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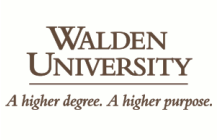

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The Challenges of Virtual Leadership Affecting Project Delivery in the Public Sector

Verna-Kay Smith
Walden University

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Walden University

College of Management and Technology

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Verna-Kay Smith

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2018

Abstract

The Challenges of Virtual Leadership Affecting Project Delivery in the Public Sector

by

Verna-Kay Smith

MBA, University of Maryland, University Colleges, 2013

MHRM, University of Maryland, University Colleges, 2011

BS, Kaplan University, 2006

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Management and Technology

Walden University

November 2018

Abstract

Leaders of the U.S. government and U.S. organizations continue to seek information to mitigate risk and improve project deliverables in virtual environments. The problem addressed in this study was the rapid growth of technology in virtual workplaces that causes organizational leaders to concentrate on infrastructure and technology. The purpose of the exploratory case study was to understand the challenges virtual leaders encounter in the government environment that affect project delivery. The research questions were designed to examine the challenges virtual team leaders encounter while maintaining their roles and responsibilities to complete a project successfully in a timely manner. The theory of constraints was the framework used to address the problem of virtual leaders who struggle to complete project deliverables. Data were collected from 11 government virtual leaders via an online anonymous questionnaire and were triangulated via a reflective journal and notes from a checklist filled out by the participants who reviewed their own virtual team documents, logs, and recordings that served as firsthand knowledge. Data analysis led to several patterns and themes including communication, trust, and collaboration challenges for virtual leaders. Organizational leaders can use this study's findings to develop efficient and effective ways to engage with virtual leaders to achieve effective project deliverables and impact change in virtual environments in the 21st-century workplace.

The Challenges of Virtual Leadership Affecting Project Delivery in the Public Sector

by

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Dedication

This dissertation is dedicated to my late father, Vernon Lewis Mitchell, who I believe watches over me daily. I want to thank him for instilling determination, dedication, and a strong work ethic into my soul. Dad was warrior; he never let anyone or anything stand in his way. The Mitchell blood runs deep in my soul; I too have that same determination and work ethic, so thank you Dad for always believing in me!

I also want to dedicate this dissertation to my grandparents, who taught me to lead from the front from a young age. I was one of many grandchildren, and it was impressed upon me early to give freely, to remember there is enough love to go around (to love unconditionally), and to never be selfish. Early in life, it was expected that I would become a role model. My grandmother had no time for weakness; she was about trying and trying again. I have always been determined to succeed in life and to never quit.

Although my grandparents and my father are no longer with me physically, I know they are watching over me, and they have encouraged me along this journey. I realize this would never have been possible without God or them by my side. I am truly grateful. I thank them for the influence they have in my life. I am blessed!

Acknowledgments

I wish to thank several people for their support on my journey to obtain my PhD. First, I would like to thank God. This was not an easy journey, and it is only though grace, faith, and God's love that I have been able to finish and reach my goal.

To my amazing husband, Kenneth Alan Smith, who I can never thank enough, what an amazing man to stand by me through this whole process. I want to thank you for always believing in me. Thank you for your unconditional love and support. I love you! To my two sons Travis Mitchell Smith and Todd Dillon Smith, you guys have seen me go to school for years and never once gave up on me. You both always stood by me. Thank you for always supporting me—love, your Momma!

To my Mom (Joyce Kay Mitchell), I love you and thank you for all the support throughout this process—your daughter always. I want to thank my extended family who never gave up on me, even though at times I may have seemed distant, missed events, and missed spending time with relatives, just know your thoughts and prayers were heard. Thank you to my brother, sisters-in-laws, brothers-in-laws, daughter-in-love, nephews, nieces, aunts, uncles, cousins, extended family, and friends—I truly appreciate all the love and support.

I want to thank my dissertation committee members: Dr. John Kitoko, Dr. Kenneth Levitt, and Dr. Judie Forbes—each of you contribute to my success. In addition, I want to thank Dr. Walter McCollum, the Cohort group, Dr. Brian Warrick and Toni Williams (Editor) for all your support and positivity in this process.

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Chapter 1: Introduction to the Study

Research about virtual collaboration is vital to the field of management. Organizational leaders who focus on project delivery as a risk indicator may achieve clarity regarding virtual leadership challenges. Researchers should work to understand the barriers that decrease effectiveness in project delivery (Battistella, Annarelli, & Nonino, 2015). Virtual collaborations have become more sophisticated and require virtual communication, trust, and leadership when establishing roles for virtual leaders (Hampton et al., 2017; Hill & Bartol, 2016; Jarvenpaa & Leider, 1999). By gathering evidence and gaining knowledge of the virtual leadership challenges and of the deficiencies that may occur in project delivery, researchers can contribute to the management field.

Organizational leaders must have virtual team leaders who can provide successful project outcomes. Virtual collaboration challenges have implications for how organizational leaders approach and assess situations (Hill & Bartol, 2016; Laux, Luse, & Mennecke, 2016). The organizational mission is at risk when uneducated and ill-equipped virtual leaders facilitate virtual teams. It is crucial for organizations to achieve success "through well-trained leadership" (Mathieu, Neumann, Hare, & Babiak, 2014, p. 84) and through virtual team leaders who produce quality project deliverables. The execution of change by organizational leaders continue to require identification of limitations and the gaps that cause delays, and the prevention of delays in productivity.

Virtual collaboration and project delivery depend heavily on communication, trust, and emergent leadership. Organizational leaders continue to learn and understand

how to motivate employees and virtual leaders toward successful project outcomes to maintain project deliverables. This study involved evaluating the role of virtual leaders and their challenges with communication, trust, and leadership emergence, as well as how these competencies contribute to project deliverables. In the remainder of this chapter, I discuss the study's background, offer the problem statement, discuss the purpose and nature of the study, present the research questions and the theoretical framework on which I built the study, outline the significance of the study, provide definitions, and outline assumptions and limitations.

Background of the Study

Communication and trust play vital roles in virtual collaboration and project delivery. Derven (2016) indicated free-flowing communication, good judgment and trust, and building confidence in a virtual workplace are key elements of virtual collaboration. Lee (2013) noted that virtual leaders consistently encounter obstacles in building communication and trust. Action plans facilitated by well-trained virtual leaders may mitigate risk factors while producing successful project deliverables.

As organizational leaders learn to communicate within the virtual environment, it is essential to build trust within the virtual workplace. Virtual team leaders need to build relationships that support virtual members to accomplish projects (Derven, 2016). As a critical component of building virtual teams, virtual leaders face a challenge of developing trust with team members. Noncollocated team members might remain out-of-sync with other members in the team, which can cause misunderstandings (Cramton, 2001; Schaubroeck & Yu, 2017). By remaining respectful of others and sharing concerns,

leaders can establish trust (Derven, 2016). Virtual leaders may struggle as team members try to bond and build trust within the group. Leaders are responsible for becoming the conduit between the organization and the virtual team (Derven, 2016). Virtual team leaders establish their role within the group and find ways to strengthen virtual communication and trust within the virtual team.

Virtual team leaders continue to receive a lot of scholarly attention in the 21st century. This study involved exploring both the contextual work environment and the motivational aspects of virtual leaders to expand the current literature. Increasing the organizational leaders' understanding of the underlying mechanism and motivation for when, how, and why virtual leaders encounter challenges during collaborations will ultimately affect the outcome of project delivery.

Problem Statement

Virtual teams that lack adequate virtual training and competencies encounter challenges in project delivery. Despite the popularity of virtual teams in the 21st-century workplace, managing a virtual team is complex (Berry, 2011). The 21st-century workplace is at a higher risk for delays in productivity due to impacts from team members' lack of virtual competencies (Daim et al., 2012). For example, ineffective project delivery yields an adverse impact that contributes to a 15% loss in the annual budget of the U.S. government (Hardy-Vallee, 2012). The general problem is that the virtual skills and competencies of leaders lag behind those of leaders in the expanding technological business world. The specific problem is the challenges that virtual leaders face, such as lack of knowledge, training, and resources, all of which adversely impact

project delivery. This study fills a gap in the literature regarding the challenges of virtual communication, trust, emergent leadership, and project delivery.

Purpose of the Study

The purpose of this qualitative, exploratory, single case study was to explore the challenges for virtual team leaders in the government environment that can affect project delivery. Scott and Wildman (2015) have noted evolution in conceptions of how to complete work and the emergence of competing ideas about the competencies and attributes appropriate for fluid work environments. Organizational leaders, including those in the U.S. government, are attempting to flatten hierarchies and reduce travel costs by increasing more opportunities for telework, telecommuting, and virtual teams; however, research on virtual teams is still in its infancy (Bailey & Kurland, 2002; Bell & Kozlowski, 2002; Hertel, Geister, & Konradt, 2005; Hertel, Konradt, & Voss, 2006; Jarvenpaa & Leider, 1999; Meister & Willyerd, 2010). This study fills a gap in the literature through examination of virtual teams from the perspective of government virtual team leaders in relation to their challenges with virtual communication, trust, leadership, and project delays. Social change will occur when organizational leadership selects virtual leaders with abilities to build virtual communication, develop trust, and improve leadership while reducing project delays. Furthermore, organizational change in the public sector is more responsive and efficient in government through quality services, stewardship of tax dollars and innovative development and initiative programs.

The qualitative research method involves gathering detailed data to describe a phenomenon. In contrast, the quantitative research method involves measuring data and

counting features to construct statistical models. A quantitative research method was not appropriate this research study on virtual team leadership because quantitative surveys include hypotheses for large groups of participants (Andressen, Konradt, & Neck, 2012). Qu and Dumay (2011) noted that researchers conducting interviews or questionnaires to answer research questions which is a qualitative approach. I determined that an exploratory case study was better suited to answering why and how questions.

Research Questions

The main research question was as follows: How do virtual leaders in the government environment describe the challenges of leading a virtual team, and how do these challenges impact project delivery? The specific research subquestions for the study were the following:

Subquestion 1: How do government virtual team leaders describe the manner in which challenges negatively affect project delivery?

Subquestion 2: What are virtual leaders doing to overcome the challenges associated with effective project delivery?

Theoretical Foundation

I developed this qualitative study using the lens of the theory of constraints. As Goldratt (1990) noted, the theory of constraints applies to running and improving organizations while addressing a system's performance and seeking positive change. Supporters of this theory claim that organizational leaders can focus on the limiting factors that tend to lead to project failure. Leadership and trust are challenging factors of virtual collaborations that affect project delivery (Daim et al., 2012; Hill & Bartol, 2016;

Iorio & Taylor, 2015; Jarvenpaa, & Leider, 1999; Lockwood, 2015). Aguinis and Edwards (2014) also contended that management research must keep pace with communication technology. Organizational leaders must find new ways to address the challenges of training and developing competencies from a virtual perspective while focusing on the key risks to project delivery.

Leaders find value and success within the virtual environment while maintaining proficiency in project delivery. Researchers continue to study the challenges of virtual teams and leaders in the 21st-century workplace (Hertel et al., 2005; Kayworth & Leider, 2001; Kurmm & Hertel, 2013). This exploratory case study involved using the theory of constraints lens to understand how virtual leaders try to meet goals and objectives by focusing on mitigating the risks of project deliverables. Specifically, the theory of constraints provided a sound framework for my exploration of virtual collaboration, virtual training, and project delivery.

Hu, Cui, and Demeulemeester (2015) noted the theory of constraints is an effective tool for communicating, building teams, reducing inventory, and reducing costs. Goldratt (1990) suggested that leaders use the theory of constraints to solve problems in leadership alignment, project management, supply chain, and production. As a theory of thinking processes, the theory of constraints is a framework that leaders use to develop simple solutions to complex problems (Goldratt, 1990). The theory is particularly beneficial for organizational leaders working to manage the limitations that prevent a successful output. By acknowledging the limiting factors and developing simple solutions through the theory of constraints, organizational leaders can remain competitive.

Nature of the Study

I used a qualitative, exploratory case study design for this study. A qualitative case study approach begins with a specific criterion associated with specific groups, individuals, topics, or events (Yin, 2014). My goal was to make a positive contribution to the field of study by shedding light on the challenges facing virtual leaders. Specifically, I focused on the challenges of virtual communication, building trust, and leadership emergence. Using the theory of constraints as a lens, I was able to identify the limitations that ultimately cause delays in project delivery.

This study involved surveying government virtual leaders to determine their thoughts and attitudes about project delivery, their challenges with virtual teams, their competencies, and their skills to identify the most effective avenue for successful outcomes. Yin (2011) suggested that a case study should involve a real context. Most research takes place in educational settings, where virtual teams are somewhat limited and lack real-world applicability (Hertel et al., 2005, 2006; Jervenpaa & Leidner, 1999; Zhang & Fjermastad, 2006). Researchers have revealed that 85% or more of all relevant research on virtual teams and project delivery is not based in a real-world context but generally takes place in university settings. In this study, I collected research data from virtual leaders who work in government environments and analyzed perspectives, documented data collection, and reviewed other related case studies and narratives. I focused on virtual leadership and risk mitigation in project delivery.The population in this study comprised employees from government-based agencies who have held virtual team positions for at least 5 years. I chose this population because these employees had

the knowledge and skill sets that allowed open dialogue on the topics of virtual teams, competency, training, and project delivery. An exploratory case study was a comprehensive way to address the questions of *why* and *how* in relation to virtual communication, trust, leadership, and project deliverables.

Definitions

I have used the following operational definitions of key terms throughout this study:

Competency: Due to the rapid growth of virtual teams, it is necessary to understand virtual compentecy challenges in the 21st workplace, focus on the impacts to productivity and project deliverables. In addition, some researchers believe that, by formularizing specific, virtual competency skills, organizational leaders can produce and create successful virtual teams. (Krumm, S., & Hertel, G. 2013; Muethel & Hegl, 2010; Wakefield, Leidner, & Garrison, 2008).

Diverse teams: A component of effective government virtual leaders is diversity due to the differences in space and culture that occur in the 21st-century work environment. Virtual teams are diverse and have both differences and similarities. Furthermore, virtual teams are diverse, with both differences and similarities, and if harnessed properly by the virtual team leader, the teams can become a source of innovation (Derven, 2016).

Global virtual teams: Global virtual teams have members who transcend time, space, and cultural differences and who work together to provide project deliverables (Magnusson, Schuster, & Taras, 2014).

Inclusive leader: The type of leader who is essential to virtual team success and captures the best ideas by including all participants on a team (Derven, 2016).

Leadership emergence: Development of leadership skills over time; in leaderless groups, leaders emerge (Stader, 2009).

Social network group: Groups of individuals who network or share information on a social website (Kuo & Thompson, 2014).

Swift trust: The form of trust that occurs in temporary organizational structures, a group, or a team to include quick starts with initial trust (Crisp & Jarvenpaa, 2015; Germain & McGuire, 2014).

Team performance: The multilevel process of teamwork and individual team members completing tasks to achieve positive outcomes that meet or exceed the project deliverable standards (Haselberger, 2016).

Virtual leader: The virtual leader develops and facilitates effectively in the virtual workplace. Virtual leaders maintain confidence in their leadership roles and responsibilities and they are proficient in project output. In addition, the virtual leader is proficient in virtual ccommunication, has abilities to develop trust, demonstrates flexibility with virtual teams, and encourages leadership emergence. The positive effects that a virtual leader has on projects and deliverables can contribute to the competitive global market, which may propel organizations forward in the 21st-century workplace (Lockwood, 2015). The business world is at a critical stage for virtual team leaders, and it is essential to adapt and become proficient in virtual mechanism effectiveness in the virtual workplace (Fan, Chen, Wang, & Chen, 2014; Hoch & Kozlowski, 2012).

Virtual team leaders: The style of leadership in which leaders make a variety of self-managed decisions associated with national or cultural diversity and globalization that require a different approach (Kirkman, Shapiro, Lu, & McGurrin, 2016). In this case study, all virtual leaders were government employees and had at least 1 year of leadership experience in the virtual environment with 15–20 successful projects.

Virtuality: Exclusive use of technology for communication and collaboration amongst team members (Serban et al., 2015).

Virtual reality: A virtual environment that is a computer-generated, multisensory, and includes telepresence or full immersion (Aguinis & Edwards, 2014; Stanney & Zyda, 2002).

Assumptions

For this case study, I made several assumptions to support a successful outcome. Virtual teams and project deliverables was the selected topic, and my goal was to understand the impact of government virtual team leaders on project deliverable outcomes. One assumption was that Goldratt's (1990) theory of constraints would provide an adequate framework for this research topic and data collection. I sent the participants an e-mail that outlined the purpose of the study and included a list of criteria for participation. I assumed that the individuals would read the criteria and participate in the research only if they meet the requirements. Another assumption was that the government employees participating in the study would understand the questionnaire and provide honest responses.

Scope and Delimitations

The target population comprised virtual team members and leaders who were government employees. The sample size was 11 volunteer participants. I used a purposeful sampling technique to identify potential participants from among government employees on LinkedIn. Sources of data for this exploratory case study included electronic questionnaires, documents, team memos, progress reports of virtual teams, and a personal reflective journal.

The scope of this case study was delimited to government virtual team leaders and employees who participated in virtual team collaborations working across time, distance, and space. Working on these teams requires team members' ability to quickly build trust with one another and to complete a full project deliverable through information and communication technology.

Limitations

Case studies are a useful research method even though they have limitations. This exploratory case study had limitations, which indicate possible weaknesses that can affect the outcome of a study (Mitchell & Jolley, 2010). One limitation was the sample of participants purposefully recruited from government agencies, which narrowed the scope. Furthermore, the government employees needed to be on virtual teams that worked on projects, which caused additional limitations. The findings from the study only reflect the views of the virtual team leaders and members who participated. Researchers may believe the results of this case study are too narrow to generalize to any other organization or virtual team leader in the same situation. Although a government sample

weakens the validity of a study (Singleton & Straits, 2010), my findings may prove useful for practical application by organizational leaders and other stakeholders. It is important to develop simple solutions for virtual teams to follow and to adjust the flow for changes that will increase productivity.

Significance of the Study

The purpose of this qualitative, single case study was to explore the challenges virtual leaders in the government environment face that can affect project delivery. Organizational leaders should recognize the direct effect of virtual teams and project deliverables on organizations' bottom line. Hardy-Vallee (2012) indicated that project delivery failure is a strong indicator of the ineffectiveness of virtual leaders, and results in a 15% annual loss to the U.S. budget. Organizational leaders must assess and mitigate the risks of project delays resulting from ineffective virtual leaders or the risk factors will continue to have significant effects on the annual budget.

Virtual teams and collaborations alter where, when, and how employees go about their daily tasks and complete projects. Researchers continue to emphasize the importance of improving technology and using traditional options such as e-mail, chat, and discussion boards (Lin, 2010). Virtual organizations can only succeed if they learn to adapt to the challenges of the virtual environment and understand the roles, competencies, and challenges of virtual team leaders (Kozlowski, Grand, Baard, & Pearce, 2015).

Organizational leaders should understanding the technological infrastructure, but should also comprehend the challenges virtual leaders confront. Researchers generally

examine the technological infrastructure when working to understand organizational risk; however, the ultimate risk factor is failed project delivery, which has a connection to the annual budget. Chang, Hung, and Hsieh (2014) indicated that virtual teams develop in all types of industries, and leaders need to acquire the skills and competencies to achieve positive impacts. Virtual teams feel disconnected from organizations if leaders do not interact virtually. Chrisentary and Barrett (2017) noted that virtual leaders experience pitfalls of interpersonal communication because they lack regular face-to-face interaction. Virtual teams must develop relationship bonds and trust (Hoch & Kozlowski, 2012; Jarvenpaa & Leider, 1999). Berry (2011) noted that human resources policies should include development, training, and competencies for virtual team leaders. It is time to build successful virtual teams and develop virtual leaders who can facilitate effectively in the virtual workplace. Leaders who remain confident in their leadership roles and responsibilities can remain proficient in project output.

Communication, the ability to develop trust, flexibility, and leadership emergence are competencies a virtual leader needs to develop to positively affect project delivery and to mitigate risk in the 21st-century workplace. The business world is at a critical stage for virtual team leaders, and it is important to adapt and become proficient in the effectiveness of virtual mechanisms (Fan et al., 2014; and Hoch & Kozlowski, 2012). The virtual environment is in flux, and organizational leaders need to remain adaptable and experience virtual collaboration. Since 2006, teleworking in the government has grown 400% (Denison et al., 2014). Organizational leaders have a responsibility to ensure virtual leaders have the training, skills, and competencies required to make

positive strides during virtual collaborations and can effectively produce project deliverables in this work enviroment.

The world of information and communication technologies is always changing. Social media networks are becoming significant means for information sharing throughout organizations (Hanna, 2012; Sethuraman, Sekar, & Sivaramakrishnan, 2014), and as the world of media continues to advance, virtual leaders will need to grow, develop, and learn to emerge into new media-rich environments. The execution of change by organizational leaders is paramount, as is a focus on identifying the limitations and gaps that are causing the delays and limiting productivity in project deliverables. It is important to develop simple solutions for organizational leaders to follow so that they can better adjust workflow to increase productivity.

