by the sample and there are new working environments emerging in the global marketplace.

The sampling of English-speaking participants could also prevent generalizability across large groups of people and cultures. Self-selection of participants may result in a study group that is limited to a geographic area or areas or with leaders who may not have the breadth of experiences that reflect the wider group of virtual leaders. While competencies can be defined for many leaders, there are also competencies that may be unique to specific industries, leader age groups, or unanticipated participant characteristics.

To maximize external validity and increase generalizability, participants were solicited from a wide range of professions, age groups, and experience in working as a virtual leader. Using online groups is an effective method for selecting participants with sufficient experience using Internet-based tools to complete the survey, which was also conducted online. The calculated sample size provided a minimum number of participants, but more may be allowed into the study to assist in generalizability of results (Rea & Parker, 2005; Ryan et al., 2012).

Internal Validity

Internal validity, or the accuracy that the study measures what it is intended to measure, is limited by the inability to measure the complex dynamics between virtual and in situ leadership activities. Leader competencies are typically broad categories of skills, attributes, and behaviors, and measuring competencies is an emerging practice in the field of leadership development. However, identifying a relationship between work practices

and leadership competencies is a first step to identifying the gap in the literature around virtual leadership.

As a single-event survey with no control group, there was no treatment, pretest, or posttest. Confounding variables related to participant experiences could affect survey responses, and there was expected to be a level of participant attrition between enrollment in the study and completing the survey. Participant attrition could change the results if a group of participants with common levels of virtual leadership experience do not complete the survey after enrollment in the study. Due to the anonymity of the participant enrollment process and completion of the survey, no data were kept on participant attrition.

To minimize the internal validity concerns, I selected an appropriate sample size, based on power, confidence, and effect size, to minimize the probability of spurious results, Type I, and Type II errors. The statistical treatment using simple linear regression provided a probabilistic outcome regarding whether results are due to random participant characteristics or demonstrated a likely relationship between the independent and dependent variables.

Construct Validity

Construct validity for the LLCI is an important factor for this study. Validation of LLCI survey design included pilot testing and reliability testing. To assess scale reliability, Cronbach's *alpha* was assessed for internal validity and ranged between *alpha* = 0.78 and *alpha* = 0.85 (N = 152). Internal reliability was established by calculating Eigen values, a measurement of the variation in responses for sample items,

and each item selected for the instrument had a factor Eigen value of 1.0 or higher indicating that each indicator significantly contributed to the competency being tested. The higher Cronbach's *alpha* indicated a reliable scale that measures the five competencies meaningfully along with a high degree of variance accountability ranging from 47.8% to 67.7% (Sandstrom & Smith, 2011a). The LLCI appears to measure the concepts for which it was designed.

Ethical Procedures

In compliance with the procedures determined by the Institutional Review Board (IRB), this study followed ethical guidelines appropriate for social sciences research. No participant contact occurred prior to IRB approval. Data collection was conducted in a confidential process that protected both the individual participant and the data during and after the study. Using an informed consent process prior to the study, all participants were given detailed information about the collection and use of the data as well as the protection of their privacy. At any point, participants could choose not to participate or return to the website and review the informed consent materials and contact the researcher directly with questions with a monitored university email address.

The data collection process, described above, was also integrated with the data analysis to make meaningful interpretations of data collected from participants. Demographic data collected for determining participant eligibility and informed consent was maintained on a password-secured data server, and all data were removed from the server weekly and archived onto an encrypted hard drive and a backup drive. All data were researcher-managed in secure network environments and were not available for

public review. An address book of participant contact information was maintained for dissemination of project findings following the study. Study data from the instrument was collected through a password-protected website maintained by the survey site and raw scores were accessible online to the researcher. A detailed data report was distributed to each participant with information regarding specific scores and suggestions for further professional development activities to strengthen competency areas. Following the study, summarized nonidentifiable data were released to all participants along with a findings report. Data privacy was maintained throughout the research process using an informed release agreement, encrypted drives for data collection, and individual communications to participants.

Summary

To determine if there is a relationship between the percentage of work time leaders spend in virtual leadership or in situ roles (*IV*) and leadership competencies (*DVs*), in self-reported percentage of the leader's time as a virtual leader, this study used an online survey that measures leadership competencies in five categories. Participants provided 95 completed surveys, with 93 completed, usable surveys providing the survey data from online business-related discussion and development groups with experience in both virtual and in situ leadership activities. Since the LLCI was available as an electronic instrument, data were collected through online tools, and managed in a secure computing environment that protected individual participants and personal identities. Study data were analyzed through a simple linear regression analysis ($\alpha = .05$, $\beta = .05$, effect size Cohen's $d = 0.15$) to determine if there was a relationship between the time

participants spend leading using virtual work practices and competencies demonstrated on the LLCI.

Chapter 4: Results

This quantitative study included the self-reported percentage of time worked as an online leader with LLCI leadership competencies to address a gap in the leadership literature about virtual leaders. Chapter 4 is a review of the data that were collected and examined, the data collection process, the data analysis, and hypothesis testing for the study. In this chapter, I discuss the sample characteristics, demographics, and population characteristics in this chapter as well. This chapter includes a discussion of the data and key findings.

There were six hypotheses in this study:

RQ1: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI (*DV1*)? *DV1* is the *composite score* for the entire instrument including all the competency components.

$H_{0(composite)}$: There is no relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

H_1: There is a relationship between *percentage time worked as a virtual leader* and *responses on the LLCI*.

RQ2: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *holder of vision and values* (*DV2*)? *DV2* is the score in *holder of vision and values.*

$H_{0(vision)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *holder of vision and values.*

H_2: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for competency of *holder of vision and values.*

RQ3: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation* (*DV3*)? *DV3* is the score in *creator of collaboration and innovation.*

$H_{0(collaboration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

H_3: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *creator of collaboration and innovation.*

RQ4: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership* (*DV4*)? *DV4* is the score in *influencer of inspiration and leadership.*

$H_{0(inspiration)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

H_4: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *influencer of inspiration and leadership.*

RQ5: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community* (*DV5*)? *DV5* is the score in *advocator of differences and community.*

$H_{0(differences)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

H_5: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *advocator of differences and community.*

RQ6: Is there a meaningfully significant relationship between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability* (*DV6*)? *DV6* is the score in *calibrator of responsibility and accountability.*

$H_{0(responsibility)}$: There is no relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

$H_{6\ (responsibility)}$: There is a relationship in leadership competencies between *percentage time worked as a virtual leader* and responses on the LLCI competency for *calibrator of responsibility and accountability.*

Data Collection

As noted earlier, Sandstrom and Smith conducted a pilot study using the LLCI (N = 152) to determine instrument validity and reliability. I did not conduct an additional pilot study for this study. My study occurred over a 4-week (28-day) period, beginning March 1, 2017, and concluding on March 29, 2017, with 95 collected surveys and 93 usable surveys. Two survey responses were eliminated due to participants indicating that they were not supervisors. One reminder was distributed to the participant audience described in Chapter 3, thus 372 invitations were sent twice for a total of 744 invitations. I closed the study after 4 weeks as the minimum number of survey responses had been collected. There were no discrepancies from the original data collection plan. As an online survey, participants accessed the survey at their convenience from multiple locations, and provided data during a wide variety of dates, days, and times. The survey responses were also anonymous, and only indicating identifiable information in the form of an e-mail address if participants wanted a personal report of their results.

Participant Demographics.

Participants contributed from 24 states, with no international or non-U.S. participants noting that on their responses. The mean age of participants was 51.18 (range 31 to 78), with 54 (58.06%) women, 37 (39.78%) men, and two (2.15%) declining to indicate gender. Participant industries included government or public work, finance,

information technology, higher education, consulting, wildlife conservation, publishing, sales, accounting, K-12 education, staffing, health and wellness, medical, pharmaceutical, mental health, general health care, museum management, logistics, property management, counseling and therapy, and marketing. This study was not focused on any industry or organization, thus the wide variety of industries noted by the participants was expected.

Of the participants, 40.87% were managers (someone who leads employees, such as a project manager), 23.66% were directors (someone who leads managers and other employees, such as a training director), 5.38% were vice presidents or executives (someone who leads directors or managers, such as a human resources VP), and 5.38% were chief officers (someone who leads VPs or executives, such as a chief operating officer). Participants had the option to write in their own position level, and the remaining responses (24.71%) were a wide variety of occupational levels, including analyst, professor, coordinator, department chair, president/owner, principal consultant, and supervisor. The mean number of years in the participant current position was 11.38 years (range 1 to 35), and leaders supported a median of 7 direct reports (range of 1 to 50), although this number was limited to between 1 and 50, which may have introduced some direct report averaging error for larger teams.

The participant group showed diversity in educational degrees earned, including 2.15% with an associate degree, 33.33% with a bachelor degree, 29.03% with a master degree, 9.68% with a specialist degree, and 24.70% with a doctorate degree. The remaining participants (1.11%) indicated different degree levels related to their own

experiences. The relatively high number of doctorate degrees may reflect participants understanding the difficulty of completing doctoral studies and supporting a fellow researcher, although it is unclear why the percentage is so high.

Sample Representation

While the study population did not reflect the overall population of leaders, some of the results may be generalized to the entire population due to the breadth of roles, industries, and experience levels of participants. Specific analysis of the distribution of the age, income, and demographics is outside the scope of this study. The sample group may not represent the statistical norms of the entire population, for several reasons. Using LinkedIn as the source of participant selection may have targeted more advanced workers from specific demographic groups than might be found in the general population. General demographic information related to LinkedIn membership or specific groups within LinkedIn is proprietary information and extends beyond the scope of this study. Additionally, participants could choose to distribute the link to colleagues or other supervisors, potentially changing the distribution strategy from more random selection to more of a nonrandomized selection approach (Bryman, 2012; Norman & Streiner, 2000; Rea & Parker, 2008). Finally, virtualization of the workforce is a global phenomenon, not just in the United States. Workforce studies do not provide a consistent understanding or even measuring strategy for virtual workers or leaders (Cavanaugh et al., 2014; Groves et al., 2009; Lister & Harnish, 2013; Noonan & Glass, 2012).

