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Virtual Team Success: The Impact of Leadership Style and Project Management Experience

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This is to certify that the doctoral study by

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Abstract

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MBA, Walden University, 2009

LLB, University of Buckingham, 1989

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

The ability of project managers to effectively lead virtual teams is an important factor in the teams' success. Since the 1990s, organizations' use of virtual teams to plan and execute projects has increased, yet virtual teams continue to have high failure rates. The purpose of this correlational study was to examine whether a relationship exists between leadership styles, years of project management experience, and success of virtual teams. I used the path-goal theory of leadership as the theoretical framework for this study. A nonpurposive random sample of 160 project managers in the San Francisco Bay Area who had obtained the Project Management Professional® designation issued by the Project Management Institute completed an online survey. Multiple regression was conducted to determine whether a statistically significant relationship existed among variables. The results of the regression analysis were statistically significant, $F(2, 142) = 39.21$, $p = .000$, $R^2 = .35$, indicating that a combination of leadership style and project management experience can predict success of virtual teams. Leaders of organizations can use the findings of this study in training virtual team leaders. The findings may contribute to social change in organizations that use or plan to use virtual teams in their operations. Team leaders can apply the findings in developing virtual team management strategies. Effective management may reduce the failure rate of virtual teams, which could lead to higher job satisfaction and employee retention among team members, increased employment opportunities, increased urbanization and gentrification of local communities, and reduced flight of capital. Effective management of virtual teams could thus support socioeconomic empowerment and a higher standard of living in local communities and improve knowledge and tolerance of cultural and geographic diversity.

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Dedication

James, AJ, and Zoey, I dedicate this work to you.

Vous êtes ma raison d'être!

Acknowledgments

As I conclude this incredible doctoral journey, I would like to express my sincere gratitude to all the people who took time to inquire, support, encourage, listen to, and talk with me about the program. Your kindness and understanding are really appreciated. I thank you.

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I would like to thank my family and friends for allowing me to go through this journey and for being understanding about my limited availability. Thank you for your patience and understanding. The journey was worth it.

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Section 1: Foundation of the Study

The purpose of this study was to investigate the correlation between styles of leadership, level of project management experience, and success of virtual teams. In Section 1, I present an overview of this study, including a historical overview of virtual teams, the background of the study, a statement of the problem, the purpose of the study, the rationale or significance of the study, and the research questions and hypotheses. This section also contains definitions of terms used in the study, as well as discussion of the assumptions, limitations, and delimitations of the study. The research approach for this study was a nonexperimental quantitative design. The independent variables in this study were leadership styles and level of project management experience. The dependent variable in this study was success of virtual teams.

Background of the Problem

Since the 1990s, there has been a rapid increase in the level of global business and economic activities (Knight & Liesch, 2016). One offshoot of this increase in business activities has been the decentralization of organizational activities and locations (Hitt, Li, & Xu, 2016). With business interests in more than one location, organizations are relying on different teams, some of which do not usually meet face-to-face to manage the various interests (Alsharo, Gregg, & Ramirez, 2016).

According to Batarseh, Usher, and Daspit (2017), organizations are increasingly using virtual teams to plan and execute their projects. This increase in the use of virtual teams has been possible because of advancements in technology (Ford, Piccolo, & Ford, 2017). The use of virtual teams provides organizations with benefits such as cost

savings, flexibility, and competitiveness (Su, Dong, & Liang, 2014; Szewc, 2013). The use of virtual teams, however, comes with some unique leadership and communication challenges over and above the challenges of traditional co-located teams (Charlier, Stewart, Greco, & Reeves, 2016).

Researchers have investigated the challenges that virtual teams face and how virtual teams can overcome those challenges. In a 2013 study designed to investigate the success factors for project leaders in virtual projects, Verburg, Bosch-Sijtsema, and Vartiainen found that the competence and level of project management experience of the virtual team leader can affect the success or failure of a virtual team. Iorio and Taylor confirmed this finding in their 2015 study in which they found that the previous experience of project leaders affects their effectiveness as virtual team leaders and that this, in turn, affects the success of the virtual team.

Problem Statement

There is a heightened sense of skepticism about the effectiveness of virtual teams as tools for achieving organizational goals even as the use of virtual teams increases (Purvanova, 2014). The reason for this skepticism is that less than 1 in 3 virtual teams actually succeed (Levasseur, 2012). The general problem is that virtual teams present unique leadership challenges over and above those faced by traditional co-located teams. The specific problem is that some virtual team leaders do not understand the relationship between leadership styles, project management experience, and the success of virtual teams.

Purpose Statement

The purpose of this quantitative correlation study was to investigate the relationship between leadership styles, project management experience, and the success of virtual teams. The independent variables in this study were leadership style and project management experience. The dependent variable was success of virtual teams. The study population consisted of project management professionals based in Northern California. I selected the study sample from a list of project managers I obtained from the Project Management Institute (PMI). The findings of this study may promote beneficial social change by providing strategies for the effective management of virtual teams to reduce their failure rate, improve job satisfaction and employee retention among team members, and increase employment opportunities. Effective management of virtual teams could support socioeconomic empowerment and a higher standard of living in local communities.

Nature of the Study

For this study, I used a quantitative approach. The quantitative approach to inquiry is a deductive approach designed to test predetermined hypotheses based on existing theory (Weathington, Cunningham, & Pittenger, 2012). The goal of a researcher using the quantitative approach is to measure and analyze relationships between two or more variables in a value-free setting (Karanja, Zaveri, & Ahmed, 2013). The positivist approach informs the quantitative paradigm in research. Positivists assume that the world is objective and therefore avoid interference of their values or biases in the conduct of inquiries (Hewege & Perera, 2013). My goal in this study was to investigate the

relationship between the independent variables—namely, leadership styles and level of project management experience—and the dependent variable, namely success of virtual teams. The variables in this study are measurable by using survey instruments to capture the responses of the participants.

The quantitative approach to inquiry was the appropriate approach for this study. The quantitative approach involves theory testing and generalization and, as Weathington et al. (2012) stated, the researcher using a quantitative approach can use hard data and statistical analysis to determine the existence of a relationship between variables. I considered a purely qualitative approach and a mixed methods approach for this study but rejected both. Researchers using a qualitative approach seek to explore and understand the meanings people attribute to their experiences (Yilmaz, 2013). The qualitative approach was not appropriate for this study because the purpose was not to understand the meaning and interpretations the participants attributed to their experiences on virtual teams. The mixed methods approach combines elements of quantitative and qualitative approaches in one study (Venkatesh, Brown, & Bala, 2013). The mixed methods approach was not appropriate for this study because it would have been unnecessarily repetitious, time consuming, and expensive.

I used the nonexperimental correlational design because it was aligned with the purpose of this study, which was to determine the extent to which leadership styles and level of project management experience impact the success of virtual teams. Correlation tests for the relationship between two or more variables without manipulating any of the variables. Correlation tests are appropriate in field studies where the researcher has no

control over the participants (Weathington et al., 2012). An experimental design, on the other hand, determines a causal relationship between variables by testing the impact of a treatment or an intervention on an outcome (Weathington et al., 2012). Because my goal in this study was not to identify a causal relationship between the independent variables and the dependent variable, and because I did not plan to control or manipulate any of the variables, the experimental design was not appropriate for this study. Further, experimental design studies tend to enhance internal validity to the detriment of external validity and generalizability (Aguinis & Bradley, 2014).

Research Question

In this study, I investigated the relationship between leadership style, project management experience, and success of virtual teams. The following research question guided this investigation: What is the relationship between leadership style, project management experience, and the success of virtual teams? Researchers use research questions to understand and examine the core concept of a problem statement. I constructed the research question in this study to focus on the specific business problem.

Hypotheses

In this study, I hypothesized that there is a correlation between leadership style, the level of project management experience of team leaders, and the success of virtual teams. The hypotheses that I tested in this study were as follows:

Ho: The linear combination of leadership styles and project management experience will not significantly predict the success of virtual teams.

Ha: The linear combination of leadership styles and project management experience will significantly predict the success of virtual teams.

Survey Questions

The survey questions for this study came from three sources. The first was the demographic survey (exhibited as Appendix B) that I used to collect demographic information such as level of project management experience from the study participants. The second was the Multifactor Leadership Survey (MLQ 5x) by Avolio and Bass (2002; exhibited as Appendix C), which I used to collect information on the leadership styles of study participants. The third was the Project Implementation Profile subscale (PIP) by Pinto and Slevin (1986; exhibited as Appendix D), which I used to collect information on the project success variable.

Theoretical Framework

The path-goal theory of leadership was the framework for this study. House (1971) developed path-goal theory to reconcile discrepancies in the findings of prior studies on the effects of leader-task and leader-person orientations on the performance and satisfaction of subordinates. The crux of path-goal theory is the notion that leaders can positively inspire performance, contentment, and motivation of employees by clarifying the path toward the achievement of goals, by offering positive reinforcement through rewards for goal achievement, and by removing obstacles in the path toward achieving those goals (Malik, Aziz, & Hassan, 2014). In 1996, House reformulated and extended the theory to address the effects that leaders have on the motivation and performance of subordinates and on the performance of the work unit. In the

reformulated theory, House (1996) identified eight classes of leader behavior and proposed 26 interrelated contingency moderator variables.