Significance to Social Change

Organizational leaders may be able to use this study as a strategy tool and a tool for positive social change. Specifically, they may use my findings to understand how virtual teams perform and communicate in order to keep their organizations competitive (see Berry, 2011). The data from this study may minimize the risk of project failure, contribute to team building, and foster positive virtual team. Building on virtual leadership competencies and team effectiveness assists in project delivery.

The significance and social change implication from this study is that virtual teams and leaders can use the results to expand project delivery while leveraging a full range of competencies for virtual team leaders. Researchers, virtal team leaders, and organizational leaders may analyze the material and effectively provide a framework for

standard procedures, policies, and compentencies. Case studies have a wide range of potential audiences including policy makers, professionals, researchers, organizational leaders, and stakeholders. The results can have positive benefits on many fronts in the management community. One of my central goals in this study was to identify limitations and gaps that are causing delays and limiting productivity in project deliverables.

Summary and Transition

This chapter included a discussion on the research problem, purpose, and methodology I used to study how organizational leaders can effectively impact virtual team leaders and project deliverables. It is essential to understand the limitations and constraints that cause delays in project deliverables, and an exploratory case study was the appropriate methodology to examine the challenges virtual leaders face. Organizational leaders must recognize when project deliverables are negatively impacted by demands in the virtual workplace.

Chapter 2 includes a comprehensive review of relevant studies on virtual teams, leadership, and project deliverables. Chapter 3 includes my rationale for selecting an exploratory case study and using the theory of constraints while explaining data collection, data analysis, and ethical protection for this research project. Chapter 4 includes the findings, results, and constructs built around the research questions. The results show patterns, themes, and perspectives I gathered using the theory of constraints as a critical lens. Finally, Chapter 5 includes my analysis and interpretation of the results, social change implications, and possible topics for future research.

Chapter 2: Literature Review

In this chapter, I review scholarly literature on virtual teams, communication, trust, leadership emergence, and project delivery. The literature includes multiple perspectives on virtual leadership competencies during virtual collaborations to improve productivity time frames for project deliverables. According to Bryman (2015), analysis of past and current literature is crucial for a thorough study. I reviewed studies dating from 2012 to 2015 that included information regarding (a) the background of virtual teams; (b) impacts for project deliverables; (c) challenges and disadvantages to virtual collaborations, (d) virtual teams, communication, trust, and leadership emergence; and (e) the characteristics of a 21st-century virtual workplace environment. The literature underscores the lack of virtual training and competencies for virtual leaders and teams, which continues to negatively affect project delivery times and creates challenges, obstacles, and failures in project performance.

More research was necessary on the topic of virtual leaders and project delivery, as the challenges continue to affect virtual teams (Hertel et al., 2005, 2006; Roybal, 2010; Zhang & Fjermastad, 2006). The purpose of this case study was to explore virtual leaders' challenges in the government environment that can affect project delivery. The general problem was that the virtual skills and competencies of leaders lag behind those of leaders in the technological business world. The specific problem was the challenges that virtual leaders face, such as the lack of knowledge, training, and resources, all of which adversely affect project delivery. Identifying the limitations and gaps that are causing delays and ultimately preventing productivity in project deliverables is important,

and my goal was to develop simple solutions organizational leaders could use to increase productivity in the 21st-century workplace.

Literature Search Strategy

I conducted an exhaustive review of scholarly materials to gain a better understanding of the challenges that virtual leaders encounter. Hu et al. (2015) indicated that the theory of constraints is an effective tool for communication, team building, inventory reduction, and cost reduction for organizations. Other researchers have shown that lack of communication, trust, and leadership are the contributing factors of challenges faced by virtual leaders (Daim et al., 2012; Iorio & Taylor, 2015; Jarvenpaa & Leider, 1999; Lockwood, 2015). These challenges continue to affect virtual leaders and project deliverables.

Because the topics of virtual leadership and project deliverables are multifaceted, researchers are still exploring them. Researchers are taking a multilevel approach when studying virtual teams (Charbonnier-Voirin, El Akremi, & Vandenberghe, 2010; Maynard, Kennedy, & Sommer, 2015; Wildman et al., 2012). Virtual leaders must recognize the challenges that are affecting virtual teams and leaders (Saafein & Shaykhian, 2014). Leaders of government agencies have begun to make changes with the virtual workforce. In 2006, the federal government's virtual workforce expanded by 400% and government leaders began developing telework policies and procedures (Denison et al., 2014). Pepper (2010) noted that no organization can remain stagnant and stay competitive in the global environment. Leaders in the business world and the government need to become proficient in virtual leadership (Bell & Kozlowski, 2002;

Fan et al., 2014; Hoch & Kozlowski, 2012; & Zaugg & Davies, 2013). Derven (2016) indicated that virtual leaders are an essential source of innovation and new ideas for any organization, which includes government agencies. Researchers must address the challenges that affect virtual leadership and project deliverables.

This literature review includes research on virtual leadership and project delivery, which were key concepts in this exploratory case study. My primary concern in this study was risks to project deliverables in virtual environments due to the challenges caused by a lack of communication, trust, and leadership emergence. In this review, I found links between several variables identified in previous research. Specifically, I found links in the research between the challenges virtual leaders experienced in training, competencies, policy and procedures, virtual leadership style, and virtual leadership effectiveness. Selecting the most suitable research method involved reviewing different research methods and choosing the method most appropriate for the study. The gaps I identified in the review served to justify the type of method and approach I adopted for the study.

For this exploration of the challenges that virtual leaders encounter, I reviewed peer-reviewed journal articles, reports, standards, regulations, encyclopedias, and government policies and procedures. The review involved searching databases related to the fields of business, management, and psychology to gain insight on the topic. I conducted Boolean searches of databases I accessed through the Walden University Library including ABI/INFORM Complete, Academic Search Complete, Business Sources Complete, Emerald Management Journals, Dissertation and Theses at Walden, Dissertations and Theses Full Text, Google Scholar, ProQuest Central, ProQuest SAGE

Premier, Science Direct, and Thoreau. I also reviewed reports from the United Nations, the U.S. Department of Defense, the U.S. Department of State, and the National Oceanic and Atmospheric Administration.

Searching for the following terms and phrases ensured the inclusion of all relevant topics in the review: *competency, diverse teams, e-loyalty, global virtual teams, inclusive leader, social network group, swift trust, team performance, virtual team leaders, virtuality, challenges and disadvantages of virtual teams, communication within virtual teams, use of technology by virtual team leaders,* and *swift trust within virtual teams*. I also searched the databases for literature related to the theoretical framework of the study, the theory of constraints.

The information obtained from the literature review was critical to my analysis of the data. I used a systematic chain of evidence and multiple resources with publication dates between 2013 and 2017 to ensure the validity of this exploration, and I sought to saturate the topic. However, core articles need more focus than reference articles (Machi & McEvoy, 2012). The review involved writing summaries with a focus on basic information and the key concepts associated with the research topics. Summaries involve high-level information, and a literature review is an in-depth processing of that information (Machi & McEvoy, 2012). My goal was to identify a gap in the literature. Table 1 shows the exhaustive list of source material and publication dates, with 87% of the sources published in the 2013–2017 time frame.

Table 1

Publication Dates of Source Material Used in the Literature Review

	Text and books	Articles and journals	Reports and dissertations	% of references
2013–2017	1	74		80
2006–2012	7	47		15
2005 and prior	3	18		5
Total references	16	137		100

Theoretical Foundation

Organizational leaders should focus on positive project delivery and any limiting factors that can fail a project. Project delivery is at a higher risk of failure for virtual teams (Daim et al., 2012). The theory of constraints, when used for communicating, team building, reducing inventory, and reducing costs, is an essential tool in building a foundation in management (Hu et al., 2015). The theory of constraints is a management paradigm, and Goldratt (1990) noted organizational leaders can solve problems in leadership alignment, project management, supply chain, and production with strategies and tools developed from the theory of constraints. Organizational leaders and researchers utilized the theoretical framework of constraints which leads to continusous improvements by addressing system performance and seeking positive change.

The theory of constraints aligned with the purpose and problem of the study given that it underscored the lack of virtual training and competencies for virtual leaders and teams, which continues to impact project delivery times, creates challenges and obstacles, and leads to failed project performance. Research has indicated that communication, trust, and leadership are the leading obstacles in virtual collaboration for leaders and teams (Daim et al., 2012; Hill, & Bartol, 2016; Iorio & Taylor, 2015; Lockwood, 2015).

Virtual team leaders must address the same challenges in core competencies to ensure successful project deliverables.

My assumptions throughout the research process and the research questions aligned with the theory of constraints. According to Goldratt's (1990) theory of constraints, research topics and data collection serve as an development of the research process. In this research process, I assumed that individuals would participate only if they met the requirements of the case study. I also assumed that the government employees who participated in this study would understand the questionnaire and would provide honest responses to each question.

Furthermore, my hope was that organizational leaders could use my findings to learn to manage their limitations. The idea is that with knowledge comes prevention, and with prevention comes successful project deliverables. The theory of constraints is a thinking process, and as such, the theory assists leaders in developing simple solutions to complex problems (Goldratt, 1990). Leaders who have the ability to understand how virtual teams perform, trust, and communicate may be able to remain competitive (Berry, 2011). By acknowledging the limiting factors and developing simple solutions, leaders can use the theory of constraints to focus on successful project deliverables in virtual collaborations.

Leaders might be able to use the findings from this study to focus on the root cause of project delivery delays. Accordingly, the results may lead to improvements in the skills, competencies, and developments of virtual team collaborations and leadership training. By building virtual leadership competencies and virtual team effectiveness,

organizational leaders can improve project delivery. With the help of human resources, leaders may develop frameworks to implement new training tools and social change strategies to ensure the positive effects of virtual leadership skills on project deliverables are constructive.

A qualitative approach, and more specifically a human behavior research design, framed this investigation to answer *why* and *how* questions regarding stakeholder investments. Goldratt (1990) noted that leaders using the theory of constraints might solve problems in leadership alignment, project management, supply chain, and production. The theory of constraints is a management approach leaders use to identify limitations to successful productivity, and as such, this theory is viable for producing an organization's project deliverables.

Rationale of choice. Six Sigma, lean thinking, and theory of constraints are all solid methodology approaches in the management field. Each one provides concepts, tools, strategies, and techniques to improve performance in the workplace. Nave (2002) indicated that knowing and understanding all methods or theories is difficult. It was therefore better to gain an understanding of how and why the theory of constraints was the right choice for this research study. The focus of Six Sigma is generally based as part of a customer service approach. In the 1970s, leaders at Motorola developed Six Sigma as a framework to address poor product quality and focus on customer requirements (Sunder, 2016). Since the 1970s, some organizational leaders have developed hybrids of this methodology in hopes of progressing at faster rates with improvements and quality. The hybrid models of lean Six Sigma are becoming more attractive to leaders in

manufacturing and service industries around the world (Sunder, 2016). The focus of Six Sigma is on frameworks for product development and process improvement.

Lean thinking is an operational tool that leaders in the automobile industry used to remove waste from organizations. The lean approach started in the automobile industry and then branched into banking, mining, public service, and health care (Thangarajoo & Smith, 2015). Toyota had great success with the lean thinking approach and became competitive with quality products and a continuous production flow (Thangarajoo & Smith, 2015). The focus of lean thinking is production flow (Nave, 2002) and creating high-quality products at lower prices with a strategy of receiving the products in a shorter time frame; the operational framework is a leaner approach to a high-performing production flow. Leaders use the theory of constraints to address system improvements within an organization. An organizational leader who seeks positive change may implement strategies and tools that a theory of constraint model produces. The strength of the weakest link limits performance (Nave, 2002; Tulasi & Rao, 2012). The focus of the theory of constraints is on the process that slows the speed and throughput that ultimately causes delays in the performance process (p. 75). In the case of virtual team leaders and the risk to project deliverables, organizational leadership must seek the answers and implement strategies and tools to address the weakest link.

Conceptual Framework

Virtual teams remain fluid in the 21st-century workplace. The theory of constraints is a process for continual improvement and is a valuable tool in the case of rapidly changing technology (Rand, 2000). Virtual teams and virtual collaborations alter

where, when, and how employees perform their daily tasks and complete projects. Researchers continue to emphasize improving technology and using traditional options such as e-mail, chat, and discussion boards (Hertel et al., 2005; Lin, 2010). Project delivery has a higher risk of failure in virtual teams (Daim et al., 2012) and contributes to a 15% loss in the annual budget of the United States (Hardy-Vallee, 2012). Virtual organizations can only succeed if organizational leaders learn to adapt to the challenges of the virtual environment and understand the roles and competencies that virtual team leaders require (Kozlowski et al., 2015).

Organizational leadership must gain knowledge and understanding of the technology and infrastructure of the organization. Furthermore, the knowledge and understanding of virtual leaders' capabilities and competencies should receive the same amount of attention. The theory of constraints may be an answer for organizational leaders seeking to complete projects in a timely manner.

The concepts of miscommunication, development of trust, leadership emergence, and productivity of project deliverables came to light through patterns and themes in the research. The landscape of virtuality is continually and rapidly changing and remaining in the status quo is a disadvantage for 21st-century organizations (Pepper, 2010). Virtual changes are obstacles that cause breakdowns in the change process. It is important for virtual teams to face challenges such as communication, trust, and leadership emergence with knowledge and a framework to mitigate delays in project delivery.

Leaders in the 21st century struggle with the challenges of a dynamic and radically changing virtual workplace environment. Virtual collaboration and

communications, trust, and leadership emergence are all critical topics in this case study. In addition, virtual leaders in a virtual environment must understand that virtual teams are a complex and fluid component in the 21st-century workplace. Researchers continue to use multilevel frameworks and models as they strive to understand the dynamic differences between traditional teams and virtual teams. Knowledge sharing and team learning should lead to a clear understanding of the concepts of communication, trust, and leadership emergence within virtual teams.

Communication. A lack of knowledge involving virtual communication, which in turn delays the growth of trust during collaborations, continues to exist as the Internet continues to change the landscape of the virtual workplace environment. It is essential to recognize and understand miscommunication and miscues during virtual collaborations. Organizational leaders must recognize the virtual challenges that are affecting virtual teams and leaders (Saafein & Shaykhian, 2014). The effects that occur through miscommunication during virtual collaborations incur risk to project deliverables, and using the correct communication tools can assist with communication breakdowns in virtual collaborations (Zaugg & Davies, 2013). Well-trained virtual leaders who are cognizant of not only their role but also their weaknesses will relate to individuals during virtual collaboration and move toward positive outcomes for project delivery.

Researchers have indicated that virtual teams develop behavioral patterns. Virtual team members learn from mistakes and redirect communication when possible (Chang, Chuang, & Chao, 2011; Ratcheva & Vyakarnam, 2001). Breakdowns in communication cause chaos for virtual team members, and communication and coordination tools assist

team members with communication and shared coordination of activities (Olson & Olson, 2014; Zaugg & Davies, 2013). These patterns trust, and leadership develop over time through actions and communications in interpersonal and interorganizational relations.

All individuals want to feel secure with leadership in a virtual environment. Computer-mediated communication systems do not have to be sophisticated, but information repositories for archiving communication are essential (Berry, 2011; Olson & Olson, 2014). As the virtual workplace continues to change and evolve into a more dynamic virtual environment, leaders are beginning to understand the need for better infrastructure, communication tools, and trust development.

Trust. Leaders in the virtual workplace find it more challenging to establish trust without the confidence of team members. Virtual team accountability is complex because the opportunities to relate face-to-face are fewer (DePaoli & Ropo, 2015). Chrisentary and Barrett (2015) indicated virtual leaders build on trust in virtual teams to increase tacit knowledge. Teams that are not collocated may feel out-of-sync with other members of the team, which can cause misunderstandings, miscommunication, and a lack of trust among team members (Cramton, 2001; Schaubroeck & Yu, 2017). Virtual leaders may struggle as the members try to bond and build trust within the group. Leadership style is a focal point for researchers.

Developing trust in virtual teams becomes an issue, as leaders execute virtual teams at a fast pace. Meyerson, Weick, and Kramer (1996) developed a phrase to describe the quick development and short-term trust relationship of virtual teams.

Traditional trust development may not work within the virtual community because some relational influences are weak within virtual teams (Berry, 2011). Virtual team leaders delegate to team members, make decisions, and facilitate virtual collaborations that happen randomly and rapidly throughout the workday. In the 21st-century workplace, this fast progression requires highly skilled virtual leaders who can understand and remain proficient within the virtual workplace environment. Researchers continue to seek avenues best suited to lead virtual teams (Bell & Kozlowski, 2002; Muethel & Hegl, 2010; Wakefield et al., 2008). Haselberger (2016) suggested using a multilevel process of teamwork and individual team members to complete project tasks, mitigate project delays, and exceed project deliverable standards. It is essential to build communication and trust within the virtual workplace. Some organizational leaders have used various leaders and facilitators to form virtual teams and to focus on individuals who spend time in virtual teams to gain a sense of trust and connection so team members can emerge in leadership roles. Lockwood (2015) contended that virtual leaders require some form of virtual leadership training to become successful 21st-century leaders. The positive effect of leaders in a virtual collaboration will develop with training and immersion.

Leadership emergence. Proactive leaders address complex topics, ensure the support of team efforts, follow the organizational mission, and manage conflicts. Virtual team leaders exist throughout organizations as more virtual teams take on projects. Leadership is a vital part of virtual team development (Chrisentary & Barrett, 2017). It may be better to have some work experience with technology and network interaction, which will influence and develop positive impacts within virtual teams (Iorio & Taylor,

2014). Additionally, virtual team members who have experience with technology and network interaction can establish a leadership role within a group (Iorio & Taylor, 2014, p. 404). Performance in virtual teams can increase through effective leadership.

Leadership positions in organizations are vast and vary in detail. Myatt (2015) suggested that gaining a leadership position is easier than maintaining it is, and the credibility of a leader is crucial. The concept of leadership must develop in a work environment over time and space. Daim et al. (2012) noted progressive leaders emerge within virtual collaborations through developing communication skills and becoming facilitators within the virtual community. Through the positive engagement of leaders, individuals build a sense of trust in virtual teams (Iorio & Taylor, 2014; Jarvenpaa & Leider, 1999). However, DePaoli and Ropo (2015) contended that some socializing and meeting face-to-face is necessary to build trust in virtual teams. Not all researchers agree about how leaders should develop trust or establish bonds within virtual teams (Charbonnier-Voirin et al., 2010). Many teams come with a unique set of dichotomies from diverse cultures, face language barriers, and experience virtual miscues that virtual leaders must overcome, as it requires a specialized skill set to face such challenges in a productive and positive manner.

Comprehending some of the challenges that virtual teams encounter may mitigate risks and lead to a more productive flow of projects. Iorio and Taylor (2014) reported virtual teamwork is important when establishing virtual leadership emergence. Leaders must engage with individuals to develop a sense of trust. The challenges facing virtual teams indicate that a need exists for the physical presence of a leader (DePaoli & Ropo,

2015). Virtual teams are becoming a fast-growing topic that requires more information. Virtual leaders must create a framework with common shared goals to develop trust, build communication, and establish a commitment of resolving differences, removing obstacles, and creating accountability among team members. For decades, forming teams at organizations varied depending on the requirements, but the most common reasons to build a team are to enhance productivity; to increase flexibility and the speed of decision making; and to establish workforce diversity, quality, and customer satisfaction (Gibson, Ivancevich, Donnelly, & Konopaske, 2009; Hollenbeck, Meyer, & Ilgen, 2007; Larson & LaFasto, 1989). Albanese (1994) noted the true reason to develop a team is to improve project results.

It is essential for leadership to recognize and understand the elements of virtuality because leaders of 21st-century organizations face various challenges that negatively affect productivity (Saafein & Shaykhian, 2014), especially project deliverables. Leaders are not grasping the requirements essential to developing productive virtual leaders who can benefit not only the virtual team but also the whole organization or government agency. Leaders are unable to comprehend their role in the virtual environment. Chang et al. (2014) indicated that virtual teams develop in all types of industries, and organizational leaders are responsible for acquiring the skills and abilities needed to affect virtual collaborations and teams positively. Since 1996, various researchers have studied swift trust and its attributes in virtual teams (Crisp, C. B., & Jarvenpaa, S. L., 2015). Research results indicate that virtual teams have difficulty developing trusting relationships (Berry, 2011). The phase *swift trust* became significant among virtual teams

that expedited trust development in the virtual community. However, Wildman et al. (2015) contended that the phenomenon of swift trust as defined does not envelop all temporary teams such as virtual teams. Some form of trust is necessary to facilitate a virtual collaborative setting in a positive and productive manner. Zakaria and Yusof (2015) noted virtual teams continue to struggle with swift trust due to culture differences, short deadlines, and different time zones. Trust plays a vital role in developing virtual team, virtual collaboration, and project delivery. Virtual teams readily use swift trust, which can positively affect team performance.