Study Results

The data collected included 95 responses at the end of a 28-day data collection period, with two incomplete responses, which I did not use. The data set of 93 observations exactly met the needed sample size calculated in Chapter 3. Data included the self-reported percent of time spent each week as an online leader, as well as responses to each of the 50 questions in the LLCI instrument. The *IV* was the self-reported *percent of time spent each week as an online leader*. The first *DV* was the summed, overall score on the assessment survey. The remaining *DV*s represented each competency indicator composed of 10 Likert-type scores summed for a total number in that competency area. The LLCI authors' validation process determined that the instrument meaningfully measures leadership competencies.

Simple Linear Regression Assumptions

For the analysis, I used the statistical package R v3.3.3 (R Core Team, 2017). As detailed in Chapter 3, I analyzed all survey data using simple linear regression to assess the effect of *percentage of work time as a virtual leader* (*IV*) on a summative score for all answers and each of five competency indicators (*DV*s). A simple linear regression (SLR) approach is not always the most effective data analysis approach, and specific assumptions must be satisfied to ensure meaningful results. Poole and O'Farrell (1971) published a concise set of the assumptions related to SLRs, and several assumptions are germane to this study. Each of these assumptions is discussed for the specific hypothesis tests in the following sections.

1. There is a linear relationship between the IV and DV. This is demonstrated by visual evaluation of the data plots for each of the hypotheses.
2. The errors, or residuals, are independent. For this study, each data case was gathered independently and not in a series or in multiple iterations, so the related error terms are considered independent.
3. The errors, or residuals, are normally distributed. This was assessed using the Shapiro-Wilk test, and the Q-Q plot is included in each hypothesis discussion. By evaluating with the Shapiro-Wilk test to check for lack-of-fit for the normal distribution, I determined that the residuals are distributed normally, using the test statistic W and the p-value for the hypothesis test where the null hypothesis is that the residuals are distributed normally and the alternative is that the residuals are not distributed normally ($\alpha = 0.05$).
4. The errors, or residuals, have equal variance over the range of values (homoscedasticity). Homoscedasticity indicates that the residuals fall within a consistent range of dispersion across the data. I reviewed this with a visual inspection of a Scale-Location plot of the square root of the standardized residuals compared to the fitted values.

Analysis of Independent Variable

For the *IV*, the median of the *percentage for time spent as a leader online* was 10% (range 0% to 100%) with more participants indicating that they were more in situ leaders than virtual leaders. The skewness of the *IV* was 1.50 and the kurtosis was 4.23, thus it was not surprising the mean was 21.05%. The *IV* was therefore not at all normally

distributed and quite positively skewed. Although a normally distributed *IV* is not required for SLR, the skewness indicates a strong need to check the assumptions of normally distributed residuals.

The data skewness was not unexpected, as study participants were not selected based on known levels of virtual leadership, but on self-selecting interest groups in online leadership forums on LinkedIn.com. The participant groups included in the study appeared to be related to virtual leadership, thus I did attempt to include more virtual leaders. However, the participants' survey results indicated that they led more in situ environments than virtual environments, an effect that could not be predicted without gathering data. The histogram in Figure 1 shows the distribution of participants' self-reported percentage of time spent in virtual leadership activities.

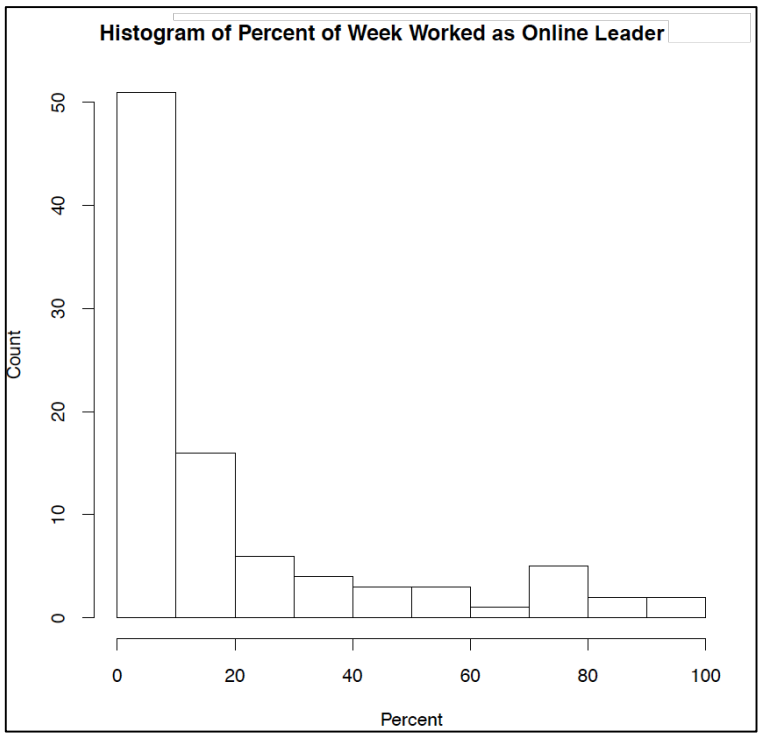

Figure 1. Distribution of responses for percentage of time worked leading online.

For the analysis, I used the statistical package R v3.3.3. For each of the six hypotheses, I used a linear regression model to test whether the slope of the line was equal to zero. That is, using the model $Y = \beta_0 + \beta_1 X + \varepsilon$ for each hypothesis,

H_0: $\beta_1 = 0$

H_A: $\beta_1 \neq 0$.

Each test was performed at the 95% percent significance level ($\alpha = 0.05$) with equal samples ($n = 93$).

Hypothesis 1: Overall Score

The first hypothesis tested the relationship of the *percentage of work time as a virtual leader* (*IV*) with the *overall summative score of the LLCI* (*DV1*). As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 2. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.29$). The calculated mean of the residuals was approximately zero (-1.30×10^{-15}). The conditions for homoscedasticity were met, as residuals were within a consistent range of dispersion across the data for this hypothesis.

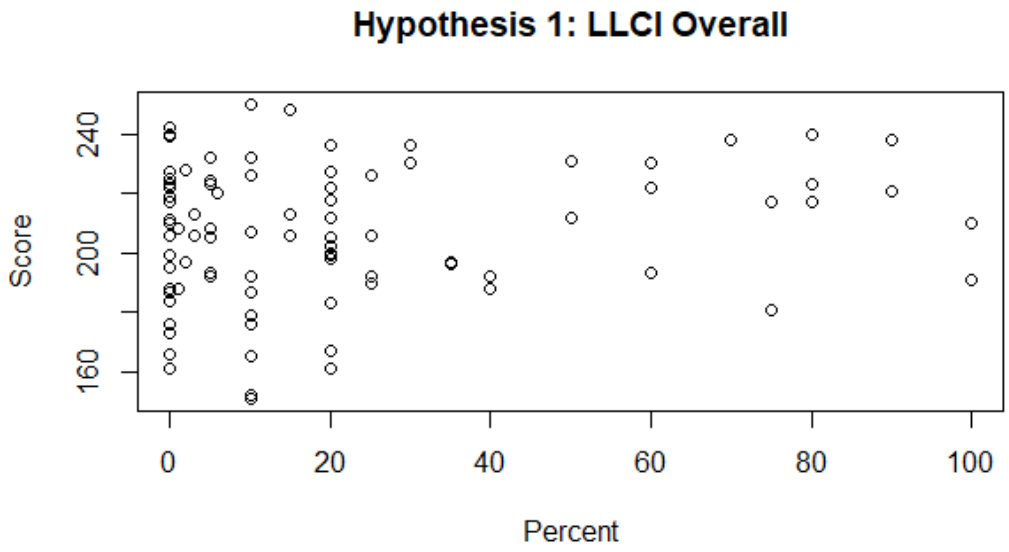

Figure 2. Scatterplot of results for hypothesis 1 for the *overall LLCI score* and *percent of time reported as a virtual leader*.

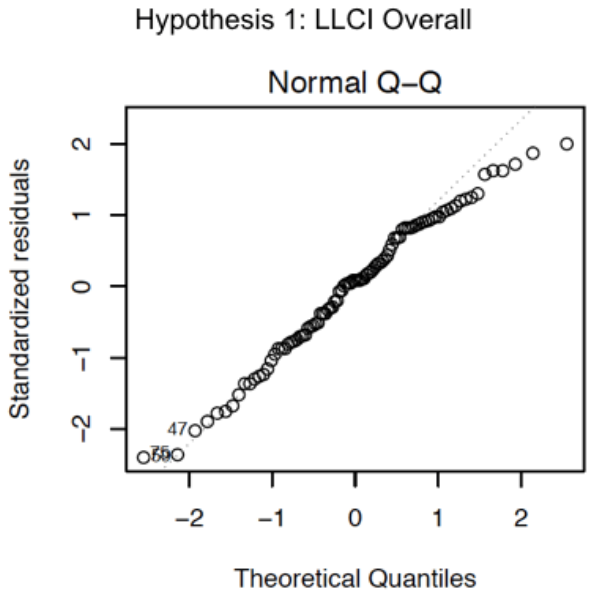

Figure 3. Hypothesis 1 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.14$ ($t = 1.64$, $p = 0.11$, $df = 91$). Because the p-value was greater than 0.05, I failed to reject the null hypothesis. Therefore, I concluded that there was not sufficient evidence of a significant relationship between the *IV* and *DV1*.