The path-goal theory was a precursor to transformational and transactional leadership theories. Breevaart et al. (2014) described the transactional leadership style as involving transactions between leaders and followers whereby reward or punishment is a consequence of followers' behavior. In contrast, transformational leadership is a style that focuses on encouragement, inspiration, and intellectual stimulation (Breevaart et al., 2014). I selected path-goal theory as the framework for this study because it posits a link between leaders' behavior and characteristics and the success of subordinates.

Definition of Terms

This section includes definitions of some of the terms used in this study. Some of the defined terms may have common meanings. The definitions presented in this section delineate and clarify the meanings related to the context of this study.

Successful project: A successful project is one that is completed in time and within budget, and whose quality meets the requirements of the project's scope (Gemunden, 2015).

Situational leadership style: This is a style of leading that involves developing and adopting different styles or behaviors as necessary, providing for effective leadership that allows leaders to use a variety of styles (Thompson & Glaso, 2015).

Telecommuter or teleworker: A telecommuter or teleworker is a team member who works from home or a location other than the office, supported by information and communication technologies (Mills, 2016).

Transactional leadership style: The transactional style of leadership relies on conditional reward-based exchanges between leaders and followers in order to motivate followers (Tarsik, Kassim, & Nasharudin, 2014).

Transformational leadership style: The transformational style of leadership promotes the collective values and needs of the group over those of individual members and raises the aspirations and higher order values of individual group members such that members feel better about their work and in turn work to exceed base expectations (Van Dierendonck, Stam, Boersma, De Windt, & Alkema, 2014).

Virtual team: A virtual team is a group of people guided by common purpose, who are dispersed across space, time, and organizational boundaries and conduct their work almost entirely through electronic technology (Krumm, Kanthak, Hartmann, & Hertel, 2016). For this study, the term is used interchangeably with *virtual project*, *dispersed team*, and *telecommuters*.

Virtual worker: A virtual worker is an individual who works from a location outside traditional, centralized offices (He & Brown, 2013).

Virtuality: Virtuality of a team refers to the extent to which team members use virtual tools to coordinate and execute team processes, the richness of the virtual tools, the amount of value provided by such tools, and the synchronicity of team member virtual interaction (Penarroja, Orengo, Zornoza, & Hernandez, 2013).

Assumptions, Limitations, and Delimitations

There are restrictions in the conduct of scholarly research endeavors. Research investigations are therefore based on certain assumptions, limitations, and delimitations

that account for the restrictions. In the following sections, I present the assumptions, limitations, and delimitations that guided this study.

Assumptions

Assumptions are a fundamental part of any research study. Assumptions are statements that help to remove or reduce doubts regarding the validity of the study and are accepted on faith, or taken to be true without proof or verification (Gandy, 2015). This study proceeded with the following assumptions.

The first assumption of this study was that research participants responded truthfully and without restrictions. The participants self-reported their experiences managing virtual teams. I assumed that the respondents did not harbor any ulterior motives that impacted their responses.

Another assumption was that the data collection and data analysis instruments were still credible and would provide accurate measures for the results. For this study, I used a demographic survey, the Project Implementation Profile subscale (PIP), and the Multifactor Leadership Survey (MLQ 5x) to collect data. For the analysis of the data, I used SPSS.

Limitations

The limitations of a study are the characteristics of the design or methodology that impact or influence the application or interpretation of the results. Limitations are the constraints on the generalizability and utility of findings that result from the choice of design or method for the study (Chin-Pyke, 2014). Limitations are threats to internal

validity that are beyond the control of the researcher. As with assumptions, a researcher has no control over limitations. The limitations on this study were as follows.

The first limitation of this study was that the instruments of data collection might not have been able to obtain data on all possible variables. Finch (2003), for instance, stated that PIP does not account for differences in project types, project managers' competence, cultural climate, and other external factors. Additionally, the instruments required the participants to self-report their responses. Self-report measures are not always verifiable because there are no direct means of cross-validating people's responses regarding their feelings, perceptions, and intentions (Kormos & Gifford, 2014).

Another set of limitations concerned the participants. It may have been difficult for some study participants to separate their experience as leaders of traditional co-located teams from their experience as virtual teams' leaders. In that case, those leaders' responses may have been based on their experiences working with traditional co-located teams instead of their experiences working with virtual teams. Further, the sample may not truly represent the population of virtual project managers. I chose the study sample by random sampling. It is possible that, even with random sampling, the participants were not truly representative of virtual teams' leaders.

Delimitations

Delimitations are constraints imposed by a researcher in carrying out a study and define the scope and boundaries of the study (Patterson, 2014). The conscious choices made by the researcher to include or exclude certain factors, methods, and variables in a study form the basis of the delimitations of a study. Delimiting factors usually include

the choice of objective, research questions, study variables, and population. Unlike limitations of a study, delimitations are within the control of the researcher, and they make the study more feasible.

One set of delimitations of this study related to choosing the sample. I selected the sample from a list of virtual team managers located in Northern California. I intended, however, to generalize the results and findings of the study to virtual team managers everywhere. Another delimitation was that I limited the sample to members of PMI who held the PMP© designation. This requirement that the study participants held PMP© designation may have resulted in excluding a number of virtual project managers.

Another set of delimitations of this study related to instrumentation. In this study, I used a survey as the instrument to collect data. The survey was self-administered, and SurveyMonkey hosted it online for a 6-week period. This 6-week period may not have been sufficient time for all of the study participants to respond. In addition, surveys are limited as to the ability to ask follow-up questions. This inability to ask follow-up questions may have limited the information I collected from the participants.

Significance of the Study

The need to be competitive and responsive to market conditions has caused business organizations to adopt changes leading to new business forms and structures. One such change has been the use of virtual teams for projects. Virtual teams are teams whose members are not in the same location and who communicate virtually using various communication tools. Use of virtual teams is beneficial for businesses (Singh, 2013). Dulebohn and Hoch (2017) found, however, that virtual teams face some

challenges and problems beyond the challenges faced by co-located team members. Saafein and Shaykhian (2013) identified leadership as one of the primary challenges faced by virtual team members. In this study, I examined the relationship between leadership styles and the success of virtual teams. The findings of this study may contribute to improved business practices and help to foster social change.

Contribution to Business Practice

I investigated the relationship between leadership styles, level of project management experience, and the success of virtual teams. Nixon, Harrington, and Parker (2012) found that the leadership style of managers is important to the success of teams. Virtual teams, however, face some unique challenges over and above those faced by traditional co-located teams (Schaubroeck & Yu, 2017). The most notable of these challenges are employee isolation, confusion, language barriers, cultural differences, and technology breakdowns. How virtual project leaders navigate these challenges may impact the effectiveness and success of their teams. Managers of virtual teams not only have to adopt tools and techniques that improve planning, implementation, and management activities, but also have to control the operating environment by creating boundaries in the virtual realm.

Currently, abundant literature exists on the subject of leadership of virtual teams. There is, however, limited research on the correlation between leadership styles and the success of virtual teams. I designed this study to determine how and to what extent leadership styles and level of project management experience affect the success of virtual teams. The data collected as part of this study and the findings may help project

managers in improving the success rate of virtual teams. The findings of this study may increase sustainability and environmental stewardship by making the management of teams more effective, thus reducing waste. Finally, this study adds to the body of knowledge on virtual project leadership and success.

Implications for Social Change

The findings of this study may contribute to positive social change in organizations that use or plan to use virtual teams in their operations. This study could provide strategies for effectively managing virtual teams. Effective management may reduce the failure rate of virtual teams, which could lead to higher job satisfaction and employee retention among team members, increased employment opportunities, increased urbanization and gentrification of local communities, and reduced flight of capital. Effective management of virtual teams could therefore support socioeconomic empowerment and a higher standard of living in local communities and improve knowledge and tolerance of cultural and geographic diversity.

A Review of the Professional and Academic Literature

The purpose of this study was to investigate the relationship between leadership style, level of project management experience, and the success of virtual teams. The null hypothesis in this study was as follows: The linear combination of leadership styles and project management experience will not significantly predict the success of virtual teams. To conduct this study, I adopted a quantitative correlational approach to the investigation. In this section, I review the existing body of literature on leadership, including literature on the path-goal theory of leadership, which served as the theoretical framework for this

study, as well as relevant literature on virtual teams, experience, project success, and research methodology.

The search for academic and professional literature related to this research topic was thorough and exhaustive. I searched the following databases to find relevant literature for this review: ProQuest Central, ProQuest Dissertations and Theses Full Text, Science Direct, ABI/INFORM Complete, Business Source Complete, EBSCO Host, PsycINFO, Emerald Management, Sage PREMIER, Academic Search Complete, Dissertations and Theses at Walden University, Emerald Management Journals, and Google Scholar. The focus of the search was primarily on peer-reviewed articles and studies published within the last 5 years. The keywords and phrases that constituted the parameters of the search for academic and professional literature in this study were *leadership, leadership styles, leadership theories, trait theories, transformational leadership, servant leader, authentic leader, virtual teams, virtual projects, global virtual teams, dispersed teams, distributed teams, and virtual team management.*

I focused my search chiefly on studies and articles that highlighted the differences between virtual teams and traditional co-located teams, as well as the unique problems and challenges that virtual teams face. Additionally, the search focused on the development and current state of various leadership theories as well as their similarities and differences. I designed the search to highlight existing academic and professional literature on styles of leadership, project management experience, and the success of virtual teams.