Organizations struggle to match the pace of technology. As more virtual leaders are in demand and the number of virtual teams is increasing, organizational leaders may make virtual leadership training a requirement (Lockwood, 2015). E-loyalty for leaders became a new phrase in the virtual world as individuals established forms of swift trust (Crisp, & Jarvenpaa, 2015; Yao, Tsai, & Fang, 2015). The speed at which everything changes in virtuality may be almost overwhelming, and organizational leaders need to obtain additional training and gain new competencies from a virtual perspective to address project delivery delays while researchers continue to seek the right balance. Organizational leaders cannot afford the high risk that virtual teams cause due to communication breakdown, trust issues, and challenges with virtual leadership (Daim et al., 2012). Researchers must continue to investigate virtual teams and leaders to find the gaps in the literature to reveal the challenges and to educate organizational leaders and virtual team leads at various organizations.

Literature Review

Serban et al. (2015) contended comfort with technology has no relationship to leadership emergence in a virtual team. It is essential for leadership of virtual teams to remain flexible and to expect consistent growth and development. The literature review illuminated the lack of understanding by researchers, organizational leaders, and virtual team leaders at various organizations. Virtual teams are indispensable, yet a critical gap in the literature on effective leadership to prevent risk of productivity in organizations required additional scholarly research, as the work environment continues to change radically (Daim et al., 2012). Leaders must develop the skills and abilities needed to make positive strides in the virtual workplace. Since the beginning of virtual teams, various researchers have studied the different dynamics of teams and leadership. Aguinis and Edwards (2014) contended that management research must keep pace with communication technology, whereas Yao et al. (2015) noted virtual communities should assist in providing theoretical platforms for individuals to share information and knowledge, as this would be a best practice approach for the virtual workplace. Additionally, researchers continue to seek avenues that best suit the leadership style and competency skill set for leading virtual teams (Bell & Kozlowski, 2002; Muethel & Hegl, 2010; Wakefield et al., 2008). The type of leader that is essential to a virtual team's success and that captures the best ideas during collaborations includes all participants on the team (Derven, 2016). Based on the amount lost in the annual budget, a major responsibility of organizational leadership is to mitigate project delays. The driving concept is to develop core competencies for virtual team leaders because with the correct

competencies, the challenges and obstacles faced during a virtual collaboration will diminish. Additionally, virtual leaders will be able to affect project deliverables positively.

Additionally, the literature review establishes relevance and includes an explanation regarding why and how the data aligns to the management and leadership field for future research. Challenges specific to virtual leaders are virtual communication, trust, and leadership emergence among virtual teams. In addition, project delivery considered an at-risk element for virtual teams due to the breakdown of communication and a pending development in the 21st century work environment (Daim et al., 2012). According to Berry (2011), virtual teams have difficulty developing trusting relationships. Iorio and Taylor (2015) indicated that leadership emergence is vital in virtual teams and differs based on personal experiences with technology. It is up to the leadership in a virtual team to develop and discover the proper framework requirements to succeed in the 21st-century workplace. Researchers are not in agreement on the basic leadership definition or on how to assist with the forward progression of a virtual leader.

Virtual teams need some knowledge and understanding of technology and infrastructure. In the 21st century, the new term *virtuality* refers to the exclusive use of technology for communication and collaboration (Serban et al., 2015). Global virtual teams are teams with members who transcend time, space, and cultural differences and who work together for project deliverables (Magnusson et al., 2014). According to Kuo and Thompson (2014), virtual teams may work as groups who network or share information on social websites and are known to social network. When virtual teams

collaborate, it is essential to establish ways to build trust, and it is up to virtual leaders to understand and guide their team members.

The concepts of communication, development of trust, leadership emergence, and the productivity of project deliverables for virtual team leaders developed through communication, collaboration, trust and trained facilitators. The landscape of virtuality is continually and rapidly changing, and remaining status quo is a disadvantage for any 21st-century organization (Pepper, 2010). Virtual changes are obstacles to leadership and organizations that create breakdowns in communication for virtual teams. Researchers have studied the progression of leaders and skills for years, and virtual leadership is an innovation in the 21st-century workplace (Anjanee, Neera, & Shoma, 2010; Bass, 1990; Katz 2009; Krumm, & Hertel, 2013; Pepper 2010). The challenges faced by virtual teams such as communication, trust, and leadership emergence may impede project delivery and successful outcomes.

Leaders may struggle with the challenges of a dynamic and radically changing virtual workplace environment. Researchers are using a multilevel framework approach when studying virtual teams (Charbonnier-Voirin et al., 2010; Maynard et al., 2015; Wildman et al., 2012). Gilson, Maynard, Young, Vartianinen, and Hakonen (2015) studied virtual teams between 2005 and 2015 and the empirical work led to 10 main themes for future research. The number of virtual teams is increasing, and a need exists for attention toward future research. Understanding virtual teams is a complex and fluid component of the 21st-century workplace. Multilevel frameworks and models continue to assist researchers as they strive to understand the dynamic differences between traditional teams and virtual

teams. Through knowledge sharing and team learning, the concepts of communication, trust, and leadership emergence evolve within virtual teams.

Virtual leaders, in a virtual environment, who can remain aware and positive and who can communicate effectively can build trust within their virtual teams. Sankowska and Söderlund (2015) indicated trust is one key component to a successful virtual team. Earlier researchers did not make trust a key component of success, but in the 21st century, researchers have deemed this as a vital issue of artificial and experiential value. By gaining knowledge, interpersonal skills, relational links, and abilities specific to a virtual leader's need to be proficient, organizations can remain competitive in the 21st-century workplace (Crosby & Zlevor, 2010; Deal, 2007; Kahai et al. 2007; Kuruppuarachchi, 2009; Ropo & Saur, 2008; Yukl, 2006). By understanding the constraints and limitations of a virtual leader and the critical components necessary to succeed on deliverables, virtual teams with a properly trained virtual leader can succeed in the 21st-century workplace (Crosby & Zlevor, 2010; Deal, 2007; Kahai et al., 2007). Therefore, the purpose of this exploratory case study was to examine the challenges virtual leaders face in the government environment and the effect on project deliveries that these challenges make.

Communication. Soft skills, such as communication, are beneficial to virtual team leaders and a competency required by virtual leaders. Zofi (2012) indicated a loss of basic communication cues in the virtual environment has occurred and has diminished communication cues, which causes leaders to lack awareness of their virtual teams. The challenge of virtual communication continues for leaders, which in turn delays the growth of trust during collaborations as the Internet continues to change the landscape of

the virtual workplace environment (Osman, 2014). As late as 2012, leaders in many federal agencies failed to integrate policy, standard operating procedures, and operation plans for the virtual workplace (Fuerth & Faber, 2012; Hines, 2012). An organization's mission is at risk when uneducated and ill-equipped virtual leaders facilitate virtual teams.

A true limitation occurs when a virtual leader does not grasp the essential requirements to develop a project deliverable. It is essential for organizational leaders to recognize and understand the elements of virtuality because 21st-century organizations are facing various challenges that affect successful productivity (Saafein & Shaykhian, 2014), including project deliverables. Osman (2014) noted that virtual leaders learn to communicate through direct language that allows for more concise and a clearer understanding for virtual team members. Zofi (2012) reported virtual communication is about group discussions, shared documentations, shared calendars, consistency with team e-mail, giving virtual members a chance to communicate openly, and shared, open information for all members. By using direct, open, and consistent communication, virtual leaders are able to convey time frames, deadlines, and responsibilities for everyone on the team. Through virtual communication, a virtual leader is able to lead using virtual methods and to ensure an understanding of tasks for a successful project outcome.

Virtual collaborations continue to increase as the Internet continues to change the landscape of the virtual workplace environment, and virtual communication will continue to be a competency for virtual leaders. Lee (2013) indicated that employees are

collocated and that they operate less frequently in brick-and-mortar environments. Virtual team members may push back project delivery timelines and responsibilities in a virtual environment if they lack of understanding and if they have less leadership interaction (Zofi, 2012). The 21st-century workplace continues to operate through virtual communication, and leaders continue to face virtual communication challenges. Organizational leaders who do not grasp the essential requirements to develop virtual communication and truly benefit from well-developed virtual leaders, including government virtual leadership, disregard an asset to the organizational team.

The Internet continuously changes, and many organizations fall prey to remaining status quo and becoming ill-prepared in the virtual workplace. It is essential for leaders to recognize and understand the elements required to develop virtual leaders because the 21st-century organizations face various challenges that affect productivity (Saafein & Shaykhian, 2014). Organizational leaders must adapt to the 21st-century workplace and lead not only through traditional concepts but also virtually with new approaches in the virtual environment. Lee (2013) suggested that through developing virtual communication, knowledge, skills, and abilities leaders can build trusted teams. Additionally, leaders must comprehend their role in the virtual environment. Analysts for the Society for Human Resource Management (SHRM) estimated that nearly half of all U.S. organizations use virtual teams on a daily basis (Germain & McGuire, 2014, p. 357). Chang et al. (2014) indicated that virtual teams develop in all types of industry and noted organizational leaders must acquire the skills and abilities to positively affect virtual collaborations and teams. Empirical studies on leadership, virtual teams, and virtual

leaders in relation to shared emergent factors of trust can be found as researchers seek ways to assist organizations and leaders in the leadership and organizational field; it is critical for businesses to remain competitive in the rapidly changing technological world (Gibson & Gibbs, 2006; Kabai et al; 2004; Symons & Stenzel, 2007; Zaugg & Davies, 2013). However, gaps remain in the literature, as in-depth research findings are lacking, and the studies are not always consistent; it seems virtual leadership is in its infancy stage.

Gibson and Gibbs (2006) conducted an exploratory study on the effects of geographic dispersion through 177 interviews and with 14 virtual teams and found that virtual teams with excellent collaboration skills used knowledge sharing and safe communication environments to build trust to communicate effectively. High standards of training and competencies are necessary to assist virtual leaders and have already occurred in the virtual workplace. Leaders in each organization and government agency must develop virtual leaders and teams to remain innovative and to depend on virtual trust and leadership emergent skills, as the technology will continue to change.

Crum (2000) conducted a study on leadership with 308 senior executive service members in the U.S. Navy. The government exploratory study included innovations for leadership development with technology and noted changes in organizational environments, attitudes, and behaviors would require substantially more exploration. Various researchers have studied virtual teams in a variety of settings: Ahuja's (2010) mixed method study with software organization leaders to study performance, Lockwood's (2015) case study with virtual teams and managers to study communication

issues, and various studies conducted in university settings for the convenience of the setting (Iorio & Taylor, 2015; Kuo & Thompson, 2014; Magnusson et al., 2014; Minas, Potter, Dennis, Bartelt, & Bae, 2014; Myatt, 2015; Olsen & Olsen, 2014; Purvanova, 2014; Saafein & Shaykhian 2014). Not all studies produce positive outcomes, and virtual team leadership is still in the infancy stage, as technology continues to outpace competency skills and abilities; as well as policies, standard operating procedures, and operation plans.

The virtual workplace continues to change and evolve into a more dynamic virtual environment, and organizational leaders are beginning to understand the need for better infrastructure, communication tools, and trust development. Using the correct communication tools can minimize communication breakdowns in virtual collaborations (Hill, & Bartol, 2016; Zaugg & Davies, 2013). Virtual team members should learn from their mistakes and redirect communication when possible (Chang et al., 2011; Ratcheva & Vyakarnam, 2001). Breakdowns in communication cause chaos for virtual team members. Communication and coordination tools assist team members with communication and shared coordination of activities (Olson & Olson, 2014; Zaugg & Davies, 2013). The development of virtual communication competencies includes an awareness of communication networks, both formal and informal (Gilley 2006; Stevens & Campion 1999). Virtual team leaders can become positive communicators in the virtual environment and make positive impacts in project delivery if they are well-trained and cognizant of their role to relate to individuals during virtual collaborations. Identifying the limitations and gaps that are causing delays and preventing the success of

productivity in project deliverables is essential to develop simple solutions that will increase productivity.

Trust. Leaders in the virtual workplace find it challenging to establish trust without the confidence of team members. Virtual team accountability is complex because there are fewer opportunities to relate face-to-face (DePaoli & Ropo, 2015). According to Cramton (2001), teams that are not collocated may feel out-of-sync and may lack awareness of other members of the team, which in turn causes misunderstandings, miscommunication, and a lack of trust among team members. Virtual leaders may struggle as the members try to bond and build trust within the group. Virtual team leaders must establish their role within the group and find a way to build trust within the virtual team.

The delegation of authority, which is a normal approach to assigning tasks in government agencies, may become a crucial component as virtual team leaders lead virtual teams that are teleworkers in the government on a daily basis. However, the concepts of trust and developing trust will still be an important component of the success of those virtual teams. Zakaria and Yusof (2015) noted virtual teams continue to struggle with swift trust due to cultural differences, short deadlines, and different time zones. Traditional trust development may not work within the virtual community because some relational influences are weak within virtual teams (Berry 2011). Virtual team leaders are delegating to team members, making decisions, and facilitating virtual collaborations that happen randomly and rapidly throughout the workday.

In the 21st-century workplace, the fast progression virtual team develop requires highly skilled virtual leaders who can understand, and remain proficient within, the virtual workplace environment. Researchers continue to seek avenues best suited to leading a virtual team (Bell & Kozlowski, 2002; Muethel & Hegl, 2010; Wakefield et al., 2008). The traditional leader-centric approach focuses on team leader abilities, and transformational leadership centers on the emergence of adaptive behaviors (Charbonnier-Viorin et al., 2010; DePaoli & Ropo, 2015). Researchers are choosing from an array of concepts and theories to gauge the best approach to assist leaders who are working with virtual teams.

Trust plays a vital role in the development of virtual teams, virtual collaboration, and project deliveries. Virtual teams readily use swift trust, which can positively affect team performance. Haselberger (2016) indicated that multilevel processes of teamwork and individual team members create complex project tasks to mitigate project delays and exceed the project deliverable standards. It is essential to build communication and trust within the virtual workplace. Additionally, some organizational leaders use various leadership skills and facilitators to form virtual teams, and they focus on individuals who spend time in virtual teams and who gain a sense of trust and a connection, so team members can emerge into leadership roles. Lockwood (2015) noted that virtual leaders require some form of virtual leadership training to become truly successful as a 21st-century leader. The positive impact of leaders in a virtual collaboration will develop with training and immersion.

It is human nature to want to feel secure with leadership, even in, if not more so in, a virtual environment. Zofi (2012) indicated trust is a key component for the success of a virtual team. Computer-mediated communication systems do not have to be sophisticated, although information repositories for archiving communication are essential (Berry, 2011; Olson & Olson, 2014). Trust in data is important, as is trust in virtual leaders. The key role of a virtual leader is to build trust in leadership despite challenges (Zofi, 2012). Trust plays a vital role for many virtual teams and leaders trying to be productive in the 21st century workplace.

As the virtual workplace continues to change and evolve into a more dynamic virtual environment, leaders are beginning to understand the need for better infrastructure, communication tools, and trust development. Virtual teams seem to value trust more than do traditional face-to-face teams (Chang, Hun, & Hsieh, 2015). Zofi (2012) noted that leadership in the 21st century is less about control and more about trusting the delegation of authority with the team members, which is a crucial component for virtual team leaders to establish their role within the group and find a way to build trust among the virtual team members.

Leaders in the virtual workplace find it challenging to establish trust without the confidence of team members. Pellerin (2009) reported that team building is an important component in the development of effective teams and requires performance improvement, self-development, positive communication, and the ability to work closely together to solve problems. Virtual team accountability is complex because there are fewer opportunities to relate face-to-face (DePaoli & Ropo, 2015). Zofi (2014, p. 103)

explained virtual trust never develops in a vacuum, and a virtual team must be able to communicate openly and often to develop trust. Well-trained and educated virtual leaders will be able to address these virtual trust-building challenges and complex issues.

Virtual leaders face virtual challenges. Virtual leaders must establish bonds with virtual team members and build trust among the group, especially in the early stages of team building. Cramton (2001) indicated that a virtual team is not collocated, so team members may feel out-of-sync, which can cause the team to have misunderstandings, to miscommunicate, and to face specific challenges during the trust-building phase. Virtual leaders must establish their virtual team and build the bonds of a well-established team (Ardichvili, Natt och Dag, & Manderscheid, 2016). However, virtual leaders who fail to maintain connections to their virtual team can lack clarity, which can lead to miscommunication and a sense of a dishonesty among the team members (Zofi, 2012). Virtual leaders are unique, and it is important to understand and address the complex issues they face to have a successful virtual team.

Virtual leadership challenges that ultimately affect productivity were a focus in this case study. The development of trust within virtual teams may become an issue, as leaders execute virtual teams at a fast pace (Zofi, 2012). Sankowka and Söderlund (2015) indicated that trust facilitates essential aspects of exchanges for knowledge sharing; in addition, because virtual teams communicate and build trust remotely, it is vital for individuals shared knowledge and bridge gaps of trust. Derven (2016) noted that in virtual teams, trust promotes values and contributes to a core of inclusive leadership for virtual leaders. In addition, clarifying virtual leadership competencies, purpose, and how

the leader and team fit into the organization achieves the goals and objectives of an organization (Derven, 2016) and is a significant part of building virtual teams and leadership within an organization because it means expediting communication, trust, and leadership development in the virtual community and workplace. Virtual leaders maintain confidence in their leadership roles and responsibilities, which creates a proficiency in a project output. In addition, virtual leaders must be proficient in virtual communication and have the ability to develop trust, flexibility with virtual teams, and leadership emergence. Lockwood (2015) suggested that the positive effects that a virtual leader has on projects and deliverables can contribute to the competitive global market and propel organizations forward. Virtual leaders are an essential part of the 21st-century workplace and should have the skills and competencies to create successful project deliverables.

Some relational influences are weak within virtual teams (Berry 2011). Any complex issue that leaders to not research can create discourse, so leaders must create and establish positive change through the development of well-researched new ideas or concepts. Wildman et al. (2012) contended that the phenomenon of swift trust does not envelop all temporary teams such as virtual teams. Zakaria and Yusof (2015) noted virtual teams continue to struggle with swift trust due to cultural difference, short deadlines, and different time zones. In virtual trust or in swift trust, it may become essential for virtual team leaders to delegate to team members, make decisions, and facilitate in the fast-paced virtual environment at random times throughout the workday, and these actions require trust.

Regardless of a virtual team's situation, some form of trust is necessary to have a positive and productive collaborative setting, and specialized skill sets for virtual leaders become a requirement for success. Researchers have explored swift trust since 1996. Additionally, researchers have discussed critical effects on virtual teams due to the phenomenon of swift trust (Hoch & Kozlowski, 2012; Wildman et al., 2012). Berry (2011) noted human resource policies include development, training, and a focus on virtual leadership competencies. The leaders in some organizations and government agencies are making the choice to ignore the fact that virtual competencies are a necessity and that the ability to lead in the virtual environment with successful project delivery will take more than the status quo mentality. The gaps in 21st-century leadership must focus on the benefits of understanding communication, trust, and virtual team leadership to ensure a successful impact in the management field.

Leadership emergence. Virtual communication and the development of trust are vital components to the success of any virtual team. Leadership emerges through leadership skills and over time, and leaders will emerge in leaderless groups (Stader, 2009). In addition, leadership emergence is also an essential element for virtual teams. In the 21st-century workplace, the fast progression of virtual teams leads to a requirement for highly skilled virtual leaders who can understand the culture and remain proficient within the virtual workplace environment based on the element of leadership emergence (Lee, 2013). Petrie (2010) determined that due to the pace of changes in the 21st-century work environment, leaders face complex challenges. Delegation of authority, which is a normal approach to delegating tasks in government agencies and virtual teams, may

become crucial as virtual leaders develop virtual communication and trust for government teleworkers.

Leadership emergence, which is a core competency for virtual team leaders, is relevant in training, and education is vital for developing virtual team leaders who can overcome challenges and obstacles during collaboration through the effective use of communication and trust. Leonard (2011) noted that researchers consistently research the topic of virtual leaders but both practical and theoretical challenges remain, and few researchers have conducted studies with actual virtual teams; rather, they use university students due to convenience and a lack of funding (Kayworth & Leidner, 2002; Morgeson, Scott, & Karam, 2010). Organizational leaders must comprehend their role in the virtual environment. Stogdill (1974) sought to redefine leadership, but his research was only conclusive regarding the fact that leadership is more complex than a single construct. Additionally, Kirkpatrick and Locke (1991) suggested leadership contains various traits, and some can be learned. In the 21st century, countless definitions for leadership exist, and no one definition truly captures leadership fully. Furthermore, due to the rapid growth of virtual teams, it is necessary to understand virtual compentecy challenges in the 21st workplace, focus on the impacts to productivity and project deliverables. Conant (2017) indicated that teams must contain specific areas of competence and remain focused on the requirements for achieving successful teams.