Hypothesis 2: Holder of Vision and Values

The second hypothesis tested the correlation of the *percentage of work time as a virtual leader* (*IV*) with the indicator *Holder of vision and values* (*DV2*). This competency is related to leading with a larger organizational goal and supporting the organizational vision. Initially, the residuals were not distributed normally, so a data transformation was used. In this case, I used a cubing transformation to achieve a more normalized distribution of residuals (Bryman, 2012; Groves et al., 2009). This transformation resulted in higher scores along the *y*-axis. As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 4. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.07$). The calculated mean of the residuals was approximately zero (2.08×10^{-13}). The conditions for homoscedasticity were met, as residuals are within a consistent range of dispersion across the data for this hypothesis.

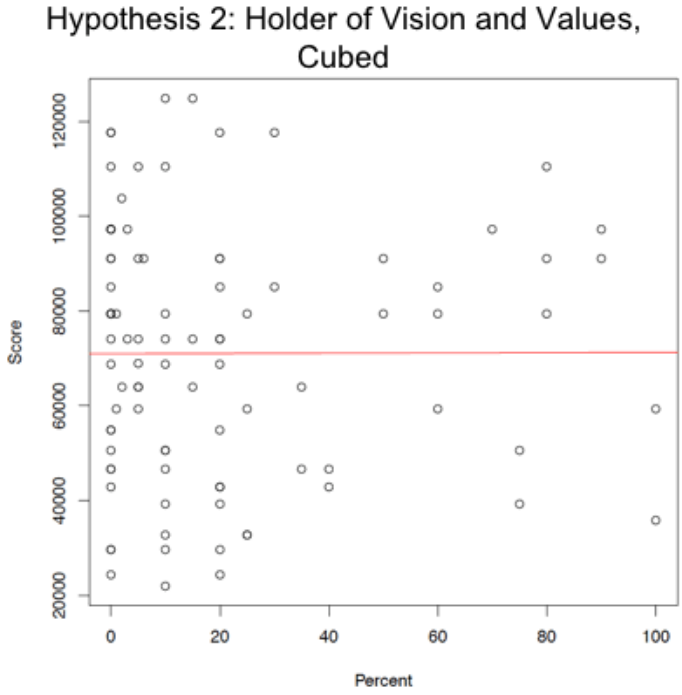

Figure 4. Scatterplot of results for hypothesis 2 for the competency *holder of vision and values* and *percent of time reported as a virtual leader*.

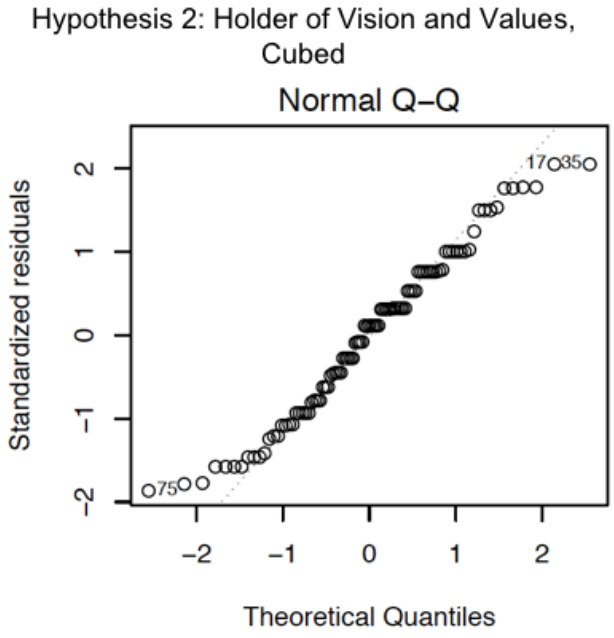

Figure 5. Hypothesis 2 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.003$ ($t = 0.12$, $p = 0.91$, $df = 91$). Because the p-value was greater than 0.05, I failed to reject the null hypothesis. Therefore, I concluded that there was not sufficient evidence of a significant relationship between the *IV* and *DV2*.

Hypothesis 3: Creator of Collaboration and Innovation

The third hypothesis tested the correlation of the *percentage of work time as a virtual leader* (*IV*) with the indicator *Creator of collaboration and innovation* (*DV3*). This competency is related to leading through team strategies that build interpersonal team connections and fosters creativity in problem-solving. As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 6. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.07$). The calculated mean of the residuals was approximately zero (3.65×10^{-17}). The conditions for homoscedasticity were met, as residuals were within a consistent range of dispersion across the data for this hypothesis.

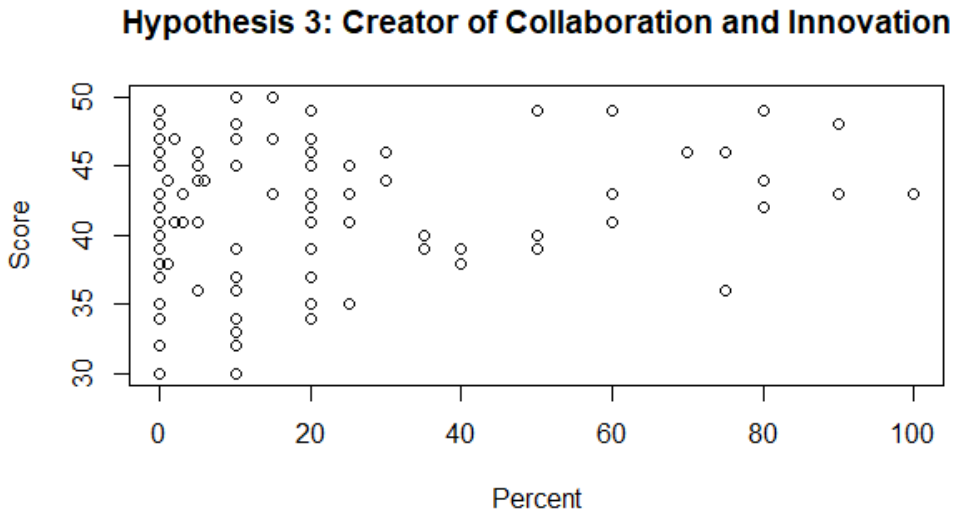

Figure 6. Scatterplot of results for hypothesis 3 for the competency *creator of collaboration and innovation* and *percent of time reported as a virtual leader*.

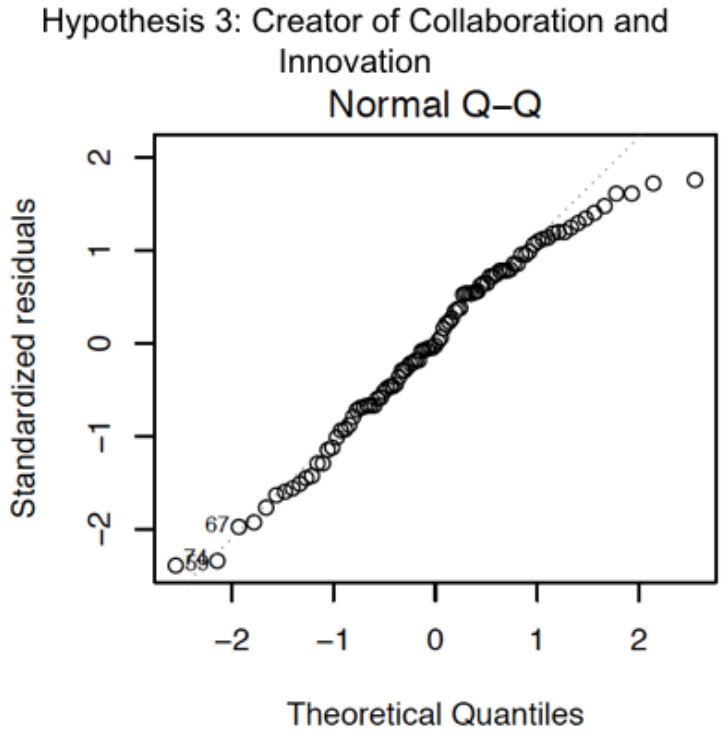

Figure 7. Hypothesis 3 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.03$ ($t = 1.63$, $p = 0.11$, $df = 91$). Because the p-value was greater than 0.05, I failed to reject the null hypothesis. Therefore, I concluded that there was not sufficient evidence of a significant relationship between the *IV* and *DV3*.

Hypothesis 4: Influencer of Inspiration and Leadership

The fourth hypothesis tested the correlation of the *percentage of work time as a virtual leader* (*IV*) with the indicator *Influencer of inspiration and leadership* (*DV4*). This competency is related to leadership style, including transformation and charismatic leadership approaches that are based on demonstration instead of authoritarian leadership approaches. As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 8. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.32$). The calculated mean of the residuals was approximately zero (-1.64×10^{-16}). The conditions for homoscedasticity were met, as residuals are within a consistent range of dispersion across the data for this hypothesis.

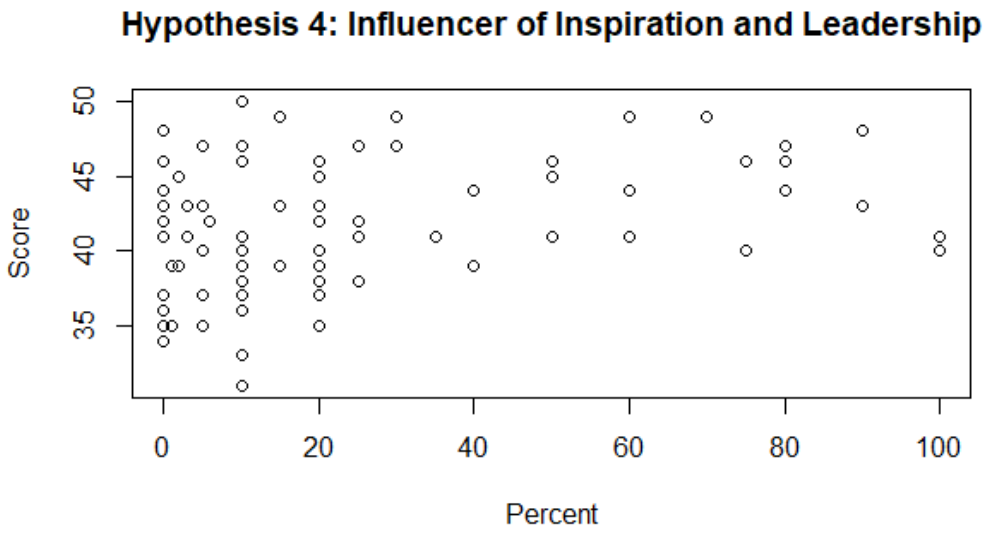

Figure 8. Scatterplot of results for hypothesis 4 for the competency *influencer of inspiration and leadership* and *percent of time reported as a virtual leader*.