I reference 174 sources for this review. The breakdown of the sources is as follows: two books and 172 articles and studies. All 172 articles and studies were peer reviewed. Peer-reviewed articles and studies less than 5 years old made up 87% of the total peer-reviewed articles and studies. Table 1 shows a synopsis of the sources referenced in this review of academic and professional literature.

Table 1

Synopsis of Sources in the Literature Review

Reference type	Less than 5 years	More than 5 years	Total
Books	0	2	2
Peer-reviewed articles & studies	150	22	172
Non-peer-reviewed studies	0	0	0
Total	150	24	174

I have organized this review of existing literature in sections that roughly correspond to the study variables. In the first section, I review the existing literature on leadership, addressing the definition of leadership and some of the major theories of leadership and looking more closely at path-goal theory and transformational leadership of teams. In the second section, I review the existing literature on level of experience and the impact of experience on individual and team performance. In the third section, I review the literature on virtual teams, including literature on the unique challenges that leaders and members of virtual teams face. In the fourth section, I review the existing literature on project success, discussing the definition and evolution of project success. I also describe the distinction between project success and project management success. In the last section, I review the existing literature on the chosen research methodology and design.

Literature on Leadership

According to Antonakis and House (2014), leadership involves influencing and motivating followers toward the achievement of organizational goals and objectives. According to Eubanks, Palanski, Olabisi, Joinson, and Dove (2016), leadership is essential for the effectiveness of teams. Evolutionary leadership theorists posit that leadership evolved in human societies to resolve social coordination problems such as group movement and intragroup peacekeeping (van Vugt & Ronay, 2014). Researchers such as McGowan and Stokes (2015) have highlighted the impact of the behavior of leaders on a host of organizationally relevant outcomes. Silva (2016) stated that despite heightened interest among scholars in the concept of leadership, it remains difficult to define, and there is little agreement among scholars in this regard. These disagreements on the definition of leadership are not the results of mere scholarly nitpicking; rather, they are attributable to deep disagreements on the identification of leaders and leadership processes. Although such disagreements encourage scholarly discourse, they also have the unfortunate effect of creating an impediment to the development of scientific theory and method in the study of leadership (Dinh et al., 2014). According to Dinh et al. (2014), this rapid proliferation of new and diverse theoretical perspectives of leadership has posed a challenge to the understanding and measurement of the concept.

There is one theme common to the various definitions of leadership, despite all of the disagreement in this area; it involves a social process in which one person uses influence to steer members of a group toward a common goal and to develop a vision (Algahtani, 2014). Leadership entails the ability to use effective communication,

modeling, and inspirational influence to persuade others and alter their behaviors and actions to work toward achieving previously set organizational goals. Consequently, the yardstick for evaluating the effectiveness of leadership of a group over time is how well the group performs in terms of achieving those goals (Inyang, 2013).

Influence or the ability to influence people is fundamental to leadership. According to Yukl (2012), the essence of leadership in organizations is influencing and facilitating individual and collective efforts toward achieving common goals and objectives. Leadership theorists have been interested in studying and explaining the way in which a leader acquires, maintains, and exercises influence over a group (Anderson & Sun, 2015). There is, however, no consensus among scholars on how a leader acquires and exercises this influence. According to Latham (2014), the various attempts by researchers at explaining leader influence have led to the development of multiple leadership theories. Each of the leadership theories has some limitations, and no one theory in isolation completely explains leadership (Latham, 2014). It is not surprising, therefore, that there are increasing calls for the integration of the existing leadership literature in the hope of creating a more comprehensive explanation for leadership (Anderson & Sun, 2015; Latham, 2014).

Path-goal theory. The basis of path-goal theory is the idea that leaders can positively inspire the performance, satisfaction, and motivation of their employees by providing clear instructions and structure for the achievement of performance goals, providing rewards to employees for achieving these goals, and removing any obstacles that may be stopping employees from achieving these goals (Malik, Aziz, & Hassan,

2014). The essence of path-goal theory is the notion that the effectiveness of the leader is enhanced if the leader provides the necessary clarifications to ensure that subordinates feel that they can achieve work goals and that they will receive intrinsic satisfaction and rewards for achieving these goals. Thus, under this theory, a leader acquires and exercises influence by positively inspiring followers.

Path-goal theory was conceived as an extension of the work of Evans in 1970 and the expectancy theories of motivation (House, 1971). The crux of the expectancy theories is that the primary motivation for individuals to behave in a specific way is the expectation that the behavior will produce a specific outcome and satisfaction (House, 1971). Since its conception, path-goal theory has undergone evolution and has been revised twice. As conceived by House in 1971, path-goal theory was structured around two themes of leader behavior: path-goal-clarifying behavior and subordinate-need-fulfilling behavior. House posited that for path-goal clarifying behavior, leaders should act in ways that not only increase the valence of outcomes associated with subordinates' work-goal attainment, but also clarify and strengthen subordinates' path-instrumentality beliefs. For subordinate-need-fulfilling behavior, House contended, leaders should act in ways that fulfill subordinates' personal needs.

House and Mitchel (1974) refined path-goal theory to increase the specificity of the two categories of behavior as well as propose four distinct leadership styles: directive path-goal clarifying behavior, supportive leader behavior, participative leader behavior, and achievement-oriented behavior. Directive path-goal-clarifying behavior and the supporting leader behavior are similar to the path-goal-clarifying behavior and the

subordinate-need-fulfilling behavior proposed by House (1971). According to House and Mitchel, participative leader behavior involves considering subordinates' opinions and valuing subordinate input as part of the decision-making process, whereas achievement-oriented behavior entails inspirational leadership. With this refinement of path-goal theory, a leader can adopt the behavior category most relevant to manage a particular situation. The behavior of the leader is not predetermined; it can change depending on the particular situation and how the leader is trying to motivate subordinates (House & Mitchel, 1974).

House (1996) further revised path-goal theory to include predictions about the effect of leader behavior on work-unit performance. In this 1996 revision of path-goal theory, House not only discussed the leader-subordinate relationship, but also explained how a leader can affect a group as an aggregate. House predicted that group performance should improve when the leader acts in ways that enable meaningful interactions among work group members, that develop quality relationships between the work group and the rest of the organization, and that facilitate access to necessary resources for the group.

Since its conception, path-goal theory has been the subject of tests and criticism. One of the criticisms of the initial concept of path-goal theory was that the sample used to test the theory was not representative. Stinson and Johnson (1975) stated that the demographic characteristics of the samples (low educational level, low-skilled blue collar manufacturing industry workers) used for tests of the theory limited generalizability. In their own study, Stinson and Johnson used data obtained from a sample made up of project engineers, civil servants, and military officers. The researchers were able to

support path-goal theory in regard to subordinate fulfilment behavior but not for the initiating structure behavior. Stinson and Johnson partly confirmed the findings in Thompson and Vecchio (2009), a study of broader situational leadership theories. Thompson and Vecchio had found that both initiating structure behavior and subordinate fulfilling behavior applied at all levels of employment. However, they found that initiating structure behavior was more appropriate for lower level and inexperienced employees, whereas subordinate fulfilling behavior was more appropriate for higher level and more experienced employees.

Despite the criticisms of path-goal theory, studies have shown that it is still a relevant leadership theory. Path-goal theory has been adapted to study the impact of the moderating factor of gender on leader-follower dynamics (Polston-Murdoch, 2013). In a study by Polston-Murdoch (2013), 117 participants self-reported their responses through social networking. Using hierarchical multiple regression to analyze the responses, Polston-Murdoch found that gender moderates subordinates' commitment to superiors only for achievement-oriented and directive leadership styles. Polston-Murdoch provided an indication that path-goal theory is still relevant as a theory of leadership. In a 2015 study, Hopkins, O'Neil, and Stoller investigated the leadership competencies of physicians. In that study, the authors interviewed 28 leading physicians at a clinic in the United States. The findings indicated that physician leaders adopted and practiced the basic tenets of path-goal theory, such as providing clear direction to subordinates and removing obstructions.

Trait theories. There have been changes in the perspectives of scholars on leadership. In the early 20th century, leadership theorists focused on leader-centric approaches in which the leader is in a position of authority (Dinh et al., 2014). With leader-centric approaches, the focus of leadership theories is on how leaders accomplish organizational goals, what traits and styles leaders possess to help them achieve these goals, and how leaders influence members of the organization (Dinh et al., 2014). The basis of these approaches is the idea that there are heritable characteristics and traits that distinguish leaders from nonleaders.

The basis of the "great man" theory is the idea that people become leaders because they are born or are destined by nature to be leaders at a particular time (Nawaz & Khan, 2016). Under the great man theory, leaders rise to the occasion when needed, through charisma, wisdom, intelligence, or other parameters. Trait theory posits that individuals become leaders because they possess certain innate and genetic characteristics that give them a better propensity to lead (Walter & Scheibe, 2013). The great man theory and trait theory tend to favor dictatorial or authoritarian leadership styles. There was wide application of the great man theory and the trait theory to leadership in business and politics in the early 20th century. By the middle of the century, however, both theories were in decline (Nawaz & Khan, 2016).