Empirical research conducted since 2012 has indicated some forward progression regarding virtual leadership emergence, and even without a concise definition, researchers point to a continuation of resistance to change. Researchers have indicated

the competencies of communication and trust, and the challenges of leadership in virtual teams, are increasing. A lack of communication in the virtual workplace may cause breakdowns in virtual teams and create delays in project delivery. Virtual leaders must become positive communicators in the virtual environment and make positive impacts on project delivery. In the 21st century, researchers continue to study virtual teams' behavioral patterns, and virtual team members can learn from communication mistakes by redirecting communication when possible (Chang et al., 2011). It is important for virtual leaders to emerge within virtual collaborations to lead through the developmental challenges of communication and become facilitators within the virtual community.

Researchers in 21st-century studies have analyzed and gauged the best approaches to assist virtual leaders who must build trusting virtual teams. Researchers continue to find ways to engage with virtual team members and understand what constitutes the process of building and maintaining a sense of trust with virtual teams in the virtual workplace (Daim et al., 2012; Iorio & Taylor, 2014). Virtual leaders work within social processes that affect information processing and that affect the ability to lead virtual teams in remote areas (Schmidt, 2014). Zofi (2012) noted the need for group discussions, shared documentation, shared calendars, consistency with team e-mails to give virtual members a chance to communicate openly and to develop trust for virtual leaders. Virtual leaders must use communication, trust, and leadership emergence to make a positive effect on projects.

Knowing the concepts of virtual leadership promotes a successful virtual environment with cohesive collaboration, which is essential for the success of virtuality.

It is vital for leaders of successful 21st-century organizations to invest in well-trained, well-educated virtual leaders who can communicate virtually, build trust, and be flexible regarding the concept of leadership emergence. The focus of the traditional leader-centric approach is on team leaders' abilities, and transformational leadership centers on the emergence of adaptive behaviors (Charbonnier-Viorin et al., 2010; DePaoli & Ropo, 2015). Researchers continue to seek various avenues to lead virtual teams most effectively (Muethel & Hegl, 2010; Wakefield et al., 2008). Zofi (2012) noted that missed expectations of virtual teams cause conflicts in organizations and the organizational mission, which may lead to project delays. Virtual leaders play a vital role in the development of organizations.

Some organizational leaders consider random leaders and facilitators within the organization to form a virtual team and preform the virtual leadership duties. The idea is to focus on individuals who spend time in virtual teams to gain a sense of trust and connection so team members can emerge into virtual leadership roles. Communication and trust are important within the virtual workplace, and virtual teams readily choose swift trust to affect team performance positively. A multilevel process of teamwork skills, abilities, and individual team members is required to mitigate project delays and exceed project deliverables in a virtual team (Haselberger, 2016). However, Lockwood (2015) indicated that virtual leaders require virtual leadership training to become proficient as a 21st-century leader. Building trust within a virtual team may require time. In some cases, virtual leaders emerge within a virtual team frequently, and at times more than one may appear (Ziek & Smulowitz, 2014). Myatt (2015) indicated that not everyone in a

leadership position is ready, able, and willing to lead. Organizational leaders must recognize the need to recruit for skilled, virtual leaders who can lead successful virtual teams.

Standards of training and competencies for virtual leaders are not in place, even though many organizations and agencies have a virtual workplace. Readman and Rowe (2016) indicated practice-based learning for virtual leaders is imperative and that a leader must study in a real-world environment that encompasses virtual teams to understand what is necessary to succeed in virtuality. The annual loss in organizational budgets across the United States serves as evidence that the risks need mitigating. Furthermore, proactive organizational leaders will address the complexity of this topic to ensure support of team efforts, follow the organizational missions, and manage conflicts in research to ensure the distribution of virtual leaders throughout organizations as more virtual teams take on projects so organizations remains competitive and successful.

Virtual leadership must develop in a work environment over time and space. Iorio and Taylor (2015) indicated it may be better to have some work experience with technology and network interaction that will influence and develop positive effect within virtual teams. Virtual team members who have experience with technology and network interaction can establish a semblance of the leadership role within a group (Iorio & Taylor, 2015). Quality of performance in virtual teams can increase through effective leadership. According to Daim et al. (2012), leadership emergence for virtual collaboration develops through using communication skills and becoming facilitators within the virtual community. Researchers continue to find that positive engagement of

leadership and individuals building a sense of trust in a virtual team are the best ways to develop virtual leaders (Iorio & Taylor, 2015). However, DePaoli and Ropo (2015) contended that teams must meet face-to-face and require socializing skills to build trust in virtual teams. Not all researchers agree on how to develop trust or on how leaders establish bonds within virtual teams (Charbonnier-Voirin et al., 2010). The federal government has virtual courses to train employees in job skills; however, many government agencies and department have not used the virtual environment for leadership development (Steinhardt, 2011). Many teams come with a unique set of dichotomies, including diverse cultures, language barriers, and virtual miscues, which give virtual leaders many obstacles to overcome, but a specialized skill set is necessary to face such challenges in a productive and positive manner.

Leaders must engage with individuals to develop a sense of trust. Comprehending some of the challenges that virtual teams encounter may mitigate risks and allow a more productive flow of projects. Iorio and Taylor (2015) indicated that virtual teamwork is important when establishing virtual leadership emergence. Virtual leaders who have virtual competency training to engage the team, ask questions in the virtual environment, consider inputs and suggestions, and involve the entire virtual team can be successful in project delivery. Various challenges and variables affect virtual teams, and some researchers indicate that there is a need for the physical presence of a virtual leader (DePaoli & Ropo, 2015). Virtual teams are becoming a frequent topic that needs more information. According to Eubanks, Palanski, Olabisi, Joinson, and Dove (2016), many organizations continue to avoid progress in the 21st century. Researchers must address

the influencing factors of uneducated and untrained virtual team leaders and the effects on project delivery.

Project Risk, Limitations, and Challenges

Project risk, limitations, and challenges occur due to a lag in virtual leadership abilities and underdeveloped competencies. Virtual leaders have distinct roles and responsibilities in the 21st-century workplace that require communication, trust, and leadership emergence to attain success in the virtual environment. Leadership competencies vary depending on the organization and continue to develop to include challenges of the business industry. Organizational leaders have a duty to establish roles and responsibilities for virtual leaders. The lack of virtual leaders and virtual competencies and the inability to lead in the virtual environment lead organizations to remain in the status quo, which leads to project delays and insurmountable financial effects in organizations (Eubanks et al., 2016). It is time to face the future and embrace the 21st century with well-qualified virtual leaders.

Organizational leaders experience challenges and try to match the pace of technology. As virtual leaders are in demand and virtual teams are increasing, organizational leaders may require virtual leadership training (Lockwood, 2015). E-loyalty, for leaders, became a new phrase in the virtual world as individuals established forms of swift trust (Yao et al., 2015). The speed at which change occurs in virtuality is almost overwhelming, but organizational leaders need to scale to new heights in training and competencies from a virtual perspective and address project delivery delays while researchers continue to seek the right balance. Organizational leaders cannot afford the

high risk that occurs in virtual teams due to communication breakdowns, trust issues, and challenges with virtual leadership (Daim et al., 2012). Researchers must continue to investigate virtual teams and leaders.

Virtual teams may need technology to facilitate interaction, whereas face-to-face traditional teams do not need outside resources to meet. These differences are a reality for organizational success. Organizational leaders continue to seek ways to lead and engage in virtual collaborations, while organizational leaders continually evolve due to advances in telecommunications and technology (Das Gupta, 2011; Wakefield et al., 2008). Serban et al. (2015) noted that comfort with technology has no relationship to leadership emergence in a virtual team. Leadership emergence is essential for remaining flexible and expecting consistent growth and development in virtual teams.

Virtual teams and leaders are essential components to the virtual workplace. Virtual collaborations include individuals in distributed teams typically disbursed across geographical areas and time zones who support a task or function (Auburt & Kelsey, 2003; Bell & Kozlowski, 2002; Depoli & Rapo, 2012; Hill, & Bartol, 2016; Kirkman et al., 2016; Zaugg & Davies, 2013). Through a survey conducted for the Society for Human Resource Management, Germain and McGuire (2014, p. 357) indicated nearly half of all U.S. organizations have virtual teams. However, not all organizational leaders choose to keep pace with the rapid changes and requirements necessary to maintain a virtual workplace. Daim et al. (2012) indicated that many organizational leaders are resisting the changes that are a requirement for new operating systems for virtual teams to be effective in the 21st century. As the Internet continues to grow quickly, organizational

leaders must keep stride with virtual training and technology to remain effective in the virtual environment.

Researchers can use the theory of constraints lens to address project deliverables from virtual teams. The theory of constraints is a framework that researchers use to assist leadership in developing simple solutions to complex problems (Goldratt, 1990). As with any organization, if projects deliverables are not meeting the demands of the organization, the impacts to the operation are negative. Researchers use the theory of constraints to rate the goal of achievement based on at least one limiting constraint (Goldratt, 1990). Virtual teams set goals and objectives for project deliverables, which was the focus in this exploratory case study.

Organizational leaders seeking positive change should implement strategic objectives for virtual teams to ensure project deliverables are occurring within their organizations. Fang (2015) recommended that virtual communities assist in providing theoretical platforms for individuals, such as leadership knowledge and sharing information, so that growth and education can occur. Researchers are choosing from an array of concepts and theories to gauge the best approach to assist leaders with virtual teams. However, the question remains whether virtual leaders require special competencies to produce projects in a timely manner.

Researchers seem to vary on virtual leadership and remain somewhat unclear when addressing leadership requirements, almost as if researchers are not on the same page in the ever-changing virtual environment. Organizational leaders seek ways to lead and engage in virtual collaborations, and organizations continually change due to

advances in telecommunication and technology (Das Gupta, 2011; Wakefield et al., 2008). Traditional organizations are resistant to change and lack the commitment to embrace the requirements leaders need in order to make virtual teams a success (Daim et al., 2012). As the project delays and challenges of deliverables occur, many organizational leaders are trying to address the issues. However, virtual teams and virtual leaders continue to gain experience and learn team roles and responsibilities because they are using the virtual environment daily. Over time, virtual leaders will continue to grow and establish communication, a sense of trust, and connections within virtual teams. Serban et al. (2015) noted that comfort with technology has no relationship to leader emergence in a virtual team or to the ability to succeed in project productivity. Iorio and Taylor (2015) indicated that leaders emerging in virtual teams differ based on their experiences with technology. The idea is that with more practice and confidence with technology, leaders will emerge. However, the leaders in some organizations are starting to use experienced team leaders and facilitators to form virtual teams with roles and responsibilities established to ensure positive outcomes.

Government agencies have also experienced change in the 21st-century virtual workforce. The 21st-century business world is at a critical stage for virtual leaders, to adapt, and become proficient in virtual leadership effectiveness (Bell & Kozlowski, 2002; Fan, Chen, Wang, & Chen, 2014; Hoch & Kozlowski, 2012; & Zaugg & Davies, 2013). Core competencies for virtual leaders focused on communication, the ability to develop trust, and leadership emergence may affect project deliverables. These competencies can positively affect project delivery and mitigate risk in the 21st-century workplace. Project

risk, limitations, and challenges identify what is delaying or preventing the success of productivity and may assist researchers, organizational leaders, and virtual leaders in a simple solution to adjust for the flow for a change with increased project deliverables. Organizational leaders may begin to seek and focus on the resources necessary to develop virtual team leadership competencies to mitigate risks such as delays in project deliverables. Closing the gaps in research on virtual leaders may benefit organizations and government agencies by understanding virtual communication, trust, leadership emergence, and project deliverables to affect the management field positively.

The business landscape of the 21st century means virtual communication, trust, and leadership need attention. Therefore, a need exists for more research on the topic of virtual leadership and the challenges virtual teams encounter during project delivery (Hetel et al., 2005, 2006; Roybal, 2010; Zhang & Fjermestad, 2006). The purpose of this qualitative, exploratory, single case study was to explore the challenges for virtual team leaders in the government environment that can affect project delivery. The general problem is the skills and competencies of virtual leaders in the expanding technological business world lag behind in virtual training. The specific problem is the challenges for virtual leaders in the government environment that affect project delivery. It is important to identify limitations and gaps that are causing the delays and preventing the success of productivity in project deliverables. The goal was to develop simple solutions for organizations to follow and adjust toward positive change that will increase productivity.

Limitations

In the 21st-century workplace, the changes from the face-to-face project teams and travel demands to cost-saving telework, telecommuting, and virtual teams continue to challenge virtual leaders as virtual teams increase rapidly. These rapid changes are a challenge for organizational leaders. Daim et al. (2012) suggested project delivery is at a higher risk of failure for virtual teams and that failure adds a 15% loss in the U.S. annual budget (Hardy-Vallee, 2012). Some researchers believe that formularizing specific, virtual competency skills within an organization can produce and create successful virtual teams (Muethel & Hegl, 2010; Wakefield et al., 2008). I address virtual leadership and virtual competencies such as communication, trust, and leadership emergence with a focus on mitigating risks to project deliverables as a constraint lens. A key factor involved identifying limitations and gaps that are causing delays and preventing the success in project deliverables. Developing simple solutions for organizational leaders to follow and adjust to the flow of change to increase productivity are important.

Communication, Trust, and Leadership Emergence

Analysis of information, communication, and technology may play a critical role moving forward, researchers contiously analyze research materials to understand the solutions of virtual communication, trust, and leadership (DePaoli & Ropo, 2012). As organizations have continued to move away from the traditional face-to-face operational-style meetings and project deliverables, so have researchers. A 21st-century workplace topic that continues to come up repeatedly is transformational office space that places employees at home, on travel, or in public settings (DePaoli & Ropo, 2012), which makes

virtual communication skills a key competency factor. However, even with the continued growth of the Internet and some infrastructure implementations, many organizational leaders continue to face challenges regarding changes that evolve in a virtual workplace, which includes support for virtual teams and leaders and how they are supporting the communication issues that continually arise.

Virtual teams remain fluid. Virtual teams are dynamic environments that include a variety of cultures, values, and work ethics (Olariu & Aldea, 2014; Richards & Bilgin, 2012). Chang et al. (2014) indicated the development of virtual teams occurs in all types of industry, and organizational leaders are responsible for addressing miscommunications. Organizational leaders benefit from using creditable research to justify changes in policy, procedures, and trainings in hopes of mitigating risk factors. Virtual leaders can become positive conduits in communication, which is improving in the 21st-century workplace environment.

An organization's mission is at risk when uneducated and ill-equipped virtual leaders facilitate virtual teams. Proper processes and procedures would support virtual leaders as they face challenges in the virtual workplace. Organizations can gain success through well-trained leadership (Mathieu et al., 2014, p. 84) and through virtual team leaders who produce quality project deliverables. The traditional face-to-face team element is not the norm in the 21st century, and organizational leaders must make the decision to embrace the change. Traditional functions in organizations are becoming flexible and hybrid by adjusting to user-friendly telecommunication and a more technical

style of operation (DePaoli & Ropo, 2015). Virtual teams are becoming more important and popular as organizational leaders develop virtual workplace environments.

Limitations occur when virtual leaders do not grasp the essential requirements to develop a project deliverable. It is essential for leaders to recognize and understand the elements of virtuality because 21st-century organizations face various challenges that affect productivity (Saafein & Shaykhian, 2014), especially project deliverables. Osman (2014) suggested that virtual leaders learn to communicate through direct language that provides a more concise and clear understanding for virtual team members. A virtual leader that is unqualified may put an organization at risk unproductive project delivery.

By using direct, open, and consistent communication, virtual leaders are able to convey time frames, deadlines, and responsibilities. Zofi (2012) indicated virtual communication is about group discussions, shared documentations, shared calendars, consistency with team e-mail, giving virtual members a chance to communicate openly, and shared and open information for all. Through the use of virtual communication, leaders can lead through virtual methods and ensure the understanding of tasks for a successful project. Team members will begin to push back project delivery timelines and responsibilities in a virtual environment due to their lack of understanding and fewer interactions with leadership (Zofi, 2012). By establishing virtual communication standards in policy, processes, and procedures, organizational leadership may begin to make positive changes in project deliverables. The ability to communicate virtually is a key strategy for organizational success.

Wanting to feel secure with leadership, even in, if not more so in, a virtual environment, is human nature. Zofi (2012) indicated building trust is a key component for the success of a virtual team. Computer-mediated communication systems do not have to be sophisticated; however, information repositories for archiving communication are essential (Berry, 2011; Olson & Olson, 2014). Trust of data is important, and so is trust of virtual leaders. The key role of a virtual leader is to build trust in leadership despite challenges (Zofi, 2012). Trust plays a vital role for many virtual teams and for leaders trying to produce successfully in the 21st century.

As the virtual workplace continues to change and evolve into a more dynamic virtual environment, leaders are beginning to understand the need for better infrastructure, communication tools, and trust development. Virtual teams seem to value trust more than face-to-face traditional teams do (Chang et al., 2014). Zofi (2012) noted that leadership in the 21st century if less about control and more about trusting the delegation of authority to team members. Therefore, virtual team leaders should establish their role within groups and find a way to build trust within virtual teams.

Leaders in the virtual workplace find it more challenging and a struggle to establish trust without the confidence of team members. Pellerin (2009) reported that team building is an important component in developing effective teams and requires performance improvement among the members, self-development, positive communication, and the ability to work together to solve problems. Virtual team accountability is complex due to fewer opportunities to relate face-to-face (DePaoli & Ropo, 2015). Haselberger (2016, p. 103) indicated that virtual team leaders develop by

working on tasks regarding interpersonal challenges and issues with projects over time. Well-trained and educated virtual leaders are able to address teams, build trust, and develop complex opportunities throughout successful projects.

Virtual leaders have the challenge of establishing bonds with members and building trust among the group in the early stages of team building. According to Cramton (2001), teams that are not colocated may feel out of sync with other members of the team, which in turn causes misunderstandings, miscommunication, and a lack of trust among team members. Virtual leaders' responsibility is to create, embed, evolve, and establish healthy virtual teams (Ardichvili et al., 2016). However, virtual leaders who exhibit unpredictable behaviors, fail to maintain commitments, and lack clarity in virtual communication will create a sense of a dishonest leader (Zofi, 2012). Virtual leaders must have the ability to know, understand, and address complex issues.

Leadership challenges were a focal point for this case study that involved examining weak links in virtual leaders that negatively affect productivity. The development of trust for virtual teams becomes an issue, as leaders implement virtual teams rapidly (Zofi, 2012). The phrase swift trust refers to short-term trust established for virtual teams (Meyerson et al., 1996). Research results point to the fact that virtual teams have difficulty developing trusting relationships (Berry, 2011). Ardichvili et al. (2016) indicated that with the emergence of new virtual workplace environments and significant changes in 21st-century leadership, competencies and theories must become specialized to achieve the goals and objectives of organizations. The phrase swift trust became

significant among virtual teams because it means expediting trust development in the virtual community.

Not every expert will agree with the new ideas or concepts established for complex issues. Wildman et al. (2012) noted that the phenomenon of swift trust does not envelop all temporary teams such as virtual teams. Traditional trust development may not work within the virtual community because some relational influences are weak within virtual teams (Berry, 2011). Zakaria and Yusof (2015) suggested virtual teams continue to struggle with swift trust due to culture differences, short deadlines, and different time zones. Virtual trust or swift trust may become essential for virtual team leaders to delegate to team members, make decisions, and facilitate in fast-paced virtual environments that happen randomly throughout the workday, as these actions require trust.

Regardless of the virtual team situation, some form of trust is necessary in a virtual collaborative setting to facilitate in a positive and productive manner, and specialized skill sets for virtual leaders are necessary for success. Researchers have described critical influences on virtual teams due to the phenomenon of swift trust (Hoch & Kozlowski, 2012; Wildman et al., 2012). Berry (2011) noted human resource policies include development, training, and a focus on virtual leadership competencies. Some organizations and government agencies are making the choice to ignore the fact that virtual competencies are a necessity and that the ability to lead in the virtual environment with successful project delivery will take more than a status quo mentality. Attempts to close the gaps in 21st-century leadership must include a focus on the benefits of

understanding communication, trust, and virtual team leadership to influence the management field successfully.

Virtual communication and the development of trust are important components of the success of any virtual team; leadership emergence is also a vital element. In the 21st-century workplace, the fast development of virtual teams requires highly skilled virtual leaders who can understand the culture and remain proficient within the virtual workplace environment (Lee, 2013). Petrie (2010) determined that due to the pace of change in the 21st-century work environment, leaders face complex challenges. The delegation of authority, which is a normal approach to delegating tasks in government agencies and virtual teams, may become a crucial component as virtual leaders struggle to develop virtual communication and trust that affect virtual teams quickly in the government telework force.