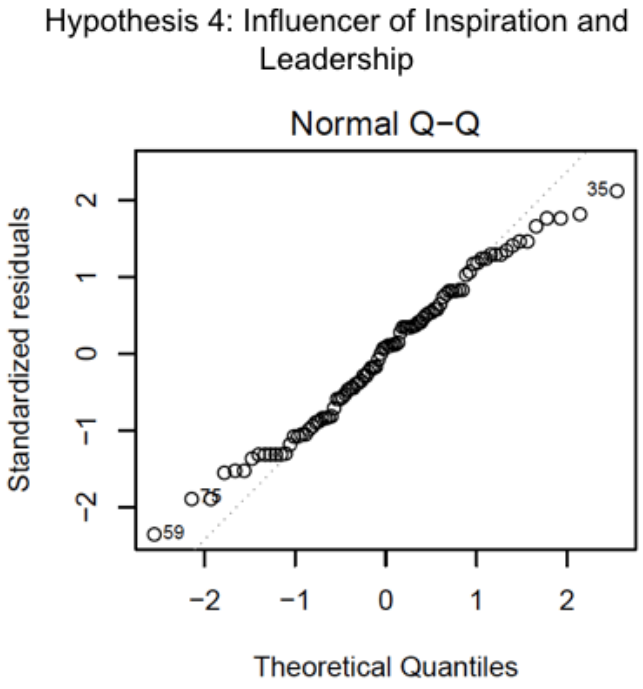

Figure 9. Hypothesis 4 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.05$ ($t = 2.84$, $p = 0.01$, $df = 91$). Because the p-value was less than 0.05, the null hypothesis was rejected. Therefore, I conclude that there was sufficient evidence for the alternative hypothesis for Hypothesis 4, that there is a significant relationship between the *IV* and *DV4*.

Hypothesis 5: Advocator of Differences and Community

The fifth hypothesis tested the correlation of the *percentage of work time as a virtual leader* (*IV*) with the indicator *Advocator of differences and community* (*DV5*). This competency is related to leading multiple cultures and building connections between multiple perspectives. As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 10. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.11$). The calculated mean of the residuals was approximately zero (-2.83×10^{-17}). The conditions for homoscedasticity were met, as residuals are within a consistent range of dispersion across the data for this hypothesis.

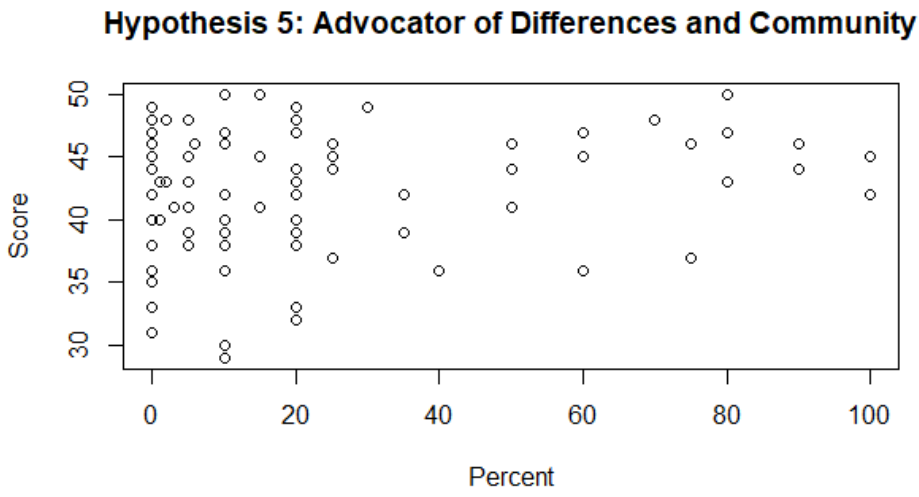

Figure 10. Scatterplot of results for hypothesis 5 for the competency *advocator of differences and community* and *percent of time reported as a virtual leader*.

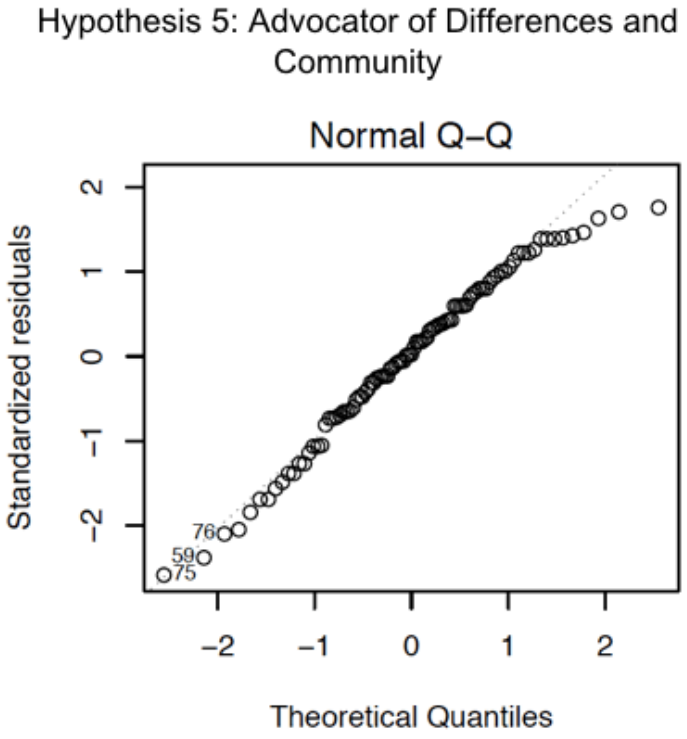

Figure 11. Hypothesis 5 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.04$ ($t = 2.04$, $p = 0.04$, $df = 91$). Because the p-value was less than 0.05, the null hypothesis was rejected. Therefore, I conclude that there was sufficient evidence for the alternative hypothesis for Hypothesis 5, that there is a significant relationship between the *IV* and *DV5*.

Hypothesis 6: Calibrator of Responsibility and Accountability

The sixth hypothesis tested the correlation of the *percentage of work time as a virtual leader* (*IV*) with the indicator *Calibrator of responsibility and accountability* (*DV6*). This competency is related to leading teams through methods that support individual accountability for measuring success and defining business results. As a review for the SLR assumptions for this hypothesis, a linear relationship existed between the *IV* and the *DV* as illustrated in the scatterplot in Figure 12. All residuals for this hypothesis were independent, and normally distributed, as noted by the Shapiro-Wilk test ($\alpha = 0.05$) and shown in the related Q-Q plot. The results of the Shapiro-Wilk test failed to reject the null hypothesis that the residuals were distributed normally, as $p > 0.05$ ($W = 0.98$, $p = 0.15$). The calculated mean of the residuals was approximately zero (-1.36×10^{-17}). The conditions for homoscedasticity were met, as residuals are within a consistent range of dispersion across the data for this hypothesis.

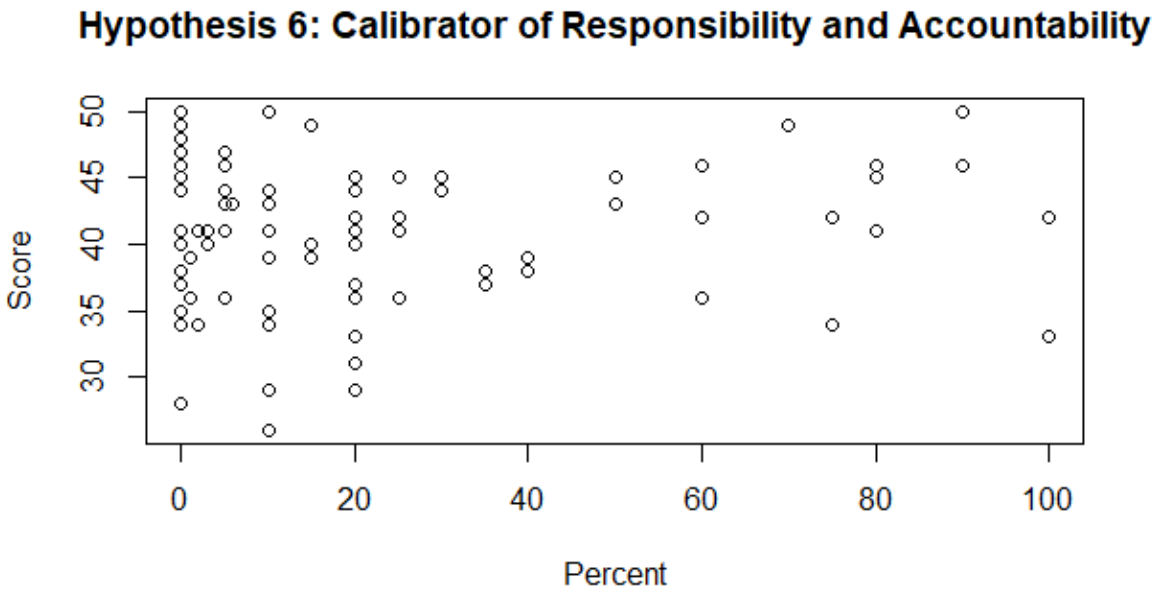

Figure 12. Scatterplot of results for hypothesis 6 for the competency *calibrator of responsibility and accountability* and *percent of time reported as a virtual leader*.