Critics of trait theories have focused on two main areas. One criticism of trait theories is the absence of a coherent connection between leader-follower interaction and influence. Meuser et al. (2016) found that trait theorists have not been able to articulate a connection between social identity and identification processes and implicit leadership,

which is essential to the emergence of influence. This finding confirms the work of Uhl-Bien, Riggio, Lowe, and Carsten (2014), who found that a preponderance of authors approach leadership studies from the perspective of the leader and give little consideration to followers. Another criticism of trait theory is that it has not been fully investigated as an individual theory. Dinh et al. (2014) found that most trait theorists investigate traits in concert with another leadership approach. For their study, Dinh et al. reviewed extant literature on trait leadership. Of the 117 studies that the authors reviewed, only 11 investigated traits solely. The other 108 studies investigated traits as part of a larger leadership approach.

As criticisms of trait theories increased, scholars started to look at leadership not just from the perspective of the leaders' traits and positional authorities, but also in terms of the role that followers play in the leadership process (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). For the first time, there was acknowledgment among scholars that outcome achievement may also depend on the situation and on the influence of followers (Gregoire & Arendt, 2014). Leadership theorists thus started going beyond the traits of leaders alone by considering how the actual behavior of leaders predicts effectiveness, leading to the birth of behavior-based leadership theories such as transformational leadership theory (Gregoire & Arendt, 2014). There has been a resurgence of trait theories attributable to the clarification of several theoretical issues and the emergence of four empirically supported traits (Walter & Scheibe, 2013). In a 2015 paper, Spector stated that the great man theory has contemporary relevance and called for a reconsideration of the theory, along with other leadership theories.

Transformational leadership theory. Transformational leadership theorists posit leaders succeed by emphasizing collective values and needs of the group instead of individual members and raising the aspirations and higher order values of the followers such that the followers identify with the leader, feel better about their work and work to exceed base expectations (Van Dierendonck, Stam, Boersma, De Windt, & Alkema, 2014). Transformational leaders raise the aspirations and values of their followers by acting as mentors and role models for their followers, and encouraging learning and individual development among the followers (Fernet, Trepanier, Austin, Gagne, & Forest, 2015). With transformational leadership, the workers are effectively challenged to take greater ownership and responsibility for their work.

The first proponent of transformational leadership theory was Burns (1978) who posited that transformational leaders stimulate and inspire followers to achieve extraordinary outcomes and also develop leadership capacity. Avolio and Bass (1995) advanced the theory further, identifying the four elements of transformational leadership, charismatic role modeling, individualized consideration, inspirational motivation, and intellectual stimulation. In keeping with these four elements, transformational leaders exhibit charisma when they inspire devotion and loyalty in the followers, and show a strong commitment to ideals while stressing the importance of the collective mission; exhibit inspirational motivation when they appeal to followers' feeling and emotions, and portray an enthusiastic and confident vision of the future; exhibit intellectual stimulation when they question assumptions and encourage followers to rethink ideas; and exhibit consideration when they recognize the unique needs and abilities of followers.

Transformational leadership theory has captured the most interest among leadership scholars and is the most researched leadership theory (Moriano, Molero, Topa, & Mangin, 2014). Much of the findings of the existing studies on leadership styles indicate that transformational style of leadership is the preferred and most suited style for organizational performance and achieving organizational goals (De Jong & Bruch, 2013) and for facilitating organizational citizenship behaviors (Dai, Dai, Chen, & Wu, 2013) and organizational identity strength (Bohm, Dwertmann, Bruch, & Shamir, 2015). Bohm, Dwertmann, Bruch, & Shamir (2015) used responses from employees of 150 organizations based in Germany to test the impact of transformational leadership on the strength of organizational identity.

Other studies have shown transformational leadership style facilitates innovation in organizations (Khalili & Khalili, 2016). Innovation is both a process and outcome that involves the production, adoption, assimilation, and exploitation of a concept or idea products, services, and markets, and an establishment of new styles of management. Khalili and Khalili (2016) investigated the relationship between transformational leadership and employees' creativity and innovation. The authors collected data for the study by surveying 1172 workers in different industries based in Iran. The study findings indicated that transformational leadership styles promoted creativity and innovation among employees.

Studies have also shown transformational leadership style can be a strong predictor of individual and group effectiveness (Chang & Lee, 2013). Chang and Lee (2013) investigated the influence of transformational and transactional leadership styles

and conflict management on the performance of undergraduate students enrolled in a business course. In that study, Chang and Lee found that transformational leadership style was more effective than transactional leadership style in the management of conflicts among team members. To collect data for this 2013 study, Chang and Lee surveyed 318 students using a combination of multifaceted leadership survey and multifaceted conflict management survey. In a 2015 study designed to investigate the social dynamics that underlie the benefits of transformational leadership style, Lehmann-Willenbrock, Meinecke, Rowold, and Kauffeld found transformational leaders are able to manage such inter group conflicts because transformational leaders adopt solution-focused communication which promotes functional problem-solving communication among team members.

Researchers have also investigated the impact of transformational leadership styles on the performance of teams. Researchers such as Paulsen, Callan, Ayoko, and Saunders (2013) have found a positive correlation between transformational leadership styles and project success. Paulsen, Callan, Ayoko, and Saunders investigated how transformational leadership qualities impacted innovation in project-based research and development organizations in Australia. The authors were motivated to conduct the study by the lack of literature on the factors and processes that explain how leaders influence and sustain high levels of motivation on teams. The authors found transformational leadership styles increased harmony and identification among team members which in turn encouraged innovation in project-based organizations.

In a related study Kissi, Dainty, and Tuuli (2013) examined the impact of transformational leadership styles on project success in project-based organizations in the United Kingdom. The target population of the study was portfolio managers who managed more than one project simultaneously. The researchers sent 350 online surveys to the sample and received 112 useable responses. The finding of the study indicated that there is an enhancement in project performance when portfolio managers exhibited transformational leadership qualities.

In a study, Sun, Xu, and Shang (2014) investigated the effect of transformational leadership styles on team performance in new product development organizations. The researchers collected data from 184 new product development firms in China for the study. The findings of that study also indicated an increase in team performance and success in new product development firms when the leaders adopted transformational leadership styles.

While a large number of studies find transformational style of leadership to be best for teams, a growing body of literature disagrees with this finding. The dissenting researchers posit that the style of leadership that best suits a team will depend on the context of that team. Strang (2011) for instance found that in virtual team situations as opposed to traditional face to face team situations, transactional leadership style and personality attributes were more significant factors than transformational leadership styles in their success. The explanation for this finding is virtual team members tend to feel isolated and removed from their leaders and from each other. Strang is notable for two reasons. First, Strang used a large sample size of 1000 team members for the study.

Using a large sample size increases the credibility and generalizability of study findings (Harrington, Bosch, Schoofs, Beel-Bates, & Anderson, 2015). Second, Strang considered the moderating impact of virtuality on leadership styles.

Tyssen, Wald, and Spieth (2014) investigated the nature of effective leadership for teams and found while transformational leadership styles were more effective, both transformational leadership style and transactional leadership style positively influenced project team members. One important take away from Tyssen et al. is findings did not affirm transformational leadership style as best suited for project performance. Also, the absence of virtuality as a moderating factor in that study may explain the difference with the finding in Strang (2011). Tyssen et al. was complemented by the finding in Larsson, Eriksson, Olofsson, and Simonsson (2015). In that 2015 study, Larsson et al. used a sample of 162 project managers employed by a public infrastructure entity in Sweden to investigate what leadership styles enhance project performance. The authors found while style of leadership impacts the outcome of projects, there is no one particular leadership style that fits all situations.

Other scholars have argued a project leader should adopt a style of leadership that aligns with factors such as the stage of the project (Nixon, Harrington, & Parker, 2012) or the composition of the project team (Tuuli, Rowlinson, Fellows, & Liu, 2012). Tuuli et al. (2012) investigated the impact of leadership styles on perceptions of empowerment in project teams. The authors mailed 500 surveys to project team members consisting of clients, consultants, and contractors. Analysis of the data from the 382 responses received using ordinary least square regression and hierarchical linear modeling indicated

that transformational leadership styles positively impacted empowerment in project teams of clients and consultants while transactional leadership styles positively impacted empowerment in project teams made up of contractors.

Some researchers have criticized transformational style of leadership for varying reasons. Van Knippenberg and Sitkin (2013) questioned the effectiveness of transformational leadership style as a style of leadership. Van Knippenberg and Sitkin noted a lack of a clear definition of transformational leadership as well as no clarification of how each dimension influences the leadership style. Van Knippenberg and Sitkin also posited the most frequently used tools to measure transformational leadership are invalid because not only do they fail to reproduce the dimensional structure specified by theory, they also fail to achieve a distinction from other aspects of leadership. Alvesson and Karreman (2016) posited transformational leadership is value-neutral and lacking in moral safeguard noting it is possible that the heightened motivation inspired by the transformational leader may lead to hero-worshipping and may override any moral misgivings which the followers may have. Another criticism of transformational leadership theory is that it is leader-centric. Transformational leadership theorists assign overwhelming credit to the leader for individual, group, or organizational development. McCleskey (2014) noted transformational leadership theorists tend to view organizational development as the result of the influence of the leader while disregarding any possible contributions from other factors such as followers' contributions and other situational or process factors.