Core competencies are a motivating concept for virtual team leaders because with training and education, the challenges and obstacles faced during virtual collaborations will diminish. Despite the fact that researchers consistently research the topic of leadership (Leonard, 2011), the issue of virtual leadership remains both a practical and a theoretical challenge, and few researchers have conducted studies on virtual teams (Kayworth & Leidner, 2002; Morgeson et al., 2010). However, due to the rapid growth of virtual teams, it is important to commit to the challenges of competencies and focus on the negative effects.

Virtual leaders who remain cognitive of the virtual environment and its challenges can become successful. Iorio and Taylor (2015) sought to establish performance skills

and abilities for virtual leaders, but the definition of leadership is yet to be fully conclusive and is more complex than one single definition. Additionally, Iorio and Taylor suggested researchers have reviewed, discussed, and investigated a vast amount of leadership research on various traits, yet require more research. As noted earlier, countless definitions for leadership exist, and no single definition captures leadership fully. Data support the concept that virtual leaders will require some form of virtual leadership training (Lockwood, 2015). Virtual leaders must communicate effectively and build on trust within teams to affect team performance positively.

Researchers must analyze and gauge the best approach to assist virtual leaders who must build trusting virtual teams. Researchers need to continue to find ways to engage virtual team leaders positively and to understand what constitutes building and maintaining a sense of trust (Daim et al., 2012; Iorio & Taylor, 2015). Virtual leaders face social processes that affect information processing and involve leading a remote team (Schmidt, 2014). Zofi (2012) discussed the need for group discussions, shared documentation, shared calendars, consistency with team e-mail, giving virtual members a chance to communicate openly, and developing trust for virtual leaders. Virtual leaders influence change positively through communication and trust.

Encouraging virtual communication, trust, and leadership emergence can promote a successful virtual environment. Leaders must communicate, build trust, and remain flexible in their work. Effective leaders foster a strong rapport within a team to create a positive sense of trust and growth among virtual team members (Derven, 2016; Iorio & Taylor, 2015). Trust is an essential component of sharing knowledge and building a solid

foundation of communication (Sankowska & Söderlund, 2015), leadership emergence is a key component of virtual teams, and trust plays a vital role in the success of virtual leaders.

Training and competencies for virtual leaders are not in place in many organizations and government agencies, nor are policies and procedures readily available. Practice-based learning for virtual leaders is imperative, and a virtual leader must study in a real-world environment to succeed in virtuality (Readman & Rowe, 2016). Proactive organizational leaders address complex topics to ensure they remain competitive in the global market. The number of virtual leaders in organizations is increasing, and Iorio and Taylor (2015) noted it may be better to have some work experience with technology and network interaction that will influence the development of positive effects within virtual teams. Virtual leaders who are aware of the challenges that virtual teams encounter and who mitigate risks to the effective flow of projects will become assets in organizations and agencies.

Leadership does not take place in a vacuum, and the concept of leadership must develop in a work environment over time and space. Daim et al. (2012) noted progressive leaders emerge within virtual collaborations through the development of communication skills and by becoming facilitators within the virtual community. Researchers continue to find that through the positive engagement of leaders, individuals build a sense of trust in virtual teams (Iorio & Taylor, 2015). However, DePaoli and Ropo (2015) noted teams must meet face-to-face and require some socializing to build trust within the virtual team. Not all researchers agree on how people develop trust or on how leaders establish bonds

within virtual teams (Charbonnier-Voirin et al., 2010). Leaders in the federal government have used virtual courses to train employees in job skills; however, leaders have not used the virtual environment for leadership development (Steinhardt, 2011). Many teams come with a unique set of dichotomies from diverse cultures, language barriers, and virtual miscues, and virtual leaders must face such challenges in a productive and positive manner using a specialized skill set.

Conclusion of Competencies

Virtual teams are becoming an increasingly popular topic that requires more information. Eubanks et al. (2016) noted many organizations continue to avoid progress with virtual competencies in the 21st century. Researchers continue to address the challenges that influence virtual team leaders and project delivery. Research on virtual communication, trust, and the challenges of leadership in virtual teams is increasing, and researchers continue to recognize that virtual teams develop behavioral patterns and that virtual team members learn from mistakes and redirect communication when possible (Chang et al., 2011). Virtual leaders should emerge within virtual collaborations by developing communication skills and becoming strong facilitators within the virtual community.

Project Delivery

Virtual team leaders are responsible for project deliverables. Project leaders are responsible for leading projects to conclusion, and virtual leaders use skills and abilities to complete projects on time, in scope, and within budget (Lee, 2013; Zofi, 2011). According to Osman (2014), virtual leaders must implement the following tactical steps

within a virtual environment: (a) influence the virtual team, (b) set deadlines to ensure the project is complete on time and within budget, (c) assign responsibilities to the team, (d) use direct language and communicate effectively, and (e) ask for volunteers. Virtual leaders have the responsibility to gain the trust of the team and ensure members perform their roles and responsibilities in the time allotted.

Conceptual Framework

Researchers can choose from an array of concepts and theories to gauge the best approach to assist with management challenges and to mitigate risks. The focus of the traditional leader-centric approach is on team leader abilities, while transformational leadership centers on the emergence of adaptive behaviors (Charbonnier-Voirin et al., 2010). Researchers continue to explore both leadership styles as organizational leaders adapt to the new virtual workplace in the 21st century.

Leadership theories may begin to address some of the issues within virtual teams, including the challenges, and obstacles that continuously cause delays in project delivery. Charbonnier-Viorin et al. (2010) explored transformational leadership with 35 teams using transformational theory and found significant support for the discriminant validity of measures for transformational leadership, adaptive performance, and climate. However, focusing solely on leadership is not addressing the whole issue.

Since 2012, researchers have consistently indicated communication, trust, and leadership emergence are the main challenges facing virtual teams in the 21st-century workplace (Daim et al., 2012; Iorio & Taylor, 2015; Lockwood, 2015). The consistency of these findings may become the main obstacles to project delivery during virtual

collaborations. Productivity in project deliverables is at risk, and it is important to develop simple solutions for organizational leaders to follow to increase productivity.

Since the beginning of virtual teams, researchers have analyzed the different dynamics of teams, leadership, and the virtual enhancements necessary to incorporate in organizations. Aguinis and Edwards (2014) noted that management research must keep pace with communication technology, whereas Yao et al. (2015) recommended a best practice approach consisting of virtual communities that develop theoretical platforms so individuals share information and knowledge that are the key to success. Leaders use virtual reality to train pilots and surgeons or to apply in architecture design and entertainment (Aguinis & Edwards, 2014). Virtual reality can enhance experiments for researchers to draw inferences about causality and external validity in natural environments (Aguinis & Edwards, 2014). The same technology can offer extraordinary advancements to the management field, organizations, and government agencies.

By implementing virtual reality in the workplace, progression ascends to another level for organizations. Sinani (2016) indicated there is a lack of research on the virtual leadership practices required to produce successful virtual teams. The successful adaptation of virtual team dynamics will only occur through quality of communication and interpersonal team trust (Chang et al., 2014). In the 21st-century workplace, leadership must focus on progression and on leading successfully in a virtual workplace.

Researchers continued to disagree on virtual teams, virtual leadership, and virtual reality in the 21st-century workplace, but it is critical to mitigate the risks to project deliverables. Arnold and Loughlin's (2013) qualitative research study of business,

government, and military leaders resulted in outcomes for both participative and directive behaviors in virtual leaders. The research addressed the need for intellectual stimulation, creative thinking, and problem solving with the ability to produce high-performance and well-skilled virtual teams that successfully produce project delivery as a direct result of well-trained leaders (Arnold & Loughlin, 2013). The loss in annual budgets due to project deliverables is a critical responsibility of researchers, organizational leadership, and the virtual community, and it is time to address the virtual challenges for leaders and to mitigate project delays.

A proper framework of the knowledge of limitations and constraints addresses the challenges organizations face in the 21st-century workplace. Derven (2016) noted the type of leader essential to a virtual team's success is the one who includes all participants on the team and captures the best ideas during virtual collaborations; the adaptable leader ready for change best suits virtual teams, virtual leadership, and project success. Virtual leaders can negatively affect the outcome of project deliverables if they are not well-trained or do not have the skill set to lead in the virtual community. The virtual workplace continues to change, and the number of virtual teams continually evolving is increasing rapidly. Organizational leaders who continually try to increase technology and never address the performance of the virtual team may be misallocating resources because the true needs are not technology based (Chang et al., 2014). The misallocation of resources for virtual teams and their leaders is a human and technical phenomenon.

Researchers have struggled with a proper approach, theory, and leadership style to evaluate and support as a remedy for the rapid virtuality changes occurring. Internet

technologies and workplace technology-based applications are a reality for the workforce and status quo is not an option (Hanna, P., 2012; Yılmaz, Yılmaz, Öztürk, Sezer, & Karademir, 2015). It is critical to address and adapt to virtual challenges. Rapid change is a challenge for organizational leadership. Daim et al. (2012) noted project delivery is at a higher risk of failure for virtual teams and the failure has added a 15% loss in the U.S. annual budget (Hardy-Vallee, 2012). Some researchers believe by formularizing specific, virtual competency skills, organizational leaders can produce and create successful virtual teams (Krumm, & Hertel, 2013; Muethel & Hegl, 2010; Wakefield et al., 2008). Additionally, most research explorations have taken place in university settings instead of virtual workplace settings, which means researchers cannot replicate or simulate these studies in the business environment (Purvanova, 2014). Researchers should address the phenomenon of virtual teams and project delivery with an approach that goes to the core of the issue.

The 21st-century research approach seems to lack realism. Lockwood (2015) noted that by 2020, the number of virtual teams in organizations will triple. Hamersly and Land (2015) noted the importance of organizational leaders creating policies, procedures, and standards for virtual leaders while establishing the virtual infrastructure. With change, establishing policy assists in governing organizations.

Theory of Constraints

In the 21st century, leadership is seeking ways to save time and money while addressing the issues of risk to the annual budget. Pepper (2010) noted that change efforts, although complex, can lead to a reduction in error rates that challenge virtual

leaders. The belief is few errors to communication, trust, and leadership can bring about a higher success rate for virtual teams (Pepper, 2010). The challenges for virtual leaders negatively affect virtual teams, which creates challenges, obstacles, and failures to project delivery (Lee, 2013). The theory of constraints is the quickest way to develop an implementation to a successful system approach (Woeppel, 2016) such as project deliverables. Organizational leaders should be able to focus on positive project delivery, including any limiting factors that can fail a project.

Organizational leaders, with the help of human resources leaders, can develop virtual competencies that will assist in creating positive communication, trust, and emerging leaders to the benefit and success of virtual teams. Hu et al. (2015) indicated the theory of constraints is an effective tool for communication, team building, increased throughput, reduction of inventory, and reduction of costs. The theory of constraints is a framework and logical system thinking process for this case study on virtual team leadership and project delivery.

The hope is that organizational leaders learn to understand constraints and manage limitations because through knowledge comes prevention, and with prevention comes positive project deliverables. Prior research from 2013 to 2016 indicated communication, trust, and leadership are the primary obstacles to virtual collaboration for leaders and teams (Daim et al., 2012; Iorio & Taylor, 2015; Lockwood, 2015). These same challenges are the leading causes that virtual team leaders must address as areas of concentration in core competencies to ensure successful project deliverables.

The theoretical framework of constraints continuously creates improvements for organizations, while addressing system performance and positive changes. Woeppel (2016) noted the theory of constraints identifies limitations and the weakest link to determine improvements in productivity. This is a continual cycle type of theory, and because the Internet will continue to evolve rapidly, it is essential for the theory to maintain and keep pace with the changes.

The theory of constraints was suitable for addressing the limitations for virtual leaders and project delivery timelines. The theory of constraints is essential for profit application, identifying limitations to supply chains, and ensuring the removal of negative constraints for customers meeting the requirements of projects (Šukalová & Ceniga, 2015, p. 139). Researchers must focus on the challenges and barriers that decrease the effectiveness in project delivery, which is vital in the workplace (Battistella et al., 2015). Additionally, by using the theory of constraints, I was able to focus systematically on virtual team leaders' competencies that are links to risk factors for project deliverables.

Through an exploration of the research, the goal was to explore which virtual leadership competencies may improve project delivery. The theory of constraints is a management paradigm, and Goldratt (1990) noted that organizational leaders can solve problems in leadership alignment, project management, supply chain, and production with the strategies and tools developed from the theory of constraints. Goldratt indicated a company (chain) is only as strong as the weakest link, so, by exposing weak competencies of virtual leaders, the system approach also links the weaknesses that challenge and hinder successful project delivery. A strategy of mapping the weak links in

project deliverables to challenges faced by leaders can begin to inform and address successful virtual processes. The focus of the theory of constraints is on any process that slows the speed and throughput and causes delays in the performance process (p. 75). Goldratt defined success as a measurement of an organization's ability to complete successful throughput (Woeppel, 2016), which is important because project delivery is a mitigating factor to the success of an organization.

The major component of the theory of constraints is to address the root causes of project delivery delays. Since 2012, several researchers have continuously analyzed the negative effects or any advances for virtual team collaborations and leadership training to further skills, competencies, and future developments (Daim et al., 2012, Hoch & Kozlowski, 2014; Krumm, & Hertel, 2013; Pepper, 2010). Theory of constraints is a thinking process, and researchers use the theory to frame and assist leaders in developing simple solutions to complex problems (Goldratt, 1990). Through the ability to understand how virtual teams perform, trust, and communicate, leaders may be able to remain competitive (Berry, 2001). By acknowledging the limiting factors and developing simple solutions, the theory of constraints can provide leadership with a focus toward successful project deliverables in virtual collaborations.

A qualitative method approach, and, more specifically, a system approach that addresses the constraints and limitations for successful delivery framed this exploratory study and led to answers regarding the why and how questions to assist in the stakeholders' investments. Organizational leaders, with the help of human resources leaders, may develop a framework to implement new training tools and social change

strategies for positive effects on project deliverables. Goldratt (1990) noted that leaders using the theory of constraints may solve problems in leadership alignment, project management, supply chain, and production. Theory of constraints is a management approach that assists in identifying the systematic limitations to successful productivity. As such, this theory for the production of an organization's project deliverables is sustainable through change and viable for virtual leader progression in the 21st century. Haselberger (2016) indicated a multilevel process is necessary to find limitations and gaps that cause delays in the completion of project tasks, mitigate project delays, and exceed project deliverable standards. Organizations can remain competitive in the virtual workplace and organizational leaders can create effective virtual teams by understanding the constraints and limitations of virtual leaders, after which successful project delivery is possible.

Rationale for Theoretical Choice

Researchers have applied a theory that includes models, tools, and strategies for a research study. Nave (2002) indicated a montage of methodologies and theories contribute to a framework for improving a product, customer service, industry, or process (p. 73). Leadership in virtual teams requires a framework of competencies to affect project delays positively. However, researchers have not agreed on how to assist with the forward progression in the 21st-century workplace; nevertheless, it is vital to mitigate the risks occurring in project delivery.

Six Sigma, lean thinking, and the theory of constraints are all sound methodology approaches in the management field. Each theory includes concepts, tools, strategies, and

techniques to improve workplace performance. There are also many parallels among these theories due to the scientific methodology in all of them (Rawson, Kannan, & Furman, 2016). The use of any or all three could be a possibility for this research study.

Each theory has strengths and weaknesses, and researchers must find a theory that will enhance value and define research in a positive manner. Researchers should compare and contrast theories that illuminate different perspectives (de Jesus Pacheco, 2015). Two authenticated theories for products, customer service, and the manufactory-industrial fields are Six Sigma and lean thinking. The focus of the theory of constraints is on project productivity, limitations, and constraints that negatively affect performance.

By establishing a clear understanding of the theories, it becomes obvious which theory was most suitable for the research study. According to Nave (2002), one of the difficult processes for a researcher is knowing and understanding which method or theory to choose. In this exploratory case study, the goal was to find strategies and tools to address the limiting factors causing the delays in project delivery.

Each approach has the ability to address specific components of the issues. Six Sigma relates to customer service and products, while lean thinking is an operational theory with a focus on waste (Sunder, 2016; Thangarajoo & Smith, 2015). Six Sigma includes a focus on product, which in this study was the project. Additionally, the focus of lean thinking could include the risk aspects of wasted time, productivity, and money due to project loss.

Researchers using the theory of constraints may be able to address the challenges facing virtual teams and speak to productivity in project delivery. Virtual teams cause an

influx of projects that in turn cause organizations to multitask to levels that are not practical and lead to reductions in successful outcomes (Jacob & McClelland, 2001). The theory of constraints assists in drawing attention to the root cause of reduction in productivity (Jacob & McClelland, 2001). The theory of constraints addresses a system of improvements within an organization, so researchers can produce positive change and organizational leaders can implement strategies and tools (Rand, 2000). Additionally, research in the virtual realm by Šukalová and Ceniga (2015) included vital information about the critical risks to successful project deliveries, limitations to supply chains, and removal of negative constraints for projects. A quick way to address the challenges for virtual leaders is to develop an implementation to a successful system approach (Woeppel, 2016). Virtual leaders will continue to face virtual challenges and delays to project deliverables, which cause risks to annual budgets. The research approach in this case study was a vital step toward mitigating risks to project deliverables.

Since the 1970s, leaders in several organizations have developed hybrids of the Six Sigma approach in hopes to progress at a faster rate with customer service challenges, management improvements, and quality products. Analysts developed Six Sigma in the 1970s as a framework for leaders at Motorola to address poor product quality and focus on customer requirements (Sunder, 2016). Rawson et al. (2016) studied Six Sigma and believed the approach is about identifying and managing out-of-control processes that cause unanticipated variations in resources. Sunder (2016) indicated a newer hybrid model of lean Six Sigma is becoming more attractive in manufacturing and servicing

industries across the world. The focus of Six Sigma is on frameworks for product development and process improvements.

Multilevel frameworks and logical thinking models continue to assist researchers as they strive to understand the dynamic differences for traditional teams and virtual teams. Researchers are taking the multilevel framework approach when studying virtual teams (Charbonnier-Voirin et al., 2010; Maynard et al., 2015; Wildman et al., 2012). It is essential to understand the complexity involved in creating and maintaining virtual teams and the fluidity component in the 21st-century workplace. Through virtual engagement with leaders, sharing about communication, swift trust, and understanding leadership emergence, I should be able to grasp the core challenges and obstacles within virtual teams that ultimately affect project delivery.

The operational framework for a leaner approach to a high-performing production flow is a solid management concept for manufacturing and the automobile industry. The focus of the lean thinking approach is production flow (Nave, 2002). Lean thinking theory started at Toyota in the 1950s, had some success, and became competitive with quality products and production flow (Thangarajoo & Smith, 2015). The focus of lean thinking is high-quality products at lower prices with a strategy of receiving the products in a shorter time frame.

Virtual teams and collaborations influence where, when, and how employees go about their daily tasks and complete projects. Virtual teams are colocated, and the focus of the change in face-to-face meetings is reductions in cost and the speed of deliverables; however, a vast amount of virtual expectation consists of challenges in team-level effort

and project production (Lee, 2013; Magnusson et al., 2014). Noncolocated teams may feel out of sync regarding a mutual awareness of other members of the team, which in turn causes misunderstandings, miscommunication, and challenges to trust among team members (Cramton, 2001; Schaubroeck & Yu, 2017). According to Rand (2000), the theory of constraints is a process for continual improvement, can address weakness in organizations, and is a valuable tool in the case of rapidly changing technology. In essence, virtual leadership continues to encounter challenges that affect project delivery.

Virtual team leaders must remain proficient in the 21st-century workplace. Several researchers have emphasized making improvements to technology and traditional options, such as e-mail, chat, and discussion boards (Lin, 2010). However, the focus must shift to address the risks in project delivery (Zofi, 2011). Just as the risks are changing, so should the research; it is time to address the focus of the theory, the approach, and the processes so that 21st-century organizations can remain current and competitive.

Organizational leaders continue to gain knowledge and understanding of the technology and infrastructure for the 21st-century workplace; however, it is just as vital that knowledge and understanding of the virtual leaders' capabilities and competencies receive the same acknowledgment and focus. Researchers should remain current with the requirements of 21st-century organizations' challenges and risks. According to Kozlowski et al. (2015), virtual leaders and organizational leadership can only succeed if they learn to adapt to the challenges of the virtual environment. In addition, organizational leaders must understand the roles and competencies that virtual leaders require for the virtual workplace. The strength of the weakest link (Nave, 2002; Tulasi,

Rao, & Tirupati, 2012), including research and performance limits. The analysis of the literature unveiled how virtual team leaders' challenges compromise project delivery.