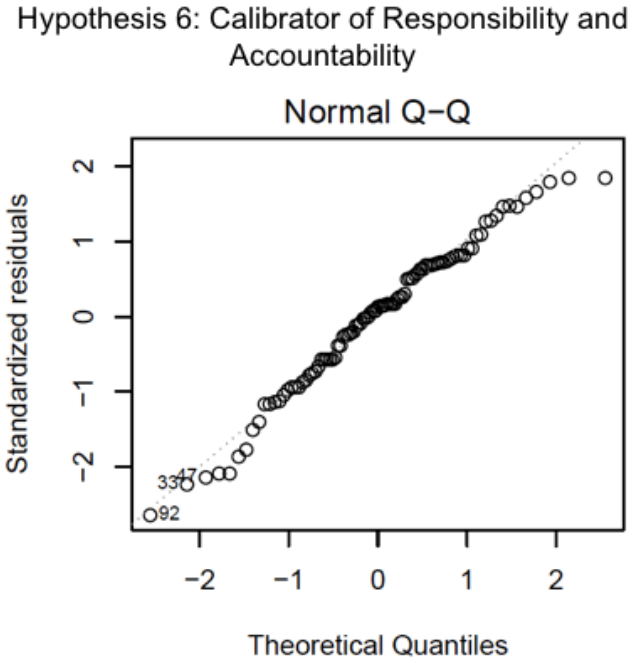

Figure 13. Hypothesis 6 Q-Q plot.

The sample statistic was $\hat{\beta}_1 = 0.03$ ($t = 1.21$, $p = 0.23$, $df = 91$). Because the p-value was greater than 0.05, I failed to reject the null hypothesis. Therefore, I concluded that there was not sufficient evidence of a significant relationship between the *IV* and *DV6*.

Summary

In summary, this study included 93 participants in this quantitative study. These participants varied in their experience, ages, and percentages of time spent online as a virtual leader. Participants were randomly selected from several LinkedIn online business groups, which are self-selecting groups reflecting topical business interests. Participants were also able to forward the invitation to participate to others who might be able to contribute to the study. The study data collection was anonymous, thus there was no method for determining who participated due to the LinkedIn invitation or due to forwards from a colleague or friend. Of the six hypotheses, four did not indicate a significant relationship between the percent of time worked as a virtual leader and leadership competencies. Only Hypotheses 4 and 5, related to the measured competencies of *influencer of inspiration and leadership* and *advocator of differences and community*, were found to be significant.

Chapter 5 provides a discussion and review of the data implications, including an interpretation of the findings, limitations of the study, recommendations based on the study, and implications of the research project. A discussion is provided to analyze and interpret the findings related to the theoretical framework, as well as recommendations of further research in the fields of virtual and in situ leadership.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to determine if there was a relationship between the percent of time worked as a virtual leader and competency indicators determined by the LLCI. Virtual work environments appear to be increasing, and there is little research literature available to determine if online leaders are significantly different from in situ leaders (Dennis, Meola, & Hall, 2013; Smith & Torppa, 2010). To help address this gap in the literature, this study's findings could support more effective virtual leadership recruiting, training, and support in many business environments. Participants were randomly selected from several LinkedIn groups that focused on leadership and virtual leadership, and 95 participants completed the anonymous study over a 4-week period. Of the responses, 93 were complete and usable in the study, which included a demographic survey and the competency survey.

I analyzed survey data in five competencies: *holder of vision and values*, *creator of collaboration and innovation*, *influencer of inspiration and leadership*, *advocator of differences and community*, and *calibrator of responsibility and accountability* (Sandstrom & Smith, 2008). An additional test was performed to determine if there was a relationship between the percentage of time spent on virtual leadership and the overall assessment. Only the relationships between percent of online leadership and the measured competencies of *influencer of inspiration* and *leadership and advocator of differences and community* were found to be significant.

Interpretation of Findings

While several studies and practices have emerged for virtual workspaces and employees, the role of the virtual leader does not often appear in the literature (Bell & Kozlowski, 2002, Hartley, 2016). The majority of leadership studies were conducted in in situ environments, which may have changed significantly in recent years (Chen & Lin, 2014; Poeppelmann & Blacksmith, 2015). In the interpretation of the results, I offer some new insights that may be gained by evaluating whether virtual leaders are different than in situ leaders, especially considering the need for finding, training, and supporting virtual leaders.

Hypothesis 1: Overall Score

The first hypothesis test was designed to explore if overall leadership competencies changed as the percentage of time spent as a virtual leader increased. For this hypothesis, there was not a significant relationship between the percentage of time spent as a virtual leader and the overall score on the LLCI, perhaps indicating that strong leaders, irrespective of the percentage of time in virtual or in situ leadership settings, perceive themselves in similar ways. Additionally, most the participants indicated that they only spent a portion of their time as a virtual leader, indicating that they also supported in situ teams as well. This finding is consistent with the literature, especially Chen and Lin (2014) and Chang et al. (2014), who noted that the virtual leadership environment is often a blending of leadership styles, modes, and capabilities. The first hypothesis test reflects the blending of virtual and in situ leadership activities mentioned

in the literature, but there was no measurable relationship between virtual leadership and overall competencies.

Hypothesis 2: Holder of Vision and Values

The second hypothesis test was an evaluation of competency *holder of vision and values*. This competency reflects the ability to demonstrate clear organizational goals by communicating and perhaps internalizing the goals so they are communicated to others (Sandstrom & Smith, 2008). As a specific leadership competency, this set of skills and abilities implies personal dedication and alignment to the corporate expectations and a deep understanding of the roles required by a leader to effectively build a stronger organization (Green & MCann, 2011; Thorn, 2012). The *holder of vision and values* competency also implies a sense of connection to the overall direction of the organization, which is a core component of transformational leadership (Berry, 2011; Burns, 1978).

In this hypothesis test, there was not a significant relationship between the percentage of time spent as a virtual leader and the competency *holder of vision and values*. This finding does not imply or suggest that either virtual or in situ leaders do not possess or use this competency in their work. Instead, it means that there is not a difference in the reported scores on these items that can be correlated to being a virtual or in situ leader.

Hypothesis 3: Creator of Collaboration and Innovation

The third hypothesis test was an evaluation of the competency *creator of collaboration and innovation*, which reflects the skills and abilities to support new or

emerging organizational opportunities (Sandstrom & Smith, 2008). Related to transformational leadership, leaders who exhibit this competence look for innovative approaches for problem-solving business issues, as well as use diversity in their team members' abilities to brainstorm solutions. Collaboration among team members is an important component of this competence, and is usually balanced by self-observation and self-assessment to create a dynamic environment (Andressen et al., 2012).

In this hypothesis test, a significant correlation between the percentage of time spent as a virtual leader and the competency *creator of collaboration and innovation* was not significant. As with Hypothesis 2, both virtual leaders and in situ leaders can demonstrate significant strengths in the competency, but there was not a significant correlation between leadership modes and their scores on the LLCI.

Hypothesis 4: Influencer of Inspiration and Leadership

The fourth hypothesis that was tested was the *influencer of inspiration and leadership*. This competency area reflects a leader's ability to connect with team members, build trust, and encourage others to work at their highest levels (Sandstrom & Smith, 2008). Most frequently, this leadership competency is thought of as leadership by example or leadership by demonstration. While charismatic leadership is part of this competency, it is not the type of leadership that is used to pressure or sell ideas to others, but focuses instead on acting admirably and as an organizational influencer (Kunnanatt, 2016). This competency also suggests shared values with followers, along with organizational advocacy for team members.

In this hypothesis test, there was a significant relationship between percentage of time as a virtual leader and this competency. A strong leader in this *influencer of inspiration and leadership* is consistent with communicating often with followers to ensure meaningful rewards and opportunities to contribute to the team's efforts (Chen & Lin, 2014; Yukl, 2009). The significant results in this category could be due to increased levels of communication required for effective virtual leadership through a variety of technologies, including telephone, videoconferencing, and periodic in-person meetings. Additionally, the positive correlation implies that the participants increased their self-perception of their abilities in this competency as they increased their time in a virtual leadership role. The higher the percentage of time spent as a virtual leader, the higher the self-perception of one's influence of inspiration and leadership.

Hypothesis 5: Advocator of Differences and Community

For the fifth hypothesis test, the competency that was measured was the *advocator of differences and community*. This competency most closely matches the conception of a virtual leader, which is often envisioned as leading a team that can be global and extremely diverse. A leader who demonstrates this competency supports diverse individuals on a team and building a more cohesive goal through shared expectations and group problem-solving (Visagie et al., 2011). A key component for being an *advocator of differences and community* is to continually gather ideas and check perceptions for opportunities that bring people's strengths together to address business goals. For example, providing open and reflective opportunities to address personality conflicts, as well as providing ongoing cross-cultural training, is a demonstration of this

competency. An advocator for differences and community is often sensitive to the internal motivations and perceptions of workers and fosters communication that identifies and resolves problems quickly and effectively (Bueno & Tubbs, 2012; Lockwood, 2015).

In this hypothesis test, there was a significant difference between virtual and in situ leaders for *advocator of differences and community*. The significant results in this category could reflect virtual leaders' use of multiple techniques for communication and teambuilding that supports ongoing communication and sharing. Additionally, the positive correlation implied that the participants increased their score in this competency as they spent more time in a virtual leadership role.

Hypothesis 6: Calibrator of Responsibility and Accountability

The sixth hypothesis reflected the competency *calibrator of responsibility and accountability*. In the model by Sandstrom and Smith (2008), this competency is an indicator of leadership inclination to share leadership roles, hold people accountable for their specific tasks, and providing and demonstrating meaningful feedback (Chang & Lee, 2013). More than just providing a periodic assessment, the *calibrator of responsibility and accountability* competency is demonstrated when leaders give and receive feedback and communicates the vision and mission through evaluations that reflect the organization goals (Change et al., 2012).

In this hypothesis test, there was not a significant relationship between the percentage of time spent as a virtual leader and the *calibrator of responsibility and accountability*. This finding does not imply or suggest that virtual or in situ leaders do not possess or use this competency in their work. Instead, it means that there was not a

difference in this competency that could be attributed to the percentage of time as a virtual leader.