Servant leader theory. Servant leader theory is arguably an extension of the great man and trait theories as well as transformational leadership. The move towards servant leader theory began as leadership theorists started to increase their focus on a shared and relational perspective with emphasis on the interaction between leaders and followers (Parris & Peachey, 2013). This interactional relationship between leaders and followers is noted in the servant leader theory as propounded by Greenleaf (1977) posited that individuals become leaders by virtue of not only their personal characteristics but also their motivation to serve. Proponents of servant leader theory see the leader as a motivator who acts in ways that encourage the followers in the organization to strive for the desired individual and organizational outcomes (Panaccio, Henderson, Liden, Wayne, & Cao, 2015). The servant leader construct arose in response to the need for increased participation by team members and improved moral behavior by leaders (Liden et al., 2015). Flynn, Smither, and Walker (2016) posited the core premise of the servant leader theory is that leaders subjugate their interest to the interests of the followers in a bid to increase individual and group performance. Liden, Wayne, Liao, and Meuser (2014) found when leaders adopt the serving culture, there is improved organizational performance and employee job performance. For their study, Liden et al. used a sample of sample of 961 employees working in 71 restaurants of a moderately sized restaurant chain to investigate whether servant leaders encourage followers to copy the leader's behavior by subjugating their own needs to those of others. Servant leaders combine their motivation to lead with a need to serve (van Dierendonck, 2011). This combination of the leader's need to serve with the motivation to lead is akin to introducing an element

of social responsibility into transformational leadership. The leaders' need to serve should however, not be equated with an inordinate desire to please others.

Like most leadership concepts, there is no one generally accepted definition of a servant leader. VanMeter, Chonko, Grisaffe, and Goad (2016) stated there is considerable confusion over what constitutes servant leadership. Parris and Peachey (2013) conducted a systematic review of empirical studies that have explored the concept of servant leadership. The resulting synthesis of that review revealed that while several scholars have proffered definitions of servant leader, there is no consensus on a single definition of the construct. Based on the characteristics put forward in the various definitions, van Dierendonck (2011) distilled the elements of servant leader into six. Thus a servant leader is one who empowers and develops people, acts with humility, is authentic, is accepting, provides guidance, and is a good steward of the whole group.

Criticisms of servant leader theory revolve around three primary areas. Lynch and Friedman (2013) stated a servant leader may become too focused on the needs of the followers and ignore the needs of the organization or the world beyond. Lynch and Friedman stated former Goldman Sachs CEO Lloyd Blankfein may be seen as a servant leader because his company was making plenty of profit and bonuses for the staff but the product was not necessarily good for the organization and the world beyond Goldman Sachs.

Another criticism of servant leader theory is the claim to universality. Servant leader theorists imply the leadership style applies in all contexts (Parris & Peachey, 2013). This claim to universality does not allow for organizational and cultural

differences (Neubert, Hunter, & Tolentino, 2016). It is conceivable there may be contexts in which the servant leader style of leadership may not be appropriate.

Another criticism of the servant leader theory is that the theory is not distinct from other concepts. Winston and Fields (2015) posited there is conceptual overlap between servant leader theory and other leadership theories such as transformational and leader-member exchange. In addition, researchers such as Avolio, Walumbwa, and Weber (2009) have criticized the tests and measurements used for servant leader research. These authors noted that with many different measures in existence and with each method having its own set of scales and items, there is no consistency in measurement of servant leader.

For all the limitations and criticisms leveled against servant leader theory, there appears to be renewed interest in the concept. van Dierendonck and Patterson (2015) stated there is increasing interest in servant leadership both inside and outside the academic world. This renewed interest stems primarily from a perceived need for more responsible leadership following on the excesses and absence of moral compass of corporate leaders that led to the global financial crisis (Choudhary, Akhtar, & Zaheer, 2013).

Authentic leadership theory. Authentic style of leadership is a concept of leadership based on the high ethical and moral compass of leaders, and the assumption the leaders will act not in their own selfish interest but will act in the best interest of the followers and the group (Azanza, Moriano, Molero, & Levy Mangin, 2015). Authentic leadership style is a positive form of leadership described as the root construct that

underlies all positive leadership forms (Wong & Laschinger, 2013). The construct of authentic leadership dates back to the early Greeks (Celik, Akgemci, & Akyazi, 2016). There has been an increase in interest in authentic leadership theory recently because of the increases in corporate scandal, management malfeasance, and broader societal challenges facing public and private organizations (Arda, Aslan, & Alpkan, 2016).

There does not appear to be a generally accepted definition of the concept of authentic leader. Baron (2016) stated an absence of a single definition is one of the challenges related to the study of authentic leadership. The most comprehensive definition of the concept I found was the one proffered by Avolio, Walumbwa, and Weber (2009). These authors defined the concept as a pattern of transparent and ethical leader behavior based on openness in sharing the information needed for decision-making while at the same time, considering the input of the followers. This definition by Avolio et al. encapsulates the two elements of authentic leadership discernable from other definitions namely, the leaders' openness in their dealings with and disclosures to followers, and the leaders' willingness to accept input from others. Petan and Bocarnea (2016) posited authentic leadership has four dimensions: self-awareness, balanced processing, internalized moral perspective, and relational transparency. In a 2015 paper, Hopkins and O'Neil described these dimensions as follows: self-awareness entails an understanding of a person's world view and how this understanding influences that person, internalized moral perspective is how a person's internal moral standards regulates that person, balanced processing of information concerns how much a person

objectively analyzes information before making decisions, and relational transparency is how a person presents their authentic true self to other people.

Authentic leader theorists have posited this leadership style leads to increased employee engagement, productivity, and performance (Hsieh & Wang, 2015), organizational citizenship behavior (Joo & Jo, 2017; Tonkin, 2013), and job satisfaction and work engagement (Bamford, Wong, & Laschinger, 2013). Additionally, authentic leadership behavior has been found to have a positive effect on the performance of followers (Wang, Sui, Luthans, Wang, & Wu, 2014). Wang et al., (2014) used a sample of 794 leaders and followers to investigate the moderating role of follower's psychological capital and the mediating role of relational processes on the relationship between authentic leadership style and follower performance.

Like most leadership theories, there have been some criticisms and challenges to the construct of authentic leader. One major criticism goes to the root of the construct. A fundamental basis of authentic leadership theory is the idea of being true to one's core beliefs and values, and who one truly is. The challenge with this idea is there is no clarification of how to determine who one truly is, or what constitutes the true self. Day, Fleenor, Atwater, Sturm, and McKee (2014) stated the hypothetical relationship between this fundamental basis of the theory and the development of authentic leadership has not been empirically tested. In a multi-method study on the moral antecedents of authentic leadership, Sendjaya, Pekerti, Hartel, Hirst, and Butarbutar (2016) found presence of marchiavellian trait impacts the positive relationship between moral reasoning and authentic leadership. Specifically, Sendjaya et al. found high levels of marchiavellianism

negatively impacted the relationship between moral reasoning and actions and authentic leadership. Sendjaya et al. used a sample size of 70 managers from a large public agency. Authors such as Nyberg and Sveningsson (2014) have therefore called for an empirical examination of the inherent goodness of authenticity.

Another criticism of authentic leadership theory is the assumption that authentic behavior by the leader is good for the followers. Arguably, this assumption does not acknowledge the imperfections of individuals. Being true to oneself in words and actions may be problematic if that person is not a good person. Bishop (2013) posited Hitler was an authentic leader who was true to himself and helped create hope in an otherwise demoralized German populace but his actions and the consequences were not ethical.

Summary of literature on leadership. The literature on leadership and leadership theories has continued to grow with different authors proposing or revisiting different theories and constructs of leadership. Sometimes, these propositions are in response to organizational, system, or world events. For instance, the resurgence of the servant leader and the authentic leader theories can be seen as a response to the greed and lack of moral capacity on the part of corporate leaders. Also, some of the current leadership theories are closely related and indeed some of them actually are spin-offs from others. Washington, Sutton, and Sauser, (2014) for instance found servant leadership shares common characteristics with other leadership theories especially transformational leadership. Schaubroeck, Lam, and Peng (2016) found peer-leaders are able to improve their peers' service quality by adopting either transformational leadership style or ethical leadership style. In recognition of this commonality among leadership

theories, PMI has stated successful teams demand strong leadership skills to be successful and leadership is important through all the various phases of the project life cycle and a strong project leader should be able to apply the necessary leadership style for each project situation, stage, or team (Project Management Institute, 2013a).

Authentic leadership is a root construct and a basis for building other organizational theories. The basic elements of authentic leadership such as selflessness and vision are also inherent in the definition of transformational and servant leadership theories. Authentic leadership is closely related to transformational leadership. Authentic leadership incorporates transformational leadership or at a minimum, adds ethical leadership qualities to established transformational leadership behavior. In a study designed to investigate the relationship between transformational leadership and authentic leadership, Joo and Nimon (2014) found that the two leadership styles are not only closely related and have overlapping areas, but are complementary of each other. The research question in that study was whether there is an association between the four dimensions of transformational leadership and the four dimensions of authentic leadership.

There is some overlap between authentic leadership and servant leadership. Both theories advocate a high degree of morality and social responsibility on the part of the leader. Authors like van Dierendonck (2011) found two of the six essential elements of a servant leader; authenticity and humility are present in authentic leadership. Transformational leadership is an extension of the trait and great man theories. Ewen et

al. (2013) posited stable individual traits such as extroversion and agreeableness influence transformational leadership style.