The framework of the theory of constraints was a logical thinking system process for this exploratory case study. The thinking process is a tool that addresses when a constraint occurs, and where, to discover the core risk of the issue (Naor, Bernardes, & Coman, 2013). Goldratt (1990) indicated that organizations have goals to make money, and anything that causes a reduction or delay to that goal is a constraint. Rand (2000) indicated the theory of constraints, as a thinking process, is a tool for continual improvement because the theory of constraints is an effective strategy for communication, team building, increased throughput, inventory reduction, and cost reduction (Hu et al., 2015). As the researcher in this case study, I must address the risks that affect the completion of projects in a timely manner and I must use the theory of constraints to address the challenges that affect virtual team leaders and their ability to produce successful project deliverables.

Relation to Current Study

Virtual team leaders' competencies assist in the successful outcome of virtual projects. It is vital to know and understand how virtual competencies relate to project delivery. Obstacles for virtual leaders remain a challenge and limit virtual teams in the constructs of communication, trust development, and leadership emergence. Saafein and Shaykhian (2014) indicated organizations must understand the influence leaders have on virtual teams, on allocating resources, and on making virtual teams a priority within the operation. Berry (2011) noted one of the roles considered important in teams is

leadership. However, leadership in virtual teams requires a framework, and researchers do not agree on the basic leadership definition or on how to assist with the forward progression of 21st-century virtual team leader responsibilities.

The challenges for this topic exist on many levels, and it is important to understand the limitations that cause projects delays. Researchers have studied leadership effectiveness in traditional environments (Fleishman et al., 1991; House & Mitchell, 1974; Stogdill, 1948) but little information is available in the virtual workplace. In the 21st-century workplace, the challenges virtual leaders face in relation to project delivery remain elusive and gaps exist. Researchers are not in agreement on which style of leadership is necessary to benefit virtual teams or on which virtual setting needs facilitators (Bell & Kozlowski, 2002; O'Leary & Mortensen, 2010). Iorio and Taylor (2015) contended that leaders who emerge in virtual teams differ based on their personal experiences with technology.

The concepts of communication, development of trust, leadership emergence, and productivity of project deliverables may emerge as patterns and themes in the research. Virtuality refers to the exclusive use of technology for communication and collaboration (Serban et al., 2015). Sankowska and Söderlund (2015) indicated trust is one component of a successful virtual team. The landscape of virtuality is continually changing at a rapid rate, and remaining in status quo is a disadvantage for a 21st-century organization (Pepper, 2010). Knowing how to collaborate in a virtual team setting is essential.

The 21st-century workplace is complex. Organizational leaders can influence the performance of virtual teams, and virtual leaders have the responsibility to understand the

virtual environment (Eisenberg, Gibbs, & Erhardt, 2016). Virtual teams must increase productivity, competitive advantage, and innovation in organizations (Guzman, Ramos, Seco, & Esteban, 2010; Hanson, Ward, & Chin, 2012; Siebdrat, Hoegl, & Ernst, 2009). Project risk and limitations will occur due to a lag in virtual leadership abilities and underdeveloped competencies. Since 1996, researchers continue to use empirical evidence to show the challenges of leadership competencies in virtual teams (Chang et al., 2014), and to have discussions on effects on virtual teams, collaborations, and the 21st-century workplace. Zofi (2012, p. 153) indicated that even though project deliverables are measurable for successful outcomes, they can comingle with communication, trust, and leadership emergence. Virtual organizations succeed if leadership can adapt with the challenges of the virtual environment and understand the roles and competencies that virtual leaders require (Kozlowski et al., 2015). Virtual leaders have roles and responsibilities that may require certain skills, abilities, and competencies to perform successfully.

Leadership competencies vary depending on the organization and continue to develop to include challenges in the business industry. Any organization that remains status quo is at a disadvantage (Pepper, 2010), and organizational leaders must face the technical infrastructure challenges in the 21st century. Virtual teams cause organizational challenges, and leaders must learn to lead remotely and develop trust among virtual team members (Saafein & Shaykhian, 2014). By adapting leadership training, understanding the required skills necessary for virtuality, and applying the competencies to make progress in virtual collaborations, organizational leaders can affect and produce project

deliverables. The days of leaders knowing and understanding all the complexities of every project no longer exist (Zofi, 2012). Developing well-qualified virtual leaders in the 21st-century workplace should be a goal of the leadership in organizations and agencies in the global marketplace.

Challenges and obstacles. Organizational leaders need to address the challenges virtual leaders face, focus on virtual competencies, and address project delivery delays, and researchers should continue to seek the right balance for virtual competencies and project deliverables. Organizational leaders struggle to match the pace of technology (Aguinis & Edwards, 2014; Lee, 2013; Zofi, 2012). Virtual changes are obstacles that cause a breakdown in the change process. Lockwood (2015) indicated that as more virtual leaders are in demand and virtual teams are increasing, organizational leaders may require virtual leadership training. New phrases in the virtual workplace that may soon be commonplace include e-loyalty and swift trust (Wildman et al., 2012; Yao et al., 2015). The speed at which things change in virtuality is fast, and the changes occurring in the virtual workplace are complex and continue to influence projects and productivity. Researchers are beginning to evaluate and address the issues of temporal emergence, especially processes that bring about sudden, radical, and unpredictable changes in systems (Floricel, Michela, & Piperca, 2016, p. 3). Organizations cannot afford the high risk that virtual teams cause due to communication breakdown, trust issues, and challenges with virtual leadership (Daim et al., 2012). Researchers must take the Internet, technology, and rapid changes seriously and place a priority on exploring virtual teams and leaders.

Face-to-face traditional teams do not need outside resources to meet, but virtual teams require technology. This difference requires organizational leaders to engage in virtual collaborations while adapting in the telecommunication and technology virtual workplace (Das Gupta, 2011; Wakefield et al., 2008). Organizational leaders should remain flexible through the growth, development, and changes, but continue to seek ways to recruit well-educated, well-trained virtual leaders for success and productivity in the virtual workplace. The Internet continues to grow rapidly, and organizational leaders must keep stride with virtual training and technology, so they are effective in the 21st-century virtual environment.

Haselberger (2016) noted that virtual leaders find success within virtual teams when they can carry out tasks effectively and efficiently through to a project deliverable. Virtual leadership training is innovative and emerging and a process that requires organizational leaders to remain flexible, creative, and focused on team environments in the 21st-century workplace (Haselberger 2016; Olsson & Backstrom, 2012). Organizational leaders should seek ways for virtual leaders to gain skills, abilities, and competencies.

U.S. government. Even U.S. government agencies have changed with regard to the 21st-century virtual workforce and the government teleworkers and telecommuting has increased substantially since the President's Executive Order 13589 on Travel and Increase Telework (SHRM.org., 2013). In November 2011, President Obama signed executive order for government employees to take strategic alternatives to travel that would reduce costs, the suggested methods were to utilize technology via teleconferences

and video conferencing; in addition, a mass inventory of all technology government-wide occurred to ensure effectiveness and efficiencies, even those that were currently teleworking (SHRM, org. 2013). Pepper (2010) noted that any organization that remains status quo is at a disadvantage. All organizational leaders face the challenges of technical infrastructure and maintaining pace with 21st-century workplaces; however, a virtual leader encounters risk factors during project delivery and must receive the same level of competencies a any leader (Pepper, 2010). As recently as 2012, many federal agencies failed to recognize the integration of policies, standards, and operation plans (Fuerth & Faber 2012; Hines, 2012) into the virtual environment. Organizational leaders have a responsibility to ensure virtual team leaders have the training, skills, and competencies needed to make positive strides in a virtual workplace and can effectively produce project deliverables.

The focus of this study was on virtual leaders and project deliverables, so organizations, including government agencies, can remain successful and competitive. It is important to develop solutions for organizations to follow and adjust to 21st-century virtual changes that will assist with project deliverables. A component of effective government virtual leaders is diversity due to the differences in space and culture that occur in the 21st-century work environment. Virtual teams are diverse and have both differences and similarities. According to Derven (2016), if harnessed properly, virtual team leaders can become a source of innovation and new ideas. A virtual leader has a style of leadership that supports making a variety of self-managed decisions in relation to the complexity of national, cultural, diversified, and globalized teams, which requires a

different approach than the traditional face-to-face team (Kirkman et al., 2016). Inclusive leaders are essential to virtual teams because they focus on the inclusion of all participants on the team and developing the best ideas of the team (Derven, 2016). Virtual team leader competencies are a relatively new phenomenon that organizational leaders and human resources managers must address as the leaders continue to need assistance in growth and development in their new roles and responsibilities.

The theory of constraints was the framework for this case study. As with any organization or government agency, if projects deliverables are not meeting demand, the effects can become a negative result. The theory of constraints rates the goal of achievement based on at least one limiting constraint (Goldratt, 1990). The concept for an emerging leader is to identify what is delaying or preventing the success of productivity, identify a simple solution, and then adjust the flow for a change that will increase productivity. By focusing on the resources necessary to develop virtual leader competencies to mitigate risks in project deliverables and finding the support necessary, social change can begin to create a plan of action with a focus on positive virtual leadership skills and to develop respectable roles and responsibilities for future virtual leaders in society.

Gap in the Research

Leaders in some organizations and government agencies are making the choice to ignore the fact that virtual leaders are a requirement for the 21st century, that the establishment of virtual competencies is a necessity, and that the ability to lead in the virtual environment with successful project delivery will take more than a status quo

mentality. Kornfeld and Kara (2011) noted the lack of literature on virtual teams, integration with project innovation, and virtual leadership strategies. Although researchers have focused on organizational leaders' and the technology infrastructure, few researchers have used empirical evidence to show the lack of leadership competencies in virtual teams (Chang et al., 2014). Researchers have explored swift trust (Hoch & Kozlowski, 2012) and its critical effect on virtual teams since 1996; some researchers have indicated the phenomenon of swift trust does not entirely envelop all temporary teams such as virtual teams (Wildman et al., 2012). Berry (2011) indicated more policies and procedures should include development, training, and virtual competencies for virtual team leaders focused on organizational culture, mission, vision, and goals.

It is essential to understand that true change begins with policy in the government workplace, which assists in agency governance. Organizational leaders should create policies as they move into the 21st-century virtual community to establish policies, procedures, and a virtual leadership infrastructure (Hamersly & Land, 2015). Eubanks et al. (2016) indicated that leaders at many organizations and government agencies continue to avoid progressing into the future; true progress for virtual leaders and teams involves developing within time limits and budget.

Virtual leaders must create a framework with shared goals to build communication, develop trust, establish a commitment of resolving differences, remove obstacles, and create accountability among team members. For decades, forming teams in organizations varied depending on the requirements, but the most common reason to

build a team is to enhance productivity; increase flexibility and speed of decision making; and establish workforce diversity, quality, and customer satisfaction (Gibson et al., 2009; Hollenbeck et al., 2007; Larson & LaFasto, 1989). Albanese (1994) suggested the true reason to develop a team is to improve project results. Virtual team leaders should develop teams, establish their role within the group, and find a way to succeed in project delivery.

Summary and Conclusions

Researchers continue to point to traditional leadership competencies instead of addressing the more relevant 21st-century virtual requirements (Daim et al., 2012; Hoch & Kozlowski, 2014; Pepper, 2010). Researchers should focus on virtual training with an emphasis on communication, swift trust, and virtual teams. It is time to draw attention to the critical components that will increase positive outcomes in project delivery. Destructive virtual collaborations will lead to delays in project deliverables (Weimann et al., 2013). The goal is to have organizational leaders recognize and mitigate the risks that occur during virtual collaborations.

Project deliverables and productivity in virtual collaborations should match pace with technology and the growth of an organization. Leaders who cannot virtually lead in informational communication technology environments increase the risk of not meeting project delivery time frames (Daim et al., 2012). Project delivery failure is a strong representation of the current ineffectiveness of virtual leaders with a 15% loss annually to the U.S. budget (Hardy-Vallee, 2012). Weimann et al. (2013) indicated that the lack of virtual training and failed project delivery times may be due, in part, to a lack of

communication, swift trust, and leadership, which leads to reduced productivity. Researchers must focus on the benefits of understanding communication, improving aspects of trust, and overcoming the lack of leadership emergence for virtual teams.

The virtual environment can lead to successful project delivery, but more than the status-quo mentality will be necessary to achieve this goal. Kornfeld and Kara (2011) noted the significant lack of literature on virtual teams, integration with project innovation, and virtual leadership strategies. Researchers continue to focus on attempts at improving infrastructure and technology within organizations, and few researchers have used empirical evidence to show the lack of leadership competencies in virtual teams (Chang et al., 2014). Since 1996, researchers have explored swift trust (Hoch & Kozlowski, 2012) and its critical impact on virtual teams, and some researchers have noted the phenomenon of swift trust does not include all temporary teams, such as virtual teams (Wildman et al., 2012). Berry (2011) indicated more policies and procedures should include development, training, and virtual competencies for virtual team leaders focused on organizational culture, mission, vision, and goals.

True change begins with policy in the government workplace. Organizational leaders should create policies as they move into the 21st-century virtual community to establish policies, procedures, and a virtual leadership infrastructure (Hamersly & Land, 2015). Leaders in many organizations and government agencies continue to avoid progressing into the future (Eubanks et al., 2016). True progress for a virtual team involves developing a project within the time limit and budget. Researchers must address

the influencing factors of uneducated and untrained virtual team leaders and the impacts on project delivery.

I completed this case study and addressed the gap in the literature by concentrating on the key factor needed to assist in identifying the limitations and gaps that are causing delays and preventing the success of productivity in project deliverables. Social change will occur in organizations as leaders develop simple solutions to follow and adjust the flow for change that will increase productivity. Haselberger (2016) noted a multilevel process is necessary to find limitations and gaps that cause delays in completing project tasks, mitigate project delays, and exceed project deliverable standards. Weimann et al. (2013) indicated failed project delivery may be due, in part, to weak competencies such as a lack of communication, a lack of swift trust, and uneducated leadership that limit project productivity. Organizational leaders can remain competitive in the virtual workplace and create effective virtual teams by understanding the constraints and limitations of virtual leaders; after addressing those constraints, successful project delivery is possible. Therefore, the purpose of this exploratory case study was to examine the challenges virtual leaders face in the government environment and the impact on project delivery that these challenges cause. It is time for positive impacts on communication, trust, and project delivery after policies, standards, and operational strategies are in place to assist leadership in a government agencies. Chapter 3 will include detailed accounts of the methodology used to collect the necessary data to address the challenges facing virtual leaders and project delivery in the 21st-century workplace.

Chapter 3: Research Method

The purpose of this qualitative, exploratory, single case study was to explore the challenges for virtual team leaders in the government environment that can affect project delivery. Scott and Wildman (2015) have noted evolution in conceptions of how to complete work and the emergence of competing ideas about the competencies and attributes appropriate for fluid work environments. Leaders of organizations, including leaders the U.S. government, are working toward flattening the hierarchy, reducing travel costs, increasing opportunities for telework and telecommuting, and empowering virtual team leaders (Bailey & Kurland, 2002; Bell & Kozlowski, 2002; Charlier, Stewart, Greco, & Reeves, 2016; Hertel et al., 2005; Jarvenpaa & Leider, 1999; Meister & Willyerd, 2010; Rapp, Gilson, Mathieu, & Ruddy, 2016). However, research on virtual teams is still in the infancy stages (Inkpen & Tsang, 2016). With this study, I worked to fill a gap in the literature by examining virtual teams from the perspective of government virtual team leaders. The study involved viewing their challenges through a theory of constraints lens to address the competencies of virtual communication, trust, leadership, and project delays. Organizational leaders may use this study to aid in better selecting virtual leaders with abilities to build virtual teams that can effectively address the challenges within those teams and develop successful project deliverables. Lockwood (2015) noted that, by 2020, the virtual team capacity of organizations will triple in size. Organizational leaders should create policies for virtual communities and focus on procedures when establishing the infrastructure for virtual leaders (Hamersly & Land, 2015). Chapter 3 includes discussions of the research design, rationale, role of the

researcher, and qualitative methodology, as well as instrumentation and data analysis. Additionally, I discuss trustworthiness, validity of the study, and ethical procedures. This study involved gathering evidence and gaining knowledge of how and why government virtual leaders encounter challenges that may cause deficiencies in project deliverables, and organizational leaders may apply the results in organizations and in government agencies so that true social change may occur.

Research Design and Rationale

The main research question was as follows: How do virtual leaders in the government environment describe the challenges of leading a virtual team and how do these challenges impact project delivery? The specific research subquestions for the study were the following:

Subquestion 1: How do government virtual team leaders describe the manner in which challenges negatively affect project delivery?

Subquestion 2: What are virtual leaders doing to overcome the challenges associated with effective project delivery?

The theory of constraints provides a framework for creating improvements in organizations while addressing system performance and seeking positive change. Organizational leaders may be able to focus on positive project delivery while limiting factors that lead to project failure through a theory of constraints viewpoint. Project delivery is at a higher risk of failure for virtual teams (Daim et al., 2012). Hu et al. (2015) noted the theory of constraints is an effective tool for communicating, team building,

reducing inventory, and reducing costs. The theory of constraints aligned with the purpose and problem of this study.

The focus of the study underpinned the lack of virtual training and competencies for virtual leaders and teams, which continues to affect project delivery times, creates challenges and obstacles, and leads to failed project performance. Recent research has consistently shown communication, trust, and leadership to be the leading obstacles to virtual collaboration for leaders and teams (Charlier et al., 2016; Derven, 2016; Hampton et al., 2017; Iorio & Taylor, 2015; Lockwood, 2015). These challenges are the primary causes that virtual team leaders must address in core competencies created to ensure successful project deliverables. The theory of constraints was a logical framework for this exploratory case study on virtual leadership and project delivery. As a management paradigm (Goldratt, 1990), the theory of constraints offers organizational leaders a set of strategies and tools for solving problems in leadership alignment, project management, supply chain, and production.

My hope is that organizational leaders can use my findings to better manage the limitations, mitigate the risks, gain knowledge through prevention, and develop positive project deliverables. The theory of constraints is a thinking process, and as such, the theory frames and assists leaders in developing simple solutions to complex problems (Goldratt, 1990). Berry (2001) indicated that by understanding how virtual teams perform, trust, and communicate, leaders may be able to remain competitive. By acknowledging limiting factors and developing simple solutions, the theory of constraints can provide leaders with a focus toward successful project deliverables.

Researchers can use the theory of constraints to identify limitations to productivity; thus, the theory is sustainable for producing an organization's project deliverables. Leaders may be able to use the findings from this study to focus on the cause of project delivery delays. The results may serve to promote further skills, competencies, and developments for virtual team collaborations and leadership training (Charlier et al., 2016; Daim et al., 2012; Derven, 2016; Hampton et al., 2017, Hill & Bartol, 2016; Hoch & Kozlowski, 2014; Pepper, 2010). Organizational leaders may improve project delivery by establishing virtual leadership competencies and virtual team effectiveness.

Six Sigma, lean thinking, and the theory of constraints are all sound methodological approaches in the management field. Each approach includes concepts, tools, strategies, and techniques to improve performance in the workplace. Nave (2002) indicated that one of the most difficult aspects of a research process is understanding the choice of the theory process. To provide readers a better understanding of these theories and why the theory of constraints was the right choice for this research project, I outline each theory below and explain why I ultimately selected the theory of constraints.

Six Sigma is about customer service; its focus is on frameworks for product development and process improvements. In the 1970s, Six Sigma emerged as a framework for Motorola leaders to address poor product quality by focusing on customer requirements (Sunder, 2016). Since 1970, the leaders of several organizations have developed hybrids of this methodology to work toward faster rates with improvements and quality. Sunder (2016) indicated that the hybrid models of lean Six Sigma are

becoming more attractive to manufacturing and service industries around the world. Lean thinking is an operational tool that leaders use to remove waste from organizations.

Thangarajoo and Smith (2015) noted the lean approach was initially developed in the automobile industry and then branched out into banking, mining, public service, and health care. Toyota had great success with the lean approach, which made the company globally competitive with quality products and an efficient production flow (Thangarjaoo & Smith, 2015). Nave (2002) contended that lean thinking is important for production flow because the focus is on producing high-quality products at lower prices with a strategy of receiving the products in a shorter time frame. The system is only as strong as the weakest link which will limit performance (Nave, 2002; Tulasi et al., 2012). Organizational leadership is at a critical point in gaining knowledge and understanding challenges in the 21st-century workplace.

Organizational leaders should focus on developing knowledge and understanding of virtual leaders' capabilities and competencies, and implementing strategies and tools to address challenges and project deliverables. The theory of constraints addresses system improvements within an organization. The focus of the theory of constraints is on the process that slows the speed and throughput, which ultimately causes delays in the performance process (Rand, 2000). In the case of virtual team leaders and the risk to project deliverables, organizational leaders must seek the answers and implement strategies and tools to address the weakest link.

Virtual teams remain fluid in the 21st-century workplace. The theory of constraints is a process for continual improvement (Rand, 2000). Kozlowski et al. (2015)

indicated that virtual organizations can only succeed if organizational leaders learn to adapt to the challenges of the virtual environment and understand the roles and competencies that virtual team leaders require. The theory of constraints may be an answer for organizational leaders seeking to complete projects in a timely manner.