Interpretations Related to the Theoretical Framework

The theoretical framework for this study was based on work by Burns (1978), Hersey (2004), and McClelland (1973) and discussed in detail in Chapter 2. Burns developed the foundations of transformational leadership that shaped many existing leadership studies and approaches. In the transactional leadership approach, the leader's role is to focus on the organizational goals, and then work with employees to solve problems, obtain training, and develop innovative solutions (Burns, 1978). Transformational leadership is often considered a shared leadership approach because the leaders is sharing decision-making responsibility with the followers. Hersey's situational leadership model in its simplest form is a decision-making matrix connecting the importance of the task to the ability of the employees to solve the task, and adjusting leadership styles to fit the needs of the moment (Hersey, 2004). The third theoretical framework, the development of leadership competencies, was first introduced by McClelland (1973) and reflected more than just skills or aptitude, but a mixture of skills, knowledge, ability, traits, and motives.

The significant results in two of the hypotheses, *influencer of inspiration and leadership* and *advocator of differences and community*, suggest modifying the concept of competencies to include workplace modes for both virtual and in situ leaders (Berry, 2011; Spencer-Scarr, 2010). Both significant competencies are closely related to many activities and functions of virtual workers and leaders, and extend the understanding of

the theoretical foundations to address more recent leadership experiences (Zimmerman et al., 2008). Being able to motivate employees and developing an effective but diverse team are both meaningful goals in a modern work environment. The significant competencies may also have hidden competency sub elements that were not measured by the survey, such as technology experience or communication styles, that contributed to the survey results.

This study raised some interesting points about how leaders are identified, trained, and supported, especially those who need to lead in a more virtual environment in the future. Looking for leaders who demonstrate the abilities to build a sense of community across diverse workforces and inspire teams to support group activities possibly meant looking for leaders who might performed best in a virtual leadership role. In another perspective, the higher competency relationships for *influencer of inspiration and leadership* and *advocator of differences and community* may indicate a performance compensation to reach team members that are not collocated with the leaders. As this study was based on self-perceptions, participants may have indicated that they were focusing their leadership attentions on different competencies as they recognize where their leadership styles need to change to meet business goals.

Limitations of the Study

As with many studies, the limitations of the study often reflect the sampling strategy. For this study, the participants were selected by an online interest group on LinkedIn.com, a business tool. Using the LinkedIn.com website allowed a wider audience and preselected participants that were fluent in standard English and website

use. However, the participants in the interest groups who responded appeared to be extremely experienced and not as reflective of a broader distribution of online leaders. Additionally, participants could forward the e-mail invitation to friends or colleagues, potentially changing the demographics of the sampling group. As the survey was anonymous, there was no way to determine how the invitation was distributed beyond initial communications.

With many of the responses, it appeared that leaders who completed the survey were extremely informed about their work environments or perceived themselves as exceptional leaders much more consistently than expected. While I cover instrumentation next, participants responding to the survey do not appear to represent a wide variety of responses on the survey. Even though videos were provided to help participants make effective choices on the survey, many participants still answered every question as a 4 or 5. This tendency to mark higher responses could be due in part to the voluntary nature of the survey and inadequate training prior to the survey to better establish a baseline understanding of the instrument and the score values. A larger audience, including leaders beyond the LinkedIn.com interest groups, may have provided a wider variety of responses. Due to the anonymity and distribution strategy of the survey, better participant preparation was not possible beyond the email invitation and the video provided on the survey page.

Instrumentation may have also contributed to the homogeny of responses. Unlike many competency studies that are mandated by a company or organization, all participants for this study were volunteers. The instrument may have been interpreted by

the participants to demonstrate their leadership proficiency, and many of the questions may have reflected participants' positive leadership self-perceptions. The high scores could have occurred in part because of the questions created a common response that suggested that higher scores were the most appropriate (Bryman, 2012; Groves et al., 2009; Zakaria & Taiwo, 2013). As the instrument, had already been developed and pilot tested, the only addition to the instrument was the demographic survey immediately preceding the LLCI. Using a standardized, unedited instrument meant that the questions were not changed, when edits may have been made to obtain more varied results. A copy of the instrument is included in Appendix A.

While the data were tested for normality and passed the assumption tests for simple linear regression, another limitation is the lack of broad representation for both in situ and virtual leaders. Many of the participants indicated that they were in situ leaders, and could have skewed the data accordingly. Even though this is a limitation of the study, future studies may indicate other differences between in situ and virtual leaders if the sample is selected with a higher number of virtual leaders.

Another limitation of the study is that the anonymous nature of the study prevented additional data collection that could have indicated the success of leaders in the competencies. This study was a self-perception survey, and many companies complement self-perception studies with 360-degree evaluations including supervisors, followers, and peers (Chang & Lee, 2013; Dai, De Meuse, & Peterson, 2010). Without more in-depth participant data, deeper generalizations about participant demonstrations of the competencies are not possible.

In terms of generalizability, reliability, and validity, the previously mentioned limitations may limit the generalizability to additional audiences. While the results may be reliable for the participating audience, additional studies may uncover different correlations, simply due to the narrow sample group and the self-selecting nature of the LinkedIn.com groups. The same applies to the validity of the study, as a wider participant group may also provide more validated results. As an introductory study, this approach yields valid data that demonstrates a relationship between the *IV* and *DV* with reasonable statistical parameters to within acceptable boundaries of Type I and Type II errors.

Recommendations

As an exploratory study that was an attempt to validate a new leadership modality and address a gap in the literature, this study could be extended to provide even more meaning to the leadership development community. As workplace technology improves and becomes even more globally distributed, many businesses will require new approaches for leading teams without regards to times, geography, and language boundaries. With richer technology-moderated communications, relationships can be forged to build effective, interactive work teams with participants from different geographies, cultures, and work styles (Fejzic et al., 2016).

One recommendation for this study is to perform the study within a single organization that is looking for new possibilities for virtual environments, virtual workers, and virtual leaders. Virtual teaming is a workplace modality that does not appear to be ending any time soon. There is a growing body of research around virtual teamwork, supported by studies, training programs, educational resources, collaboration

tools, and business practices (Dennis et al., 2013). If a large company conducted the study with all its leaders, then several potentially confounding factors could be eliminated, such as organizational culture and distribution approach. In the existing study, the variability in the participant workplace cultures may account for some differences in results.

If time, cost, and participant recruitment were not study issues, then opening the study to more participants and over a longer period would potentially yield more meaningful results, as would targeted surveys that followers could complete for their leaders. Additionally, there might be some regional or cultural differences that would emerge if the survey could be completed with non-North-American participants (Chang et al., 2012). Completing this survey in conjunction with other self-assessments would provide cross-correlation data for more advanced studies.

For leaders who work in 100% in situ or 100% virtual environments, an interesting study might be a comparison of participants, as well as an analysis of the work functions performed by each. Some components of such a study might be related to the competencies in this study, and could include a reflection of the types of leadership activities that are most impactful, such as one-on-one communications, team collaborative activities, and problem-solving approaches. Other activities, such as strategic plan development or team vision development, may be fundamentally different for different types of leaders but may not reflect virtual or in situ leadership competencies.

Finally, being able to better inform participants and select from a more widespread audience prior to data collection would potentially provide more varied and meaningful data. As discussed in the *Limitations of the Study* section, one concern was the homogeneity of the data. Being able to provide more direct instruction for participants may help ensure more valid and reliable results. Including participants using other survey solicitation techniques may also yield more participants who are better informed to complete the survey.

Implications for Positive Social Change

Virtual leadership competencies are one set of many leadership competencies being explored in the business world today. Knowing more about the impact of competencies on business models can help organizations develop new strategies and approaches that are flexible, not always connected to a single geography or culture, and emphasize communication technology to connect employees. While companies will continue to develop virtual team models, there will also be a need for virtual leadership resources as well (Clemons & Kroth, 2011). By identifying at least two virtual leadership competencies, this study can benefit companies, employees, and leaders to encourage positive social change.

One example of a positive change resulting from this study is the ability to more effectively recruit, train, and support virtual leaders using strengths comprehension in areas that are most impactful for online leaders (Cavanaugh et al., 2014). Being able to more effectively target potential leaders using a competency assessment may be one method for increasing team leadership success. Of course, many virtual leaders were

either placed in their role or were part of the process to develop a more virtual leadership role. In that case, this study supports providing specific training that has been connected to the *influencer of inspiration and leadership* and *advocator of differences and community* competencies.

Another example of positive social change from this study is to encourage the emphasis on home working or virtual work environments. If the virtual workplace trend continues, the amount of gas being consumed for a family member to drive to work and back daily could be greatly reduced. Additionally, many employees could now eliminate the time to commute, potentially lowering stress, and lessening human environmental impact. While working virtually has many different benefits, the social change that could result from understanding virtual leadership can potentially be measured through lowered stress and workplace environmental impact.

With the number of benefits that could be affected through virtualizing the workforce at least a day or two every week, the work company can save organization funds for physical buildings. Like the previous change, having a limited office space environment or greatly reducing the use of the office space can also provide a large environmental benefit.

In the field of leadership management, this study supports existing research but also provides a new review of leadership that addresses a gap in the literature. For some organizations that are either emerging or redeveloping their companies to include more virtual environments, this study provides factual, research based ideas for making new decisions with online leaders and in situ leaders alike. This section also contributes to

competency research and supports future studies of a similar nature that can be used to expand the field of virtual workplace research.

Conclusions

Social science fields change and grow as new technologies, new ideas, and new approaches are developed. This study connected new business models that include virtual leaders with meaningful competencies, not relying on older business models to support emerging online workplaces. Virtual workplaces are often very different from previous office environments, including richer technology communication tools that expand the number of communication modes. Leadership development is a critical aspect of strong organizations, because without good leaders, the business will not be successful very long, if at all. By examining the correlations between the time spent leading online and the results on the LLCI, this study identified two competencies that demonstrated significant results: *influencer of inspiration and leadership* and *advocator of differences and community*. By exploring these two competencies in more detail and with an expanded audience, there may be a way to provide more detail and develop a more generalizable set of recommendations for virtual and in situ leaders. Understanding virtual leadership competencies, even in part, can make positive changes in many workplaces in the recruitment, development, and support of virtual leaders in the workplace.