Literature on Project Management Experience

The level of experience of project managers can be a factor in determining the success of projects. According to Hwang and Ng (2013), recruiting, developing, and nurturing superior project managers can help an organization maximize its probability of consistently attaining project success. In the Hwang and Ng study, the authors through a review of extant literature, interviews, and surveys investigated the challenges project managers face in green construction projects and how to overcome those challenges. In another study, Thamhain (2013) discussed the increased importance of the experience of project managers in assessing and mitigating project risks. Thamhain noted in that study that increasingly, organization are not relying solely on analytics to assess project risks but instead are integrating the experience of project managers and other project stakeholders in assessing and mitigating risks.

In searching the databases for literature on experience, I got limited results on literature dealing specifically with team and project management experience. The focus of much of the literature I found as it relates to the management of teams was on two main areas, requirements for certification and competency. The first area dealt with the requirements of the various project management organizations such as PMI for its members to obtain professional designation. Eskerod and Huemann (2013) noted governing bodies of some project management organizations have standards and requirements based on experience that their members have to attain before the members

can obtain certain certifications. PMI for instance requires its members to have at least 3 years of project management experience in addition to educational training before the members can apply for the PMP certification (Project Management Institute, 2013).

The second area dealt with the relationship between the work experience of project managers and their competence. Ahsan, Ho, & Khan (2013) described competence as the knowledge, skills, and abilities that project managers adopt to improve performance. The rationale for this prime position of experience is experience can lead to competence. Hwang and Ng (2013) posited project managers can attain competence by the combination of knowledge and skills developed through experience. Bredillet, Tywoniak, and Dwivedula restated this position in a 2015 review of what a competent project manager is. Bredillet et al. noted experience on the job is one of the ways project managers attain and maintain competence in their profession. According to Ahadzie, Proverbs, and Sarkodie-Poku (2014), competency-based measures are the only viable means for refocusing project managers on their job performance.

Easton and Rosenzweig (2012) investigated the relationship between project management experience and project success. In that study designed to investigate the role of individual, organizational, and team leader experience in team work, Easton and Rosenzweig found experience level individuals bring to a project can impact the success of that project. To conduct the study, Easton and Rosenzweig reviewed successful and failed six-sigma team projects in a Fortune 500 company. In a study by designed to explore the key project management competencies potential employers seek, Chipulu, Neoh, Ojiako, and Williams (2013) confirmed the findings of Easton and Rosenzweig. In

that study, Chipulu et al. developed a list of six competencies employers require one of which was project management methodologies.

In another study, Easton and Rosenzweig (2015) further investigated the relationship of team leader experience to the success of teams. Easton and Rosenzweig distinguished between experience emanating from the social system called social capital experience and experience emanating from leading projects called technical experience. Easton and Rosenzweig found a leader acquires social capital experience by working with or in the same team repeatedly and technical experience by working on similar projects repeatedly.

Verburg, Bosch-Sijtsema, and Vartiainen (2013) and by Iorio and Taylor (2015) investigated the impact of the level of experience of project leaders on the success of virtual teams. The authors in both studies found level of experience and competence of project leaders had an impact on their effectiveness in leading virtual team and this in turn affected the success of the teams. Verburg, Bosch-Sijtsema, and Vartiainen used a sample of 30 experienced project managers to investigate the factors that are critical to the success of virtual teams. Iorio and Taylor investigated how the prior experiences of project leaders can be used to predict their effectiveness as leaders of virtual teams.

Literature on Virtual Teams

Virtual teams are teams of people, usually employees of an organization who work together on tasks but who have little or no face-to-face contact (Krumm, Kanthak, Hartmann, & Hertel, 2016). The degree of virtuality varies from total virtuality where team members never have any face time with each other to hybrid teams where members

have occasional face-to-face meetings (Liao, 2017). Schweitzer and Duxbury (2010) stated virtuality can be measured in terms of time spent on virtual work, percentage of members on virtual work, and how far apart the team members are. The use of virtual teams by organizations is a relatively new but rapidly growing. Virtually unheard of in the 1970s and 1980s, virtual teams have become critical tools for integrating information and for making and implementing decisions around the world (Hoch & Dulebohn, 2017; Iorio & Taylor, 2015). Working in dispersed teams is fast becoming the norm instead of the exception. This rapid growth in the use of virtual teams is a result of the need by organizations to be more competitive and to better respond to changing market conditions (Mukherjee, Lahiri, Mukherjee, & Billing, 2012).

The rapid growth in the use of virtual teams has spurred increased interest by scholars to understand the various aspects of adoption and use (Dulebohn & Hoch, 2017). A review of the literature on virtual teams show a marked increase in the number of studies conducted the last 10 years (Caya, Mortensen, & Pinsonneault, 2013; Gilson, Maynard, Young, Vartiainen, & Hakonen, 2015). Not surprisingly, this heightened scholarly discourse on virtual teams has made it difficult to come up with a generally accepted definition of the concept. Pinar, Zehir, Kitapci, and Tanriverdi (2014) defined virtual teams as team members who work in different locations, and who use computer mediated communication and technology to collaborate in efforts towards the achievement of common goals. There are four key elements that appear across all the definitions of virtual teams: geographical distribution, temporal nature, common purpose, and enablement by technology.

Researchers such as Schulze and Krumm (2016) have found use of virtual teams provides benefits to organizations. Virtual teams are nimble and that makes it easy to deploy them. This ease of deployment makes it possible for organizations to be flexible and more responsive to changing market conditions. Chamakiotis, Dekoninck, and Panteli (2013) stated virtual teams enable organizations to be more responsive to competition, and make it easier for employees to work from home or on the road. Another benefit of virtual teams is they provide a platform for organizations to harness, integrate, and apply distributed knowledge (Singh, 2013). Virtual teams are more flexible, promote knowledge sharing, improve talent acquisition and retention, reduce cost to market (Gupta & Pathak, 2017), and are more responsive to the changing business and technological environment (Barnwell, Nedrick, Rudolph, Sesay, & Wellen, 2014).

Virtual teams, like traditional co-located teams face some problems and challenges. Virtual teams however face some unique challenges over and above the challenges traditional co-located teams face (Dulebohn & Hoch, 2017). Most of the challenges faced by virtual teams are related and revolve around the issues of leadership, trust, and communication (Dube & Marnewick, 2016; Fernandez, & Jawadi, 2015). The inherent virtuality of these teams makes it challenging for team members to coordinate work, build and retain motivation, create commitments, and develop trusting relationships (Orhan, 2014). The challenges faced by virtual teams increase with increased virtuality. In a 2010 study designed to define and operationalize the construct of degree of virtuality, Schweitzer and Duxbury found the quality of team interactions and performance was reduced in situations where virtuality was high. For that study,

Schweitzer and Duxbury collected data from 30 virtual teams based in Canada. Researchers such as Ortiz de Guinea, Webster, and Staples (2012) have criticized Schweitzer and Duxbury for incorrect generalizations, for assigning too much importance to virtuality as a factor, and for not taking any moderating factors into account. Ortiz de Guinea et al. reviewed 80 studies that explored the impact of virtuality on team performance. The synthesis of that review revealed inconsistent findings among the studies. The inconsistencies are due to the presence of moderating factors such as levels of analysis, time frame, and study method (Ortiz de Guinea, Webster, & Staples, 2012).

Challenge of leadership. One of the challenges virtual teams face regularly is the challenge of leadership. Saafein and Shaykhian (2013) stated although virtual team structure adds value and benefit to organizations, it comes with some unfamiliar leadership and management challenges. Saafein and Shaykhian stated further this leadership challenge stems primarily from the virtualness of the team because the absence of face-to-face interaction and bonding makes it more challenging for managers to engage the team members. In a 2016 study, Alsharo, Gregg, and Ramirez found the inherent virtuality of the teams detracts from team bonding, effectiveness, and success. Alsharo, Gregg, and Ramirez used a sample of 1,000 to investigate the social effects of knowledge sharing among virtual team members. According to Hoch and Kozlowski (2014), there is a significant difference between managing proximally and managing remotely. The authors used a sample of 101 virtual teams to investigate the impact of traditional hierarchical leadership and support structures on team performance.

Studies have demonstrated critical role and functions of leaders in organizations are the development of the team and the management of team performance (Ruggieri & Abbate, 2013). For the leader to fulfill either of these two roles, there is an assumption of a direct interaction between the leader and the group (Ford, Piccolo, & Ford, 2017). This type of interaction is not available in virtual teams. Virtual teams therefore, present a real challenge in how core leadership functions can be duplicated, substituted, or eliminated (Ford, Piccolo, & Ford, 2017).

In a 2012 study, Mukherjee, Lahiri, Mukherjee, and Billing considered the issue of what leadership capabilities impact virtual teams. In that study, Mukherjee et al. discussed three leadership capabilities for effective management of virtual teams, cognitive, social, and behavioral. Cognitive capabilities refer to the ability to contemplate and judge in a multidimensional manner and present information in a way that helps other people make voluntary decisions (Helfat & Peteraf, 2015). Social capabilities refer to ability to apply interpersonal skills in social situations with the aim of influencing other people (Helfat & Peteraf, 2015). Behavioral capabilities refer to ability to display personal behavior in a way that makes team members think and function in the best interest of the team (Helfat & Peteraf, 2015). The findings of Mukherjee et al. show the adoption of appropriate capabilities by virtual team leaders can lead to increased levels of tolerance among virtual team members and effective team leadership.