Role of the Researcher

The researcher is the primary data collection instrument in qualitative studies. Researchers offer their interpretations through personal experiences, which leads to a more holistic and textural analysis (Lincoln, Mehl, Exner, Lindenmeyer, & Rief, 2010). I worked in virtual teams for approximately 7 years before beginning my doctoral studies. This experience provided a rich foundation and knowledge base regarding the topic under study. I also understand the ramifications as the researcher of this study, in that my experiences may have influenced the data analysis. Greene (2014) indicated a researcher's experience might influence a study; therefore, I kept an open mind to address my feelings, ethics, and principles using a reflective journal.

The journaling process in relation to an exploratory case study involves recording actions and feelings. The practice of reflective journaling serves as an opportunity to reflect on personal principles and assumptions. During both data collection and analysis, I recorded my personal experiences, principles, and opinions. Qualitative researchers maintain a reflective journal as a way of reducing the possibility of bias (Lincoln et al., 2010). Ortlipp (2008) indicated that rather than trying to control the values of a researcher's thoughts, values, and assumptions, it is best to use a method of journaling and bracketing to "consciously acknowledge" (p. 695) rather than to ignore. The research

journal and bracketing process assisted in ensuring the validity and accuracy of the research findings.

Bracketing is a technique in which researchers keep data aligned in a matrix to maintain themes and patterns, which creates trustworthiness and validity in the research process. By using a reflective journal and by bracketing the data through a matrix system, I was able to identify the thematic patterns supported by the literature and not through the motivation of bias, keeping to the reflective process of bringing the unconscious into the conscious and thus gaining a true interpretation of the research (see Justus, 2017; Ortlipp, 2008). Through journaling and bracketing procedures, researchers can remain self-aware of feelings, ethical issues, and principles that arise in the research process.

Methodology

The population was virtual team leaders from various government agencies. Virtual leaders working with and leading teams in the competitive global market are specialized, skilled professionals (Colomo-Palacios, Casado-Lumbreras, Soto-Acosta, García-Peñalvo, & Tovar, 2014). The population for this exploratory case study consisted of highly skilled professionals working in government agencies. Moretti and Thulin (2013) indicated that the unique skills and knowledge acquired by highly skilled professionals are usually effective within decision-making teams. Further refinement of the target population led to selecting virtual team leaders who had led government virtual teams for at least 5 years. This criterion provided some assurance that these government virtual leaders had formed attitudes and perceptions toward their respective agencies in response to organizational policy, procedures, and standards for the virtual environment.

All the participants were professionals who were members of professional association listings on LinkedIn (Performance Based Budget for Government, National Oceanic and Atmospheric Administration Researchers, Federally Employed Women (FEW), American Society for Military Comptrollers, and American Associated Budget, Programming Analysis, and U.S. Air Force Association) that totaled 48,887 individuals. Criteria for inclusion were knowledge and experience in virtual teams and project delivery. Most members of these groups hold high-ranked titles (i.e., lead budget officer, director, program analyst, financial officer, and researchers) and represent organizations with multiple national and international facilities within the government.

Such positions require the collaboration of geographically dispersed individuals with global organizational goals. The LinkedIn associations serve as platforms for government professionals to network, discuss issues, search for talent, and attend world summits. Wright (2012) successfully conducted a correlational leadership study among 175 project managers from 39 countries using experts found on groups within LinkedIn, with significantly correlated results. The inclusion criteria included members who belonged to highly skilled decision-making virtual teams, and all members used virtual methods as the primary source of interaction with other team members at the time of the study. A minimum of 5 years of experience was necessary to ensure only highly skilled professionals participated. Excluded individuals included lower level employees in secretarial, non-decision-making positions and who were not members of a team. Professionals who never collaborated virtually outside of the physical workplace were also not able to be part of the sample. Further refinement of the target population led to

the selection of virtual team leaders who had not only led government virtual teams for at least 5 years, but had extensive knowledge and substantive experience on all the issues under investigation in this study.

In this exploratory case study, purposeful sampling served as a way of recruiting the participant pool. Purposeful convenience sampling is a method used to gain a target sample size (Bryman, 2015; Patton, 2002; Thomas, G. 2015; Yin, 2014). The 11 government virtual team leaders obtained via purposeful sampling on LinkedIn met the minimum sample size required based on response rates in previous studies (Cho & Dansereau, 2010; Morris & Venkatesh, 2010; Nadiri & Tanova, 2010; Walumbwa et al., 2011; Walter & Bruch, 2010). I conducted an online survey among highly skilled professionals on LinkedIn, some researchers have been able to reach a 61% response rate; however, other reports indicated the response rate in studies involving highly skilled professionals is an average of 33% (Grubb & Begel, 2012; Wright, 2012). Researchers' hard work, dedication, and skill help to determine the successful outcome of a research project.

Purposeful convenience sampling is the preferred method when the opportunity is present and yields a fair sample (Bryman, 2015, p. 189). The goal was to approach the administrators of six groups on LinkedIn with a request to post to all the members and request for the government associationed participants to take the questionnaire through SurveyMonkey. The groups were all government-based LinkedIn professional association listings (Performance Based Budget for Government, National Oceanic Atmospheric Administration Researchers, Federally Employed Women (FEW),

American Society for Military Comptrollers, and American Associated Budget, Programming Analysis, U.S. Air Force Association) and totaled 48,887 members. The recruitment phase did not require the snowball method to achieve the number of government virtual team leaders required to complete the participant pool. Snowballing is a strategy the researcher may use to obtain or complete a participant pool (Bryman, 2015). However, for this exploratory case, the purposeful convenience method produced the target of 11 government virtual team leaders, within the first phase of data collection to complete the participant pool.

I received participants through an informational letter that included the informed consent and the terms of the study. Yin (2014) suggested researchers use multiple sources of data and indicated 11 is an appropriate sample size for exploratory case studies. Participants received information on the withdrawal process, and the option to withdraw was available (at all times) and without penalty. The letter included an explanation of the minimal risks and the benefits of the research. Participants had an opportunity to review firsthand knowledge; give their perceptions of challenges they face; and review their own virtual team documents, logs, and recordings. To reduce any ethical or professional risk, virtual leaders did not need to provide copies of the documents, logs, or recordings reviewed.

Exploratory case studies have no one-size-fits-all method to know when data collection is complete based on saturation and sample size. Guest, Bunce, and Johnson (2006) noted that researchers agree on rules and principles of qualitative studies, such as no new data, no new themes, no new coding, and the ability to replicate the study.

Researchers can attain data saturation with as few as six participants, and depending on an exhaustive data collection, a researcher is within guidelines of saturation (Burmeister & Aitken, 2012; Dibley, 2011; Guest et al., 2006). Dibley (2011) indicated the best way to think of data is in terms of being rich, whereas Burmeister and Aitken (2012) suggested thick as the size of the sample. The easiest way to differentiate between rich and thick data is to think of rich as quality and thick as quantity. Thus, thick data refer to a lot of data, whereas rich data refer to layers that are intricate and detailed.

Instrumentation

This exploratory case study involved collecting data regarding the challenges government virtual leaders face using an open-ended questionnaire (see Appendix A) designed for an exploratory case study and available via SurveyMonkey. As the researcher, I was the primary instrument of data collection. The online questionnaire included nine open-ended questions based on a study by Chrisentary and Barrett (2017) designed specifically for virtual leaders. The goal of a questionnaire is to find common themes and patterns. Furthermore, the questions in the questionnaire underwent review by Chrisentary and Barrett on July 12, 2017. Chrisentary and Barrett granted permission to use the questions for this exploratory case study (see Appendix C). I used the the online questionnaire (see Appendix B) via SurveyMonkey.

The participants reviewed their own virtual team documents, logs, and recordings. To reduce any ethical or professional risk, I did not ask virtual leaders to provide any copies to me or to anyone else related to the study. The document review provided firsthand knowledge within the questionnaire and supplied background information for

the checklist review process (see Appendix B). I used a reflective journal and notes to assist in the triangulation method. Triangulated data collection was a proposal of both Yin (2014) and Stake (1995). The SurveyMonkey questionnaire (see Appendix A) consisted of structured open-ended questions developed after an extensive review of the literature through a theory of constraint lens consisting of nine open-ended questions developed by Chrisentary and Barrett (2017) for virtual leaders. Desper (2013) indicated open-ended questions are an effective tool in qualitative research. The questionnaire included nine questions (see Appendix A) used to explore the complexities of the challenges explored in the analysis as the themes and patterns emerge. The researcher, the online SurveyMonkey questionnaire, the reflective journal, and the checklist were the primary instruments used in this case study.

Data Collection Procedures

Data collection included a SurveyMonkey questionnaire with open-ended questions. Data collection is a process of providing questionnaires to government virtual leaders through purposeful, convenience, and possibly snowball sampling (Stake 1995; Yin, 2014). Yin (2014) noted that using multiple sources of data assists in triangulating data, which can increase the reliability and validity of the information collected. Patton (2002) indicated that the primary activity of a case study, which is contacting participants, starts after a researcher identifies a research problem and develops the research design plan. Sampling for the questionnaire process continued until recruiting 10–12 participants was complete. The study did not start until after receiving approval

from the Walden University Institutional Review Board and receiving participants' consent via the e-mail survey link included in the instructions for the questionnaire.

Data Analysis

The data triangulated for the initial analysis were from questionnaires, the reflective journal, and notes transcribed from the checklist. Yin (2014) suggested researchers type all data into a Microsoft Word document and integrate the document into the database as part of the triangulation process. The data analysis from the questionnaire was interpretive, which meant there was no exact method to the task (Cohen, Manion, & Morrison, 2007). However, Wilkinson (2000) contended that a data analysis plan serves as a guide to assist the researcher in an audit trail. It was imperative to remain transparent while investigating how virtual leaders in the government environment handle the challenges of leading virtual teams and how these challenges affect project delivery.

Data analysis involved transcribing all data and using NVivo software to identify themes and patterns that may address the challenges of virtual leaders. Data analysis also involved importing all data from the reflective journal and my notes into NVivo to identify any additional impacts from the challenges on the project deliverables. This process allowed triangulation to take place. Yin (2014) indicated that case studies are "empirical inquires of investigations into contemporary phenomena of real-world context" (p. 16), and this study was consistent with Yin's case study model. Virtual leaders and project deliverables are an emerging technology, and studying individuals who currently work in the profession is vital to the management field.

Participation identification and the security of the case study were paramount to this study. It is important during research to replace participant names with aliases and conceal participant identities during data transcription (Guthrie & McCracken, 2010). During the exploratory case study, I concealed each participant's identity and all hard copies and the hard drive will remain in a locked cabinet; to include all data which will remain in a secure file with a secure password. I will shred or erase and destroy the research 5 years after this study is complete. Data labeling, and transcription occurred after collecting the responses to each questionnaire using a word processing document. Journal notes were labeled during the review of the questionnaire process to reflect on the participants' responses and any bias reflected.

Extra precautions in the case study assisted in preventing lost data. All documents had a backup document to prevent loss due to file corruption and to ensure data integrity (Bluhm, Harman, Lee, & Mitchell, 2011). Color codes served as identifiers for each participant, and a flash drive served as an extra precaution to protect the integrity of the data (Marshall & Rossman, 2011). Neuendorf (2016) noted emerging concepts of existing literature improve internal validity and conceptual basis when developing a case study. Capturing the emerging themes and patterns, triangulating the data, and ensuring data saturation ensured a comprehensive case study.

Triangulation served to validate the data from the questionnaires, the reflective journals, and the notes. Miles, Huberman, and Saldana (2014) indicated that researchers establish validity in a case study when they focus on the research questions through logical and rational procedures, seeking to maintain alignment. Yin (2014) suggested

through concentration of case studies alignment is preserved through research questions, data collection instruments, and the data analysis techniques which gives way to validity. Triangulation allows a holistic picture of the results to form. Tracy (2012) noted that coding during research should include categories relevant to research problems, purpose statements, research questions, and conceptual frameworks that direct literature. By using a theory of constraint lens, researchers may be able to reveal patterns and themes that led to challenges during project deliverables. However, Merriam (1998) indicated that it is imperative for case study researchers to obtain participants' feedback on the interpretations of the questionnaires to validate the results and improve the internal validity of the research. After the review and analysis of each questionnaire is complete, each participant received the results in an e-mail, along with a request to ensure the interpretations are valid, which may have improved the results.

The triangulation method became a source of validity in this exploratory case study. Chrisentary and Barrett (2017) developed the questionnaire for virtual leaders. Triangulation justifies and validates themes and patterns to establish the results in case studies. Maxwell (2013) noted that to mitigate researcher bias, researchers should use a reflective journal to increase internal validity. Participants will review firsthand knowledge of their own virtual team documents, logs, and recordings from a checklist provided. To reduce any ethical or professional risk, virtual leaders were not asked to provide any copies to me or to anyone else related to this study. Using the triangulation method will improve the internal validity of this study. The cross-checks of findings allow for transparency, other researchers can use the cross-checks to replicate the

procedure, and the results may yield gaps that give way to a future focal component that allows researchers, organizational leaders, virtual leaders, and employees the opportunity to address the management field for future endeavors.

Issues of Trustworthiness

To ensure this study's construct validity is sound, it was important to develop a clear chain of evidence among the literature review findings, the questionnaire process, and the final analysis procedures. Yin (2014) indicated that researchers use four types of criteria to judge a study's quality: construct validity, internal validity (credibility), external validity (transferability), and dependability. A reflection journal documents bias, which helps to ensure internal validity (credibility). Qualitative researchers who are able to maintain a reflective journal as a way of reducing the possibility of bias can increase internal validity (Lincoln et al., 2010). Participants reviewed their questionnaire inputs via e-mail. Additionally, the patterns and themes that emerge as a result of the coding use a theory of constraint lens (Goldratt, 1990) and from the participants' responses strengthened the study's internal validity (Yin, 2014), which helped develop the exploratory case study.

Triangulating the questionnaires, the personal reflective journal and notes, and a checklist further strengthened this exploratory case study's internal validity. By establishing external validity using the components of the theoretical framework identified in the literature review to compare shared outcomes (Goldratt, 1990; Yin, 2014) and crosswalking participants' experiences triangulation is established (Stake 1999; Yin, 2014). Researchers may be able to replicate a case study in future case studies

with variance among participants and their experiences to achieve transferability of the findings (Thomas, 2015; Yin, 2014) to other organizational settings. Reliability, or dependability, in case studies, can be challenging to achieve, as each case study is unique (Huberman & Miles, 2002; Thomas, 2015). In this case study on government virtual team leaders, I sought dependability by ensuring the clear documentation of data collection procedures and other operations so that the process is repeatable in the future, even if the outcomes are unlikely to yield the same results due to participant variance (Yin, 2014). These processes provide clarification and contribute to clear audit trails to ensure oversight. Ensuring confirmability, or objectivity, involves researchers acknowledging their experience to ensure transparency and to avoid bias.

Researchers use journaling and bracketing procedures to remain self-aware of feelings. Ortlipp (2008) indicated that rather than trying to control the values of a researcher's thoughts, values, and assumptions, it is best to use a method of journaling and bracketing. Through maintaining a reflective journal and creating a bracketing matrix, a researcher can support the literature. The research journal and bracketing process can help ensure the trustworthiness, validity, and accuracy of research findings.

Ethical Protection of Research Participants

This exploratory case study only included participants who voluntarily agreed to respond. To ensure the fulfillment of this goal, every participant received a consent letter that ascertained voluntary participation in the questionnaire. The participants were able to provide consent by clicking on the questionnaire link and by completing the survey via

SurveyMonkey. As noted in the consent letter participants were able to opt out from the questionnaire at any time if they wished.

I always ensured the anonymity and privacy of the participants. No individual responses will be available to the public. I will report and publish only general findings based on the analysis and summary of all the data. In the consent letter, I included additional assurances that this is academic research and that I used the participants' responses only for academic purposes. I protected the privacy of all respondents by not revealing the data to any third party. I explained participants' anonymity in this case study and the ways I will value their privacy, and I also explained how I employed a coding framework so that no third party could use the reported results to identify the details of any participant, and I ensured all data collected from the questionnaires will remain saved on a secured password-protected personal computer for at least 5 years to await further analysis.

Summary

The purpose of this case study was to explore the challenges for virtual leaders in the government environment that can affect project delivery. The research questions served as a guide to, and aligned with, the questionnaire used in the SurveyMonkey research project. Data collection will consist of triangulating the questionnaires, the personal reflective journal, and notes from a checklist. Triangulation helped to establish the validity of the results of this case study. Cross checking the findings showed that transparency helps other researchers to replicate the procedures. This research yielded gaps and other focal points that give way to a future that allows researchers,

organizational leaders, virtual leaders, employees, and opportunities to address the management field for future research endeavors.

Chapter 4: Results

The purpose of this exploratory case study was to examine the challenges confroning virtual leaders in the government environment. The rapid growth in technology in virtual workplaces has caused organizational leaders to concentrate on infrastructure and technology; however, the rapid growth also challenges virtual leaders and project deliverables. I developed the research questions to focus on the challenges faced by virtual team leaders while maintaining roles and responsibilities to successfully complete a project deliverable. Chapter 4 includes detailed descriptions of the case study, the data collection methods, and the data analysis technique. Chapter 4 also includes the results of my data analysis and a discussion of how I used the findings to answer the research questions.

Demographics

I invited members of all six government LinkedIn associations (Performance Based Budget for Government, National Oceanic Atmospheric Administration Researchers, Federally Employed Women (FEW), American Society for Military Comptrollers, American Associated Budget, and U.S. Air Force Association) to participate in the study. The survey was available via SurveyMonkey for 3 weeks, and although seven people attempted to complete the online survey, only six respondents fully completed the survey. During the fourth week, an additional person completed the survey. As the researcher, I monitored the data collection process daily, and I maintained a journal to keep track of my personal thoughts, feelings, and attitudes toward the case study. It took a total of 5 months before receiving 11 participants for the exploratory case

study to examine the challenges confroning virtual leaders in the government environment.

Data Collection

To ensure visibility and achieve the required sample size, I reposted the survey invitation to the top of the LinkedIn government association pages weekly. Additionally, I monitored the comment boxes and conversed with members asking questions about my study, about the process, and about Walden University in each group. Data collection took place at the end of each day throughout February–April 2018.

As the lead instrument and sole researcher, I decided to triple my LinkedIn connections to maximize my visibility on LinkedIn by marketing my personal LinkedIn page. The goal was to direct more traffic to the survey. As I connected with new LinkedIn associates, I also connected them to the survey request at the top of each group association page. I worked to ensure the number of my LinkedIn connections tripled by the end of May 2018. The primary goal in this effort was to ensure that 10–12 participants from the six government group LinkedIn associations completed the survey by the beginning of June 2018.

I collected data from 11 purposefully selected participants via a SurveyMonkey questionnaire with open-ended questions. Yin (2014) noted that using multiple sources of data assists in triangulating data and can increase the reliability and validity of the information collected. I continued the sampling process until I recruited 11 participants. I did not begin the case study until after I received approval from the Walden University

Institutional Review Board (01-23-18-0457066) and after receiving participants' consent via the e-mail survey link included in the instructions for the questionnaire.

Issues of Trustworthiness

Credibility

A reflection journal supports internal credibility by documenting bias. Qualitative researchers who maintain a reflective journal may reduce the possibility of bias and increase internal validity (Lincoln et al., 2010). The reflective journaling process in an exploratory case study serves as an opportunity to reflect on personal principles and assumptions. Personal experience I had in virtual teams before this case study began provided a rich foundation and knowledge base regarding this topic. However, as the researcher in this exploratory case study, I understood that my experiences had the potential to influence the data analysis. To maintain awareness of such potential influence, I documented in a reflective journal throughout the research process.

Creditability involves more than just using a reflective journal. Simon and Goes (2013) indicated that participants should check data for verification of information. In this case study, participants were able to check the individual questionnaire before submission through SurveyMonkey. The online questionnaire included a list of nine open-ended questions based on a study by Chrisentary and Barrett (2017) designed specifically for virtual leaders. I used the questionnaire's nine questions (see Appendix A) to explore the complexities of participants' leadership challenges and to gather useful data that I could organized into themes and patterns. The researcher, the online

SurveyMonkey questionnaire, and the reflective journal were the primary instruments used in this case study.

Transferability

Researchers may apply findings in a completed case study to another environment. Yin (2014) indicated that when researchers document case study procedures and limitations, other researchers can replicate the study and may receive similar results by following the same procedures. Government virtual leaders completed this case study; therefore, the findings may be transferrable to virtual leaders in other settings. The participants were all professionals who work as government employees and lead virtual teams facing challenges with projects. I chose participants who work in the management-business field so that replicability and transferability would interconnect.