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Appendix A: Legacy Leadership Inventory

CORPORATE OFFICE

7370 Hawk Road
Flower Mound, TX 75022 USA

Date: 23 September 2014

Christopher Wells, Doctoral Student

Dear Mr. Wells:

Thank you for your interest in using the Legacy Leadership Competency Inventory for your dissertation research. As we have discussed through our emails and phone calls, we agree that using the inventory is an effective use of the tool and contributing to the body of knowledge about leaders, leadership, and competencies.

You are given permission to use the Legacy Leadership Competency Inventory to conduct your research comparing virtual and collocated leaders. We are interested in seeing a summary of your findings!

Sincerely, and good luck,

DR. C. Jeannine Sandstrom

Dr. C. Jeannine Sandstrom, CEO
CoachWorks International Inc.

LEGACY LEADERSHIP COMPETENCY INVENTORY

For each of the following statements, choose the rating that you feel is most representative of your performance:

How often **do I exhibit** this stated behavior/attitude?

Read each statement carefully, and honestly rate yourself on a scale of 1 to 5 as follows:

5 - Consistently
4 - Frequently
3- On Average
2 - Occasionally
1- Not at All

This statement describes my behavior/attitude

1. I reinforce the organization's vision and values.
2. I create possibilities that are both innovative and sound for the organization.
3. I develop and maintain strong relationships.
4. I am willing to take a stand for a person, practice, or cause.
5. I use appropriate checks and balances to reach the organization's strategic goals.

The first five questions are provided as an example of the instrument text.

Appendix B: Recruitment Invitation

DATE

Dear Colleague,

The purpose of this letter is to invite you to participate in a research study that explores leadership characteristics and competencies. I am a doctoral candidate at Walden University in the Applied Management and Decision Sciences Program specializing in Leadership and Organizational Change. I am conducting a research study to identify if there are common competencies shared by online leaders that may be different from face-to-face or collocated leaders. The results of this study could provide information to increase awareness of factors related to leadership selection, training, and support in the workplace. The findings may be useful to organizations that employ online workforces or employees that spend a portion of their time collaborating with colleagues in distant locations.

To collect data, I have prepared a short (10-15 minute) research survey that is delivered through a secure online survey tool. If you agree to participate, you will be asked to agree to an informed consent form, which you can print for your records. At no time will individual participant data be shared in any way that allows for recognition of any participant or their organization. All data reports will be developed from aggregated data. Potential participants will have a two-week timeframe to complete the survey and the option to decline participation.

The results of this research will be made available to all participants upon completion of my dissertation. If you have any questions, please e-mail me at [e-mail address redacted].

Thank you in advance for your consideration. If you wish to participate, please click here to go to the survey website: **LINK**

Sincerely,

Christopher Wells

Appendix C: Informed Consent Example

Dear Participant,

You are invited to participate in a research study designed to evaluate the leadership competencies of virtual team leaders. You were selected as a possible participant because of your membership in online forums related to virtual team leadership. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. Please read this form and ask any questions before participating in the study. This study is being conducted by Christopher Wells, doctoral candidate at Walden University.

Background Information:

The purpose of this quantitative nonexperimental study is to examine the relationship between the percentage amount of time spent weekly as a virtual leader and leadership competencies. A quantitative survey design will be used. Existing literature has already established that technology-moderated virtual teams are business phenomena different from previous in-office or in situ work environments, with unique success criteria and employee expectations (Rhoads, 2010; Saunders & Ahuja, 2006; Vakola & Wilson, 2004). However, primary research literature is rare or nonexistent regarding the competencies of virtual leaders and how they differ from in situ leaders.

Procedures:

If you agree to be in this study, you will be asked to take a brief electronic survey. The survey is strictly anonymous and will take approximately 10-15 minutes to complete.

Voluntary Nature of the Study:

Your participation in this study is strictly voluntary. Your decision whether to participate will not affect your relations within the organization in which you are employed. If you decide to join the study now, you can still change your mind during the study. If you feel stressed during the study you may stop at any time. You may skip any questions that you feel are too personal.

Risks and Benefits of Being in the Study:

This study presents no foreseeable risks to you; any participant identification collected will protect your identity and responses will be completely anonymous in subsequent reporting. You will be asked for demographic information such as gender, age, length of employment, and hours worked per week, percentage of time spent in online leadership activities, etc. to allow for a more complete analysis of the data. Electronic submissions are SSL encrypted. The data collection and analysis will be conducted by me; no other researchers will be involved in the data collection and analysis. Raw data will be electronically stored for a period of 5 years and kept locked in a cabinet for that purpose; it will be electronically shredded after that time (there will not be any paper copies). Individual participants may benefit from this study to the extent that the findings provide information that is used for informing companies with online, virtual, or distance working teams and leaders in the field of management and leadership. This may lead to improved job satisfaction for future online leadership workers.

Compensation:

Participation is strictly voluntary. For any participant who completes the study, an executive summary of the findings will be available. Information on how to obtain the executive summary of results will be provided at the end of the survey.

Confidentiality:

Any information you provide will be maintained in a secure environment. Any data being used will be aggregated to prevent individual recognition of the data. A copy of the informed consent form will be available for you to keep. Also, the researcher will not include your name or anything else that could identify you in any reports of the study.

Contacts and Questions:

The researcher conducting this study is Christopher Wells. The researcher's dissertation chairperson is Dr. David Gould. If you want to talk privately about your rights as a participant, you can call Dr. MMMMMMMM. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. Walden University's approval number for this study is **NUMBER HERE** and it expires on **EXPIRATION DATE.** You may print this form to keep for your records. If you have questions, the contact information is: Christopher Wells, at christopher.wells@waldenu.edu.

To protect participants' privacy, individual signatures of consent are not being collected; the completion of the survey will indicate participant consent.

Statement of Consent:

By clicking on the link below, I indicate that I have read the information and understand the study, and I am agreeing to the terms described above. LINK

Appendix D: Message for LinkedIn Groups

Hello, my name is Christopher Wells, and I am a doctoral candidate at Walden University. I am studying leadership competencies, and I am looking for study participants to complete a survey. The survey is completely voluntary and anonymous and will take between 10 and 20 minutes to complete. If you have team members that report directly to you, then you are invited to participate in this free and anonymous survey at <<website>>. If you have further questions regarding this study, please contact me.

Appendix E: Message for Participants Requesting Survey Feedback

You recently completed a research study survey, and your results are enclosed. Five specific leadership competencies are measured by the survey, and your scores are tabulated into each competency. There are no right or wrong answers to any of the questions on the survey. This is simply meant as a measurement of your existing competencies.

The survey was developed by Sandstrom and Smith (2008) and you are welcome to pursue more information about the survey through their text, *Legacy leadership: The leader's guide to lasting greatness*. The survey measures five competencies:

Your score	**Competency**
##	Holder of vision and values
##	Creator of collaboration and innovation
##	Influencer of inspiration and leadership
##	Advocator of differences and community
##	Calibrator of responsibility and accountability

Scores between 1-20 are considered "Novice." This is an area where only a basic skill or competence is demonstrated. Scores between 21-40 are considered "Proficient." This is an area where you might be comfortable applying this competency in your leadership practices, but can continue toward mastery of the competency. Scores between 41-50 are

considered “Legacy Leaders.” This is an area where mastery is demonstrated in the competency, allowing for an internalization of competency behaviors and skills.

If you have any further questions regarding this survey, please contact Christopher Wells.

Appendix F: Survey Data Collection Website Text

Landing Page for Survey website:

Study Home Page

Video: https://youtu.be/cFylYFq5IIc

Welcome!

My name is Christopher Wells, and I am completing my doctoral study on leadership competencies. With an increase in virtual teams, there has been a corresponding increase in virtual leaders. This study is designed to explore leadership competencies in relation to the time spent leading teams in person or in a virtual format.

Don't worry if you only lead in person or only virtually! All types of leaders are welcome to participate in the study. Many leaders also split their time between in-office and virtual teams. Any leader is welcome to participate in the study!

You might wonder what a "competency" is. A competency is described as a measurement of knowledge, skills, abilities, traits, and sometimes motives. More simply, competencies are the combinations of skills and inherent talents that you use to lead others. For example, a good restaurant manager has to bring specific accounting skills and an inherent awareness of business finances to the role. That combination of skills and talent can be considered a competence.

To participate, you will need to read and agree to the Informed Consent document in the link below. All data collected by the study will be held confidentially, and you don't even have to provide your personal information. There are three parts to the survey: a demographic questionnaire to understand more about your leadership environment, and the 50-question survey, broken into two sections. It should take between 10 and 20 minutes to complete the entire survey process.

To participate in this voluntary and free survey, please click here.

When a participant clicks on the link, it takes him or her to the following page:

Informed Consent for the Study

You are invited to participate in a research study designed to evaluate the leadership competencies of virtual team leaders. You were selected as a possible participant because of your membership in online forums related to virtual team leadership. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. Please read this form and ask any questions before participating in the study. This study is being conducted by Christopher Wells, doctoral candidate at Walden University.

Background Information:

The purpose of this quantitative nonexperimental study is to examine the relationship between the percentage amount of time spent weekly as a virtual leader and leadership competencies. A quantitative survey design will be used. Existing literature has already established that technology-moderated virtual teams are business phenomena different from previous in-office or in situ work environments, with unique success criteria and employee expectations (Rhoads, 2010; Saunders & Ahuja, 2006; Vakola & Wilson, 2004). However, primary research literature is rare or nonexistent regarding the competencies of virtual leaders and how they differ from in situ leaders.