Fan, Chen, Wang, and Chen (2014) investigated how leaders' use of motivating language and feedback would affect the creative performance of virtual team members. Fan et al. posited motivating language has three elements, clear and precise job-related

instructions to reduce uncertainty, acknowledgment and appreciation of team members' efforts and accomplishments, and clear explanation of organizational structure, rules, and expectations. Motivating language theorists posit strategic application of leaders' communication will have measurable effects on team members' performance (Madlock, 2013). Fan et al. found use of motivational language helps increase virtual team members' idea generation and creativity. Virtual team leaders should provide proper guidance and use clear wording in instructing the team members.

Challenge of trust. Trust is an essential factor in developing and maintaining relationships among team members (Singh et al., 2015). Rose and Schlichter (2013) found trust among stakeholders is critical to the successful implementation of enterprise projects. In a 2016 mixed methods study designed to investigate the interaction of role clarity, trust, and communication on team performance, Henderson, Stackman, and Lindekilde found trust and communication are critical to the effective functioning of global virtual teams. Henderson, Stackman, and Lindekilde (2016) collected data for the study through 217 surveys and 18 interviews of project managers.

There is however, a disagreement among researchers on the definition of the concept despite its importance in team cohesion (Robbins, 2016). The most comprehensive definition of trust I found was one put forward by Chang, Cheung, and Tang (2013). Chang et al. defined trust as the willingness of one party to be vulnerable to the actions of another party in reliance on positive expectations of the other party's motivation or behavior. This definition encompasses two strands of the concept of trust,

a willingness to accept vulnerability (attitudinal), and a behavioral decision to accept vulnerability (choice).

Trust can be either cognitive or affective (Zhu, Newman, Miao, & Hooke, 2013). Cognitive qualities include professionalism, competence, and reliability while affective qualities include caring, emotional, and commitment (Zhu, Newman, Miao, & Hooke, 2013). In a study designed to investigate the impact of impersonal and interpersonal trust on communication among virtual team members, Lohikoski, Kujala, Haapasalo, Aaltonen, and Ala-Mursula (2016) found cognitive trust was more effective for communication and functioning in virtual teams that affective trust because the absence of face-to-face interaction among impeded the development of affective trust. Lohikoski et al. used a mixed-methods research approach to collect data from a sample of 94 virtual team members in the telecommunications industry.

Trust among team members and between the leader and the team is essential for the success of teams (Boies, Fiset, & Gill, 2015). In virtual teams where the leader has little or no face to face contact with the members, the importance of trust is even more critical (Pinjani & Palvia, 2013). According to Park and Lee (2014), trust creates a strong impact on knowledge sharing among virtual team members and leads to good project performance. Development of trust in virtual teams is however complicated (Cheng, Macaulay, & Zarifis, 2013).

Verburg, Bosch-Sijtsema, and Vartiainen (2013) found trust and communication are related and they both impact the effectiveness of virtual teams. Lohikoski et al. (2016) stated communication is an essential element in building and maintaining trust and

trust is essential for the flow of communication. The absence of trust in a team can lead to a breakdown of communication which Killingsworth, Xue, and Lui (2016) found to be one of the causes of project failure.

Building trust among virtual team members can be more challenging than building trust among face to face team. Trust, by its nature, develops when people interact face-to-face with each other and appreciate their respective vulnerabilities and in the absence of such face-to-face interaction among team members, there is a diminishing of trust (Chae, 2016). In a study designed to investigate the impact of trust in hybrid teams, Cheng, Yin, Azadegan, and Kolfschoten (2016) found trust is a critical factor in the effectiveness of virtual teams. The issue of trust-building in virtual teams was the focus of a 2013 study by Crisp and Jarvenpaa. In that quasi-experimental study, Crisp and Jarvenpaa discussed the concept of swift trust, a unique kind of trust associated with temporary systems such as ad hoc global virtual teams. The authors found that based as it is on cognitive factors instead of affective factors, swift trust is fragile in nature and requires constant reinforcement and calibration through the actions of the leader and team members. The formation of swift trust in virtual teams can be subject to some challenges. Germain and McGuire (2014) identified four sets of barriers that can impede the fostering of swift trust: individual barriers, organizational barriers, technological barriers, and team barriers. To overcome these barriers, Germain and McGuire suggested virtual human resource developers should encourage the building of online communities and culture, as well as regular and prompt communication among virtual team members.

Distance between virtual team members can be a modifier of trust and team building. Siebdrat, Hoegl, and Ernst (2013) distinguished between objective distance and subjective distance; objective distance relates to the physical distance or miles between team members while subjective distance relates to the teams' perception of the distance between its members. Drawing on the survey responses of 678 study participants, Siebdrat et al. found subjective distance had a significant impact on team collaboration while objective distance did not impact team collaboration.

Challenge of communication. The challenges of communication in virtual teams have been the subject of numerous research. Mishra, Boynton, and Mishra (2014) described communication as a two-way exchange of information. Mishra et al. stated further in organizations, this exchange consists of a dissemination of information by the managers to the employees in return for employee engagement. Lohikoski et al. (2016) posited communication is important for the effective functioning of organizations. Pozin, Nawi, and Romle (2016) found effective team member communication is fundamental and critical in the performance of any organization. Pozin et al. investigated the effect of communication on virtual team success in the Malaysian construction industry. Saafein and Shaykhian (2013) found reliable communication tools a more critical factor in team performance than leadership among support professionals in the technology industry.

In the absence of face-to-face contact, virtual team members use tools of technology to communicate with each other and their leaders. Charlier, Stewart, Greco, and Reeves (2016) stated the most common communication tools used by virtual team members are emails, online chat, and video-conferencing. These types of communication

tools, also called computer-mediated communication, lack non-verbal cues such as gestures, facial expressions in virtual team communication (Kotlyar & Ariely, 2013). Pangil and Chan (2014) found virtual team members use of computer-mediated communication tools detracts from participation, trust-building, and development of mutual responsibility. In 2014, Morgan, Paucar-Caceres, and Wright examined the relationship between communication and team effectiveness in global virtual teams. Morgan et al. focused particularly on whether the limited range of communication tools available to virtual team members had any impact on the effectiveness of the team. The measure of team effectiveness for that study was based on the team's capability to work together cooperatively. The findings of the study indicated that the limited methods of communication available to virtual teams did not have a positive effect on team effectiveness.

Another challenge virtual team members face in connection with computer-mediated communication is the level of technology adoption. Technology adoption refers to the process by which a team changes how it uses information and communication technology. Aiken, Gu, and Wang (2013) posited the way virtual teams adopt and use technology depends on the tasks and the existing constraints or opportunities. Nguyen, Newby, and Macaulay (2015) identified the constraints to technology adoption as costs, perception, organizational attitude, and employee knowledge and skill.

As organizations increasingly become more diverse and global, the use of teams distributed across national, cultural, and geographic borders have increased too (Han &

Beyerlein, 2016). Killingsworth, Xue, and Lui. (2016) stated there is an increased risk of communication breakdown as the cultural, individual, and geographical diversity of team members increase. According to Bouncken, Brem, and Kraus (2016), cultural differences among team members can potentially create barriers to communication, relationship building, cooperation, and trust which can adversely impact the innovation process. Bouncken, et. al. was a longitudinal study designed to investigate why many international firms do not have robust cultural diversity in their innovation process. Data collection for the study was through semi-structured interviews of 70 participants from international firms. In another study designed to that investigated trust formation among multicultural and uni-cultural teams Cheng et al. (2016) found trust development and sustaining in multicultural team declined over time more than in uni-cultural teams.

Interestingly, some studies have found diversity is not always detrimental to team performance. Van Knippenberg, van Ginkel, and Homan (2013) and Pieterse, van Knippenberg, and van Dierendonck (2013) both found that in certain situations, diversity of global virtual team members can have a positive effect on team performance. It is incumbent on leaders to understand when cultural diversity can be a benefit and when it can be detrimental. Pieterse et al. stated in teams with high learning and low performance-avoidance orientation, cultural diversity will positively impact the team effectiveness.

Given the challenges faced by global virtual teams, there is an increased demand for organizations to manage them effectively through better understanding of the cultural backgrounds, motivations, and work values of their cross-cultural team members.

Thamhain (2013) found effective management of cross border and cross cultural teams requires emphasis on the common goals and values of the team members to unify them. According to Thamhain, the emphasis on common goals and values should be done within the context of the appreciation of the national and cultural differences between the different team members. To build a true partnership among the different members and groups, management should recognize the greater autonomy of all international partners as well as their cultural differences (Thamhain, 2013).

Summary of virtual teams. Virtual teams are a relatively new phenomenon but their use has increased rapidly. Increasingly, virtual teams are no longer tools for convenience but are tools for strategic and tactical planning. There are benefits to using virtual teams such as nimble operations, ease of deployment and winding down, and leaner more cost efficient operation. There must however, be a balance in favor of these benefits over the leadership and trust-building challenges posed by the use of virtual teams. As noted earlier, the challenges are interrelated and feed off each other. Because the use of virtual teams is more likely to continue to increase, organizations must balance the benefits of using virtual teams against the actual and potential challenges and problems associated with their use. According to Hoegl and Muethel (2016), virtual teams are a growing trend and they are not going away anytime soon.

Literature on Project Success

Project success is a term frequently discussed in professional and academic circles because project success is central to project management. There have been numerous attempts to define project success but there is no real consensus on the definition of the

term (Pinto & Slevin, 1988). The iron triangle of time, cost, and utility was the basis of the initial definitions of project success. A successful project is one completed in time, within budget, and meets the client's criteria (Gemunden, 2015). These early definitions of project success align with the traditional definition of a project as a temporary collaboration of two or more people tasked with the achievement of a specific goal. This traditional definition of project envisages a definite beginning and end, a budget, and a purpose.

Evolution of project success. As the discourse on project success grows, there have been criticisms of the iron triangle as the basis of defining project success. There is a growing recognition of the importance of broader measures of success beyond the iron triangle (Williams, Ashill, Naumann, & Jackson, 2015). As an example, the PMI's PMBOK now includes customer satisfaction as a measure of success (Project Management Institute, 2013a). The fact PMI recommended the consideration of the subjective feeling of the customer along with the time, cost, and scope criteria denotes the importance of customer satisfaction as a measure of success. The current literature on project success compares the performance of a project against the critical success factors. Critical success factors are measurable factors that when present in a project, make the project environment more conducive to success (Pinto and Slevin, 1988). On the other hand, researchers now use broader measure than the iron triangle of time, cost, and scope to measure the success of projects (Serrador & Turner, 2015).

It is important to distinguish between project success factors or critical success factors and project success criteria or measurements. Muller and Jugdev (2012) stated

project success factors are factors that are capable of impacting the of success of the project. Project success criteria on the other hand, are the measures against which the performance of the project is judged (Muller & Jugdev, 2012).

Widely used critical success factors are the ten-factor model propounded by Pinto and Slevin (1986). The ten factors are (a) initial clearly defined goals and direction, (b) willingness of top management to provide necessary support and authority for project success, (c) detailed specification of action steps for project implementation, (d) communication and consultation with all parties that will be impacted by the project, (e) recruitment, selection, and training of personnel necessary for project implementation, (f) availability of required technology and expertise to accomplish required technical steps, (g) ensuring the client will accept the finished project, (h) regular monitoring and feedback at each stage of the project implementation, (i) availability of appropriate network and communication tools to all key actors in the implementation, and (j) an ability to handle unexpected crises and deviations from the plan. Following on the ten-factor model, Pinto and Slevin (1986) developed the project implementation profile (PIP), a tool project managers can use to periodically monitor the success or failure potential of the project, and take necessary remedial actions.

As noted earlier, there has been an evolution of the measurement criteria of project success. The emphasis is no longer on the iron triangle of time, cost, and scope. Project success measures and criteria now include the impact of the project on the customer and the benefit of the project to the organization (Muller & Jugdev, 2012).

Another evolution in the literature on project success is the increase in diversity and time span. In the 1980s, project success was focused on the implementation stage of projects. Since then, the literature on project success has increased the focus to cover the full project life-cycle from the conception phase to the close-out phase of a project (Muller & Jugdev, 2012). Recently, there have been efforts by scholars to increase the timeframe of the focus of project success studies. Turner and Zolin (2012) posited project stakeholders cannot fully judge the success of the project until months or years after the delivery of the project. Also, given that the interests of the different stakeholders in a given project will not be the same, their respective opinions on the success of failure of the project will also not be the same (Turner & Zolin, 2012). Consequently, Turner and Zolin proposed a set of leading indicators that the different project stakeholders can rely on at the time of project execution to predict if the project will be a success or not. The indicators include satisfaction with the specifications and the performance of the prototype, the relationship with the prime contractor, the net cost of the project execution, and alignment with organizational goals.

Researchers such as Nixon, Harrington, and Parker (2012) have considered project leadership a factor in project success drawing a distinction between project management and project leadership. Samset and Volden (2015) defined project management as the established processes of organizing and managing the resources required to complete a project within the defined scope, quality, time, and cost constraints. Project leadership on the other hand is about providing guidance, oversight, and motivation to others to help attain the project objectives (DuBois, Koch, Hanlon,

Nyatuga, Kerr, 2015). Nixon, Harrington, and Parker noted that for the attainment of project success project management usually requires effective leadership.

Summary of project success. Project success is an overarching concept in the execution of projects. The growing body of literature on the project success underlines the importance of the topic. There is however, no one universally accepted definition of project success, or the criteria for measuring success primarily because the subject itself and the literature on project success are still evolving.

Literature on Methodology and Design

For this study, I used the quantitative approach and the correlation design. The research question and my positivist worldview informed my choice of study method and design. According to Hedlund-de Witt (2012), the research problem, the worldview of the researcher, and the intended audience of the research findings influence the choice of research approach and design.

The quantitative approach to research seeks to explain phenomena by using mathematical and statistical methods to analyze numerical data (Yilmaz, 2013). Quantitative research considers empirical investigation of social phenomena via statistical, mathematical, or computational techniques. The qualitative approach on the other hand seeks to investigate phenomena through understanding the contextual and subjective experiences of their study participants (Bhati, Hoyt, & Huffman, 2014).

I used a three-part survey instrument to collect data. The first part was a survey to collect demographic information. The second part was the MLQ 5x to collect

information on leadership styles. The third part was the PIP to collect information on project success.

MLQ 5x was developed by Avolio and Bass in 2002 to measure key leadership behaviors and how these behaviors impact organizational effectiveness and individual success. The results of MLQ 5x analysis is a tendency towards one of three leadership styles; transformational, transactional, and laissez faire. The MLQ 5x has been used by numerous scholars to collect data on leadership. In a 2013 study designed to test the psychometric qualities of MLQ 5x, Hemsworth, Muterera, and Baregheh posited MLQ 5x is the most widely used and is the standard instrument for measuring leadership.

Similar studies to mine have used MLQ 5x for data collection. Popli and Rizvi (2016) used MLQ 5x to investigate the effect of leadership style on employee engagement. Popli and Rizvi is similar to my study because the authors investigated how style of leadership impacts employee and team effectiveness. In another study that is similar to my study, Chaimongkonrojna and Steane (2015) used MLQ 5x to investigate the developing and sustaining of effective leadership. The authors in that study used a sample of 31 middle managers in a Taiwanese furniture factory to study how full range leadership development programs impact leadership development. In a 2013 study, Kalu, Lew, and Sim used MLQ 5x to investigate the effect of leadership style of IT professionals on the success of information technology projects. The sample for that study was 150 practicing information technology professionals in Nigeria.

Other scholars have used other survey tools as alternatives to MLQ 5x to measure leadership. Clavelle, Drenkard, Tullai-McGuinness, and Fitzpatrick (2012) used a

modified version of the leadership practices inventory (LPI) to examine the leadership practices of chief nursing officers in magnet organizations. LPI utilizes a 10-point lickert style scales for the responses. The output of LPI is five possible leadership styles. While LPI is similar to MLQ 5x and two of the possible leadership outcomes are transformational and transactional, I did not use LPI for my study because it is unnecessarily repetitious and confusing. Peus, Braun, and Frey (2013) developed the situational judgement test (SJT). SJT was developed to overcome the apparent lack of sensitivity to context and situation of leadership characteristic of lickert type scales like MLQ 5x and LBA. SJT was not appropriate for this study. Participants in a SJT study are required to evaluate alternative reactions to different situations. This requirement compromises the objective value-free setting necessary for positivist worldview of quantitative studies.

Pinto and Slevin developed the PIP in 1986 to measure project success. Since the time it was developed, PIP has been widely used by researchers to measure project performance and monitoring. Muller and Jugdev (2012) stated PIP is the best current measure of the success of projects. Amponsah and Darmoe (2014) used PIP to collect data on a study designed to investigate success factors of public sector projects in Ghana. In a 2015 study, Rusare and Jay sought to determine if PIP is relevant in measuring project success in the non-profit section. The authors found that PIP is an appropriate instrument to measure project success in non-governmental organizations.

Other researchers used or proposed alternative survey instruments to measure project success. Joslin and Muller (2015) used a self-designed survey to study the

relationship between the use of project management methodology and project success in different project circumstances. The survey included questions from five categories the researchers identified including project management methodology, project governance environment, and project success. In a 2014 study designed to assess the relationship between the performance of project managers and project success, Mir and Pinnington (2014) used a structured online survey to measure project success. In that study, the authors designed the questions from information adapted from peer reviewed articles.

Transition and Summary

The purpose of this study was to examine the relationship between leadership styles, level of project management experience, and success of virtual teams. In section 1, I presented an overview of the study, the significance of the study, the problem statement, and the purpose of the study. Section 1 also included the research questions, the hypotheses, and the theoretical framework that underlies the study. Lastly, section 1 included a review of the current professional and academic literature on the leadership including path goal theory, experience, virtual teams, project success, and study methodology. The review of current literature indicates that while virtual teams and virtual team leadership are relatively new topics, there is an elevated interest in their performance and the challenges to their success. Leadership, communication, and trust building are the main challenges to the success of virtual teams. In reviewing the current academic and professional literature on virtual teams, I noted a preponderance of the participants in the studies were students in undergraduate or graduate programs. There appears to be a dearth of studies conducted in real work or project situations. This study

may fill this gap by using participants who work or have worked in virtual teams. The findings of this study may therefore, be more applicable to work virtual teams do, and be more beneficial to virtual team leaders than the findings of studies that used student participants.

Section 2 began with a restatement of the purpose of the study. In section 2, I discussed the role of the researcher, the research method and design, the ethical considerations that may arise during the study, and the data collection and analysis techniques including the instrumentation. In section 3, I presented the findings of the study along with the application to professional practice, and the implications for social change. Also, section 3 included the recommendations for action, the recommendations for further studies, and the reflections on the study.

Section 2: The Project

I used a quantitative