Dependability

In this case study on government virtual team leaders, dependability was vital. As the researcher, I ensured the clear documentation of data collection procedures and other operations so that the processes are repeatable in the future. Yin (2014) noted that even if the outcomes are unlikely to yield the same results due to participant variance, it is important to be able to repeat the procedures in the future. Additionally, for dependability, qualitative research may include a second coder to analyze data when necessary (Given, 2008). This case study required no extra levels of coding, there were no significant changes, and the questionnaire was easy to comprehend. Additionally, I followed an efficient process for data collection.

Confirmability

This study involved collecting research data from virtual leaders who worked in government environments and analyzing their perspectives, documenting data collection, and reviewing other related case studies and narratives. The population in this study was employees from government-based agencies who have held virtual team positions for at least 5 years. The primary focus was on government virtual team collaborators who had the knowledge and skill sets that allowed for open dialogue on the topics of virtual teams, competency, training, and project delivery. An exploratory case study is a comprehensive way to address the questions *why* and *how* in relation to virtual communication, trust, leadership, and project deliverables.

Study Results

I recruited study participants through LinkedIn government association groups. In the study, virtual leader participants completed a research questionnaire. Qualitative case study data analysis was suitable exploring the skills and attributes required for leadership development and project deliverables for virtual teams. The study consisted of an exploratory questionnaire completed by 11 virtual leaders with knowledge and expertise in virtual team environments. Individuals invited to participate in the research were virtual leaders in government agencies who are professionals and who worked in virtual environments for at least 5 years.

The virtual environment is constantly changing (Jacob & McClelland, 2001), and it is vital to gain knowledge and data from the field from those working in it to comprehend the skills, attributes, and behavioral characteristics required to effectively

lead virtual teams. When participants were asked to respond to a question about if you are willing to volunteer for a check-list review (containing an additional 5 questions) and at no time will you have to turn in your personal emails, agenda, logs, virtual communications, these items are to be reviewed by you through a checklist to assist you as a reminder of how you and your virtual teams communicate and mitigate challenges as an additional section of the questionnaire, six replied yes and five replied no. When participants were asked about their position and title, two (18%) responded government support specialists, one was a program developer (9%), and the others (73%) held different positions and titles within diverse government agencies. The participants had led projects for 5-10 years. See Table 2 for a summary of demographic information regarding the research participants.

Table 2

Data of Participants in Case Study

Participant	Government position	Leadership style	Communication with team members	Perception of trust in organization, agency, and team
1	IT management	Empowerment	E-mail, Instant Messenger	Fair
2	President NGO (retired military)	Self-directed/ project goals	E-mail; regular conference calls	Distrust; lack of control; intimated by lack of expertise
3	NCOIC	Influential/ inspirational	Transparent, direct; no sugarcoating	Strong
4	EOD team leader	Basic/equal voice among all	Every voice counts	Equal - one voice
5	Program development	Help guide conversation	Telecon; e-mail	Complete
6	Program analyst	Consensus	E-mail; face-to-face	Limited
7	Grants management specialist	Inclusive; participatory	E-mail; phone if necessary	Trust in-house; less trust with other bureaus
8	Fighter pilot	Assess team/ buy-in/proceed	Skype; e-mail; text; telecom	Trust; timeliness, eye contact
9	Service support specialist	Facilitator	Report incidents/ successes after sessions; collaborate on how to minimize issues	Positive
10	Service support specialist	Collaborator	E-mail	Positive
11	Logistics technician	Collaborative; flexible	Telecon; e-mail; videoconference	Perception is reality; trust is key

Note. This information is in the participants' complete response format

The overarching research question for this study was as follows: How do government virtual team leaders describe the manner in which challenges negatively affect project delivery? The four main themes that emerged from the analysis of the data obtained from the responses to the questionnaire were as follows: (a) challenges of communication, (b) trust, (c) organization, and (d) a need for additional collaboration within the organization. After I completed data collection, I coded the participants' responses by using NVivo to find themes and patterns. Therefore, Question 1 (Q1) represented the thematic analysis, researchers can pinpoint patterns (Vaismoradi, M., Turunen, H., & Bondas, T. 201). I used semistructured questions and maintained a journal throughout the process to ensure an in-depth understanding of the perspectives on effective leadership strategies. The chosen participants were professional government employees who had experience as virtual leaders.

The second overarching question was as follows: What are virtual leaders doing to overcome the challenges associated with effective project delivery? The themes that developed for Question 2 (Q2) from the analysis of the data obtained from the responses to the questionnaire were (a) collaborations, (b) trust, and (c) trained virtual facilitators. The participants' responses to the questionnaire supported the theory of constraints, which addressed virtual leaders who continue to struggle to complete project deliverables due to challenges. Goldratt (1990) indicated that, whether acknowledged or not, if challenges are properly identified, organizational leaders can manage constraints that may create significant improvements for project deliverables.

In Figure 1, participants responded to a checklist items with the number of virtual projects in category (a) timelines: generally, how long your timelines last for virtual projects; (b) number of virtual projects that are currently outstanding; (c) number of successful virtual projects to date and number of overdue projects; and (d) other. Those who had dedicated timelines, comprised of 20% of the population, and the number of outstanding projects also equated to 20%. The participants indicated that 40% of their virtual projects were successful and there were no overdue projects. Additionally, the participants noted that 20% of projects were classified as other (suggesting that some may be cancelled or pending further information—in planning stages).

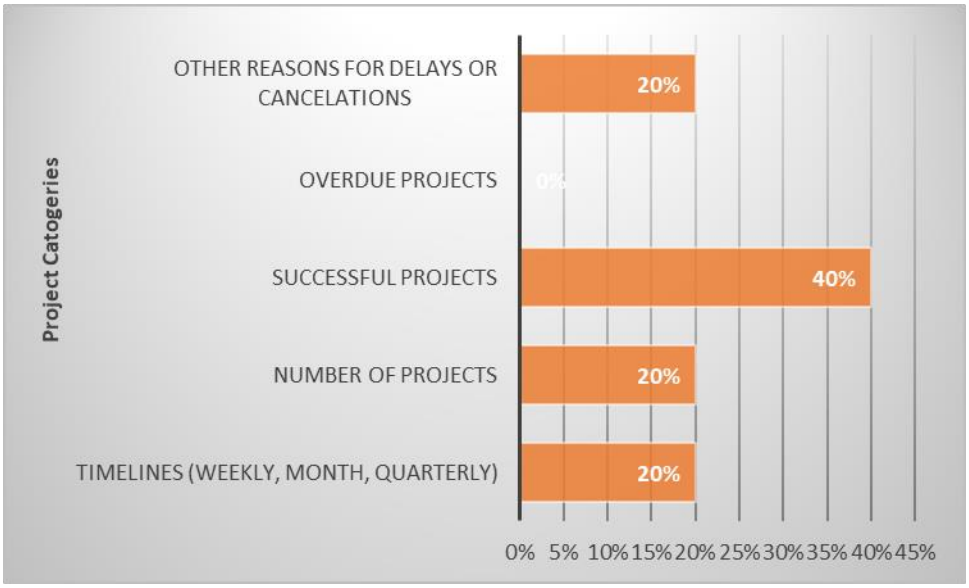

Figure 1. Project timelines.

Participants responded to virtual meetings as those that functioned with communication technologies that used GoToMeeting, WebX, or Skype 50% of the time, which indicated that virtual leaders are indeed virtual and use the technology infrastructure of their organizations. In Table 3, the partcipants' response aligned with

data that indicated face-to-face meetings are still relevant (33.33%) and are necessary to complete some projects and that indicated e-mail is a solid foundation for communication (16.67%).

Table 3

Meeting—Communication

Participant	Answer Choices	Responses
1	Email Communication	16.67%
2	Agenda for meetings	0.00%
3	Type Minutes in Meetings/Distribute after each meeting	0.00%
4	GoToMeetings/WebX/Skype – Teleconferences	50.00%
5	Chat- in-between meetings	0.00%
6	Social chatting to build trust/relationships	0.00%
7	Face-to-Face meeting (quarterly/or yearly)	33.33%

Furthermore, participants responded to all other types of communication used by the virtual team to communication during projects. Table 4 indicated that 50% percent of the time, the teams relied on agendas from the meeting to reiterate information and to stay on task, and 50% of the time examples are shared among the team via a face-to-face meeting or via e-mail. Table 4 shows no virtual leaders or teams in this demographic noted the use of repositories or recordings for checks and balances or transparency.

Table 4

Communication (During Project)

Answer Choices	Responses
Agenda	50%
Example	50%
Repositories	0%
Recordings	0%

The final three open-ended questions about training as a virtual leader, standard operation procedures, and open-ended information on positive impacts for virtual leaders were completed with n/a by all participants.

Summary

The purpose of this qualitative case study was to explore and gain knowledge of challenges for virtual leadership that may occur in project delivery. Results showed that, among virtual leaders, there was a pattern of communication and trust as a commonality. Another theme was the need for more collaboration and possible requirements for virtual facilitators. Therefore, the conclusion was that virtual team leaders who are working on project deliverables tend to perceive organization as more effective when communication and trust is high, as well as when the agency is collaborating among departments and if the virtual team uses a trained facilitator with each virtual meeting. Trained virtual facilitators is considered an asset and can assist with communication and trust challenges for virtual meetings.

Chapter 5: Discussions, Conclusion, and Recommendations

Overview

The purpose of this qualitative exploratory case study was to explore the challenges confronting virtual leaders in the government environment that can affect project delivery. The problem was that the virtual skills and competencies of leaders lag behind technological transformations in the business world. Typically, when leaders adopt any change in a workplace, a positive or negative disruption occurs. Researchers

have focused on organizational leaders' attempts at responding to changes in the infrastructure technology; however, these attempts by most researchers have found unproductive a continual lag of leadership competencies in virtual teams (Chang et al., 2014). It is essential for virtual leaders to gain competencies in virtual knowledge, training, and resources, all of which affect successful project delivery.

Chapter 4 included details of the themes, patterns, and results I obtained from the responses to the questionnaire. Chapter 5 contains the results of the study, discussions of the study's limitations and implications for social change, recommendations for further study, and conclusions. Chapter 5 also includes a discussion of my answers to the research questions. Data collection involved using a SurveyMonkey questionnaire answered by 11 participants recruited via LinkedIn. I identified four theme and patterns for virtual leaders in the results. Specifically, virtual leaders faced challenges associated with (a) communication, (b) trust, (c) organization, and (d) the need for additional collaboration within organizations. Additionally, data showed that 50% of the virtual teams relied on agendas from virtual meetings to reiterate information and 50% of the time the teams use examples shared in face-to-face meetings or through group e-mails to explain issues in more detail.

Interpretation of the Results

The participants were 11 government employees from government-based LinkedIn professional association listings that totaled 48,887 members (Performance Based Budget for Government, National Oceanic Atmospheric Administration Researchers, Federally Employed Women [FEW], American Society for Military

Comptrollers, and American Associated Budget, Programming Analysis, and U.S. Air Force Association). I triangulated questionnaire data by using a reflective journal, open-ended questions, and other case studies.

Research Subquestion1

Research Subquestion 1 was as follows: How do government virtual team leaders describe the manner in which challenges negatively affect project delivery? To address this question, I used participants' responses to nine open-ended questions designed specifically for virtual leaders. The open-ended questions emphasized leadership style, communication with team members, the development of trust, and challenges virtual team members have to successfully implementing a project. The primary theme for virtual leaders in this exploratory case study was communication, building trust, collaboration, and leadership emergent. Additionally, recommendations made by the experienced virtual leader participants indicated that, being consistent through e-mail, examples in e-mails, face-to-face meetings, and video chats leads to successful project deliverables.

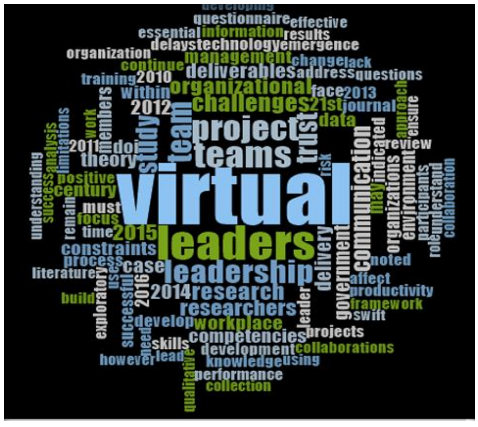

Figure 2. Themes & Patterns

Most notably, the participants noted that to be effective and efficient, virtual teams need a fully trained virtual facilitator. The 21st-century business world is becoming aware of the requirements for virtual team leaders, and it is important for leaders to adapt and become proficient in virtual effectiveness (Bell & Kozlowski, 2002; Fan et al., 2014; Hoch & Kozlowski, 2012; Zaugg & Davies, 2013). Researchers have consistentely shown communication, trust, and virtual leadership to be the leading obstacles to virtual collaboration for leaders and teams (Daim et al., 2012; Iorio & Taylor, 2015; Lockwood, 2015). As technology and virtual leaders continue to move forward, it is essential to address their core competencies and ensure successful project deliverables.

Research Subquestion 2

Research Subquestion 2 was as follows: What are virtual leaders doing to overcome the challenges associated with effective project delivery? Several of the nine open-ended questions included a focus on leadership style, communication with team members, and perception of trust in organizations. In participants' responses, I identified the predominant themes and patterns of trust, collaboration, and trained facilitators. Virtual leaders discussed working inclusively, developing collaborative teams, and to remaining flexible. Additionally, virtual leaders flagged the need to continue to communicate with team members throughout projects via e-mail, telecommunications, and video chat. The vital component of a virtual team is trust. Researchers continue to investigate leadership and trust to address the challenging factors of virtual collaborations that affect project delivery (Daim et al., 2012; Iorio & Taylor, 2015; Jarvenpaa, & Leider,

1999; Lockwood, 2015). Furthermore, management research must keep pace with communication technology (Aguinis & Edwards, 2014). Organizational leaders must find new ways to address the challenges of training and developing competencies from a virtual perspective while focusing on the key risks to project delivery.

Limitation

The first limitation of this exploratory case study was the theoretical approach I used. Even though a constraints lens allows for management fields to obtain quality improvements in real time, the system improvement philosophy (theory of constraint lens) might be too stringent for an exploratory case review. To obtain context-rich data on the impact of virtual leadership and the effects on organizational productivity, process, and communication, some reasearchers might deem a mixed-method as a more appropriate.

A second limitation involved using government employees for the participant pool. A broader participant pool involving other organizations may have produced a different result. Finally, this case study contains data that represented only a single questionnaire with open-ended questions; to obtain different results, a researcher may use another instrument to observe and interview virtual leaders, which may lead to more in-depth material.

Recommendations

In this case study, my intent was to provide virtual leaders with information that will improve project deliverables. The virtual leaders in government who participanted in this study have served as a beneficial information resource for those seeking to

understand future management field success. The collected information gave valuable insight into virtual leadership and project deliverables. Future researchers may want to replicate this study and explore improvements to address the challenges of communication and team trust. The findings indicated that facilitators contribute to communication, build trust in virtual meetings, and assist with the project deliverables; further studies should include research in this area. This study provided a base, but more research is necessary on this subject, possibly with use of a different instrument.

Research exists on virtual leadership, but there is little research regarding trained facilitators who contribute to virtual communication and project deliverables. A future researcher could focus on how virtual leadership (trained facilitators) can influence performance and project deliverables. Recommendations for research also include replicating this study in a non-governmental business setting.

Implications

The information from this study may affect social change by providing virtual leaders with critical information required to make more knowledgeable decisions in 21st-century workplaces. The case study has practical implications for organizational leaders interested in supporting the adoption of new strategies to build communicative, trusting, and productive virtual teams that can improve project deliverables. The findings of the case study show the patterns and themes of communication and trust toinclude collaboration and virtual facilitators for positive impacts toward successful virtual leadership.

The information in this case study contributes to the management field by providing organizational leaders the daily perceptives of virtual leaders regarding challenges and project deliverables. The results of this exploratory case study may help organizational leaders understand the perspectives of their employees and therefore enable future development of policies and procedures to guide virtual leaders and project deliverables.

Summary and Conclusion

This exploratory case study adds to the body of knowledge in the management field and provides information for organizational leaders that may be useful in examining the challenges confronting virtual leaders and project deliverables. The research problem led me to explore how the virtual skills and competencies of leaders lag behind the expanding technological business world. The study involved exploring the challenges that virtual leaders face with knowledge, trust, training, and resources, all of which adversely impact project delivery.

A well-trained and educated virtual leader will be able to address virtual teams, build trust, and develop complex opportunities throughout successful projects. Organizational leaders struggle to match the pace of technology (Aguinis & Edwards, 2014; Lee, 2013; Zofi, 2012). Haselberger (2016) indicated virtual team leaders develop through experience, and it is essential to understand that virtual leaders deal with interpersonal challenges and issues with projects over time. Researchers will continue to seek the right balance for virtual competencies and project deliverables until

organizational leaders learn to scale up to the challenges for virtual leaders and focus on virtual competencies and project delivery delays.

My goal in this study was to understand challenges affecting project deliverables as understood by virtual leaders. This study fills a gap in the literature by examining the challenges of virtual communication, trust, emergent leadership, and project delivery. The results may lead to improvements in the skills, competencies, and developments of virtual team collaborations and leadership training. Hamersly and Land (2015) suggested that organizational leaders create policies for virtual communities and focus on procedures when establishing the infrastructure for virtual leaders. This exploratory case study included information with patterns and themes that indicated a need for further studies on virtual leadership and project deliverables.

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Appendix A: Questionnaire for the Virtual Team Leaders

1. Please give your government position (i.e. budget analyst, or, program analyst, etc.) and how you were chosen as a virtual leader at your respective agency?

2. How would you describe your leadership style when leading a virtual team?

3. How do you communicate with your team members?

4. What is the earliest experience of a successful project deliverable you can recall?

5. What is your perception of trust in your organization, your agency, and your team?

6. As a team leader, how can virtual team members build initial trusting relationships in the virtual workplace to enable successful project deliverables?

7. Using your experience, can you explain instances that team members' exhibit trust challenges?

8. From your perspective on virtual challenges, what could prevent virtual team members from successful implementing a project?

9. Additional research: please indicate yes or no, if you are willing to volunteer for a check-list review (additional 5 questions below) and at no time will you have to turn in your personal emails, agenda, logs, virtual communications, these items are to be reviewed by you through a checklist to assist you as a reminder of how you and your virtual teams communicate and mitigate challenges

If you chose yes – please review the checklist and questions on Appendix C:1:

Appendix B: Checklist of Items

Please use any items that you use with your virtual team to assist you with the below answers (i.e. emails, agendas, progress logs, timelines, matrix, etc):

1. **Please describe the amount of projects you have in each category below:**
   a. Timelines (Generally, how long are your timelines in your virtual projects currently [within a set timeline of a week?, a month?, a quarter?])
   b. Number of projects (How many outstanding projects do you currently have as a virtual leader?)
   c. Successful projects (How many successful projects have you lead as a virtual leader?)
   d. Overdue projects (How many overdue projects have occurred as a virtual team leader? And why?)

2. Do you and your virtual team use any of the below? If so how?

a. Email Communication
b. Agenda for meetings
c. Type Minutes in Meetings / Distribute after each meeting
d. GoToMeeting/WebX/Skype – Teleconf
e. Chat – in-between meetings
f. Social chatting to build trust/relationships
g. Face-to-Face meeting (Quarterly/or Yearly)

3. What types of email communication do you and your team provide throughout the project? Is it standard, routine? Does it help? Or hinder the project?

a. Agenda
b. Examples
c. Repositories
d. Recordings

4. Are you required by your agency to keep or provide any of the above? What are thoughts about these items?

a. Training examples
b. Formal
c. Informal
d. Competencies

5. What type of virtual training did you receive to become a virtual trainer? How often do you re-train?

6. Do you have a Standard of Procedure (SOP), to include Rules and Regulations in place at your office as a Virtual Leader?

7. Would you like to add any additional thoughts on being a virtual leader or the training you received which positive impacts the success of the virtual teams you encounter?

Appendix C: Approval E-mail – Questionnaire Questions

From: "Dr. John Chrisentary" <drjchrisentary@gmail.com>
Date: July 12, 2017 at 9:08:39 PM EDT
To: Verna-Kay Smith <verna-kay.smith@waldenu.edu>
Cc: "denbarrett@verizon.net" <denbarrett@verizon.net>, VK <verna_kay@hotmail.com>
Subject: Re: Permission - USE OF RESEARCH QUESTIONS [An Exploration of Leadership in Virtual Communities of Practice- 2015]
Reply-To: "Dr. John Chrisentary" <drjchrisentary@gmail.com>

Hello Verna-Kay Smith,
Thank you for your email requesting permission to use the interview questions from my research. Speaking for Dr. Barrett as the co author, I grant permission to use the interview questions as stated in your request. I would love to have the opportunity to read your completed research. Good luck with your proposal, oral defense, and URR.

You are on an amazing journey. Enjoy the process and keep focused on the end goal. Once completed, your life will never be the same (in a good and exciting manner).

Regards,
Dr. John Chrisentary