Procedures:

If you agree to be in this study, you will be asked to take a brief electronic survey. The survey is strictly anonymous and will take approximately 10-20 minutes to complete.

Voluntary Nature of the Study:

Your participation in this study is strictly voluntary. Your decision whether to participate will not affect your relations within the organization in which you are employed. If you decide to join the study now, you can still change your mind during the study. If you feel stressed during the study you may stop at any time. You may skip any questions that you feel are too personal.

Risks and Benefits of Being in the Study:

This study presents no foreseeable risks to you; any participant identification collected will protect your identity and responses will be completely anonymous in subsequent reporting. You will be asked for demographic information such as gender, age, length of employment, and hours worked per week, percentage of time spent in online leadership activities, etc. to allow for a more complete analysis of the data. Electronic submissions are SSL encrypted. The data collection and analysis will be conducted by me; no other researchers will be involved in the data collection and analysis. Raw data will be electronically stored for a period of 5 years and kept locked in a cabinet for that purpose; it will be electronically shredded after that time (there will not be any paper copies). Individual participants may benefit from this study to the extent that the findings provide information that is used for informing companies with online, virtual, or distance working teams and leaders in the field of management and leadership. This may lead to improved job satisfaction for future online leadership workers.

Compensation:

Participation is strictly voluntary. For any participant who completes the study, an executive summary of the findings will be available. Information on how to obtain the executive summary of results will be provided at the end of the survey.

Confidentiality:

Any information you provide will be maintained in a secure environment. Any data being used will be aggregated to prevent individual recognition of the data. A copy of the

informed consent form will be available for you to keep. Also, the researcher will not include your name or anything else that could identify you in any reports of the study.

Contacts and Questions:

The researcher conducting this study is Christopher Wells. The researcher's dissertation chairperson is Dr. David Gould. If you want to talk privately about your rights as a participant, you can call Dr. MMMMMMMM. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. Walden University's approval number for this study is NUMBER HERE and it expires on EXPIRATION DATE. You may print this form to keep for your records. If you have questions, the contact information is: Christopher Wells.

To protect participants' privacy, individual signatures of consent are not being collected; the completion of the survey will indicate participant consent.

Statement of Consent:

By clicking on the link below, I indicate that I have read the information and understand the study, and I am agreeing to the terms described above. Please note that this survey will open in a new window. <<LINK>>

When the survey opens, there is another video that can be viewed:

Leader Competency Survey, Part 1 of 3 (Demographics)

This contributes to a doctoral study to evaluate the leadership competencies for face-to-face leaders and virtual leaders. If you have questions regarding this study, please contact christopher.wells@waldenu.edu. There is no right or wrong way to answer any of the questions. This should take between 10 and 20 minutes to complete.

This survey is completely confidential and will not be reported in any identifiable way. If you wish to receive a copy of your responses, you may enter your email at the end of the survey, and a summary will be sent to you during data analysis.

The first part of the survey is demographic information that clarifies your working condition.

The second and third parts of the survey are the instrument to evaluate competencies.

Introduction to the Survey Video: https://youtu.be/d0xXXWoezfM

<<Survey follows>>

Appendix G: Survey Reminder Email

Dear Potential Participant,

If you have not yet done so, please take the time to read this email and participate in the linked survey if you choose to participate. You are invited to participate in a research study designed to evaluate the leadership competencies of virtual team leaders. As a member of this group, you are welcome to participate in the survey. To participate, you will need to go to <<WEBSITE>> and follow the directions on the site to complete eht survey. Below is a copy of the document entitled "informed consent" to allow you to understand this study before deciding whether to take part. Please read this form and ask any questions before participating in the study. This study is being conducted by Christopher Wells, doctoral candidate at Walden University. You may contact Mr. Wells with questions related to the study.

Background Information:

The purpose of this quantitative nonexperimental study is to examine the relationship between the percentage amount of time spent weekly as a virtual leader and leadership competencies. A quantitative survey design will be used. Existing literature has already established that technology-moderated virtual teams are business phenomena different from previous in-office or in situ work environments, with unique success criteria and employee expectations (Rhoads, 2010; Saunders & Ahuja, 2006; Vakola & Wilson, 2004). However, primary research literature is rare or nonexistent regarding the competencies of virtual leaders and how they differ from in situ leaders.

Procedures:

If you agree to be in this study, you will be asked to take a brief electronic survey. The survey is strictly anonymous and will take approximately 10-15 minutes to complete.

Voluntary Nature of the Study:

Your participation in this study is strictly voluntary. Your decision whether to participate will not affect your relations within the organization in which you are employed. If you decide to join the study now, you can still change your mind during the study. If you feel stressed during the study you may stop at any time. You may skip any questions that you feel are too personal.

Risks and Benefits of Being in the Study:

This study presents no foreseeable risks to you; any participant identification collected will protect your identity and responses will be completely anonymous in subsequent reporting. You will be asked for demographic information such as gender, age, length of employment, and hours worked per week, percentage of time spent in online leadership activities, etc. to allow for a more complete analysis of the data. Electronic submissions are SSL encrypted. The data collection and analysis will be conducted by me; no other researchers will be involved in the data collection and analysis. Raw data will be electronically stored for a period of 5 years and kept locked in a cabinet for that purpose; it will be electronically shredded after that time (there will not be any paper copies). Individual participants may benefit from this study to the extent that the findings provide information that is used for informing companies with online, virtual, or distance working teams and leaders in the field of management and leadership. This may lead to improved job satisfaction for future online leadership workers.

Compensation:

Participation is strictly voluntary. For any participant who completes the study, an executive summary of the findings will be available. Information on how to obtain the executive summary of results will be provided at the end of the survey.

Confidentiality:

Any information you provide will be maintained in a secure environment. Any data being used will be aggregated to prevent individual recognition of the data. A copy of the informed consent form will be available for you to keep. Also, the researcher will not include your name or anything else that could identify you in any reports of the study.

Contacts and Questions:

The researcher conducting this study is Christopher Wells. The researcher's dissertation chairperson is Dr. David Gould. If you want to talk privately about your rights as a participant, you can call Dr. MMMMMMMM. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. Walden University's approval number for this study is **NUMBER HERE** and it expires on **EXPIRATION DATE.** You may print this form to keep for your records. If you have questions, the contact information is: Christopher Wells.

To protect participants' privacy, individual signatures of consent are not being collected; the completion of the survey will indicate participant consent.

Statement of Consent:

By clicking on the link below, I indicate that I have read the information and understand the study, and I am agreeing to the terms described above. LINK TO WEBSITE LANDING PAGE

Appendix H: Demographic Questionnaire

What is your gender?

- Male
- Female
- Prefer not to say

What is your age?

- Your answer

In which state do you reside? (If you do not reside in a state listed below OR live in another country, please provide your location below.)

- AL Alabama
- AK Alaska
- AZ Arizona
- AR Arkansas
- CA California
- CO Colorado
- CT Connecticut
- DE Delaware
- DC District of Columbia
- FL Florida
- GA Georgia
- HI Hawaii
- ID Idaho
- IL Illinois
- IN Indiana
- IA Iowa
- KS Kansas
- KY Kentucky
- LA Louisiana
- ME Maine
- MD Maryland
- MA Massachusetts
- MI Michigan
- MN Minnesota
- MS Mississippi
- MO Missouri
- MT Montana
- NE Nebraska
- NV Nevada
- NH New Hampshire

- NJ New Jersey
- NM New Mexico
- NY New York
- NC North Carolina
- ND North Dakota
- OH Ohio
- OK Oklahoma
- OR Oregon
- PA Pennsylvania
- RI Rhode Island
- SC South Carolina
- SD South Dakota
- TN Tennessee
- TX Texas
- UT Utah
- VT Vermont
- VA Virginia
- WA Washington
- WV West Virginia
- WI Wisconsin
- WY Wyoming
- Other:

What is your industry (NOT your company, but the industry of your primary work)? Examples might include K-12 education, software development, or healthcare.

- Your answer

What is your current position title / level?

- Manager (someone who leads employees, such as a project manager)
- Director (someone who leads managers and other employees, such as a training director)
- VP or Executive (someone who leads directors or managers, such as a Human Resources VP)
- Chief officer (someone who leads VPs or Executives, such as a Chief Operating Officer)
- Other:

For how many years have you worked at this level?

- Your answer

How many employees report or reported directly to you in the last 12 months?

- Your answer

Of the employees that report or reported directly to you, how many of these employees were collocated with you at least 50% of the time (on average over the last 12 months)?

- Your answer

Of the employees that report or reported directly to you, how many of these employees are currently below the age of 30?

- Your answer

Of the employees that report or reported directly to you, how many of these employees are currently below the age of 50?

- Your answer

Over the past 12 months, how many hours a week did you typically work?

- Your answer

What is your current compensation level?

- Less than $25,000 annually
- $25,000 to $50,000 annually
- $50,000 to $75,000 annually
- $75,000 to $100,000 annually
- $100,000 to $125,000 annually
- $125,000 to $150,000 annually
- $150,000 to $175,000 annually
- $175,000 to $200,000 annually
- $200,000 to $225,000 annually
- $225,000 to $250,000 annually
- More than $250,000 annually

What is your highest formal education level?

- Associate degree
- Bachelor's degree
- Master's degree
- Specialist degree (typically in education only)
- Doctorate degree
- Other:

Over the past 12 months, what percentage of your week did you spend leading others in a virtual format (not in a collocated space)?

- Your answer

If you lead others in a virtual format, how many years have you led in a virtual format? If you do not lead others in a virtual format, please enter "0".

- Your answer

Many leaders support both collocated teams and virtual teams. How many years of experience do you have leading others in a face-to-face environment for part or all of your time?

- Your answer

In your opinion, do you see yourself more as an online leader, or a face-to-face leader?

- I see myself more as an online leader
- I see myself more as a face-to-face leader

What is your preference, to lead as a face-to-face leader or as an online leader?

- I prefer to lead as a face-to-face leader
- I prefer to lead as an online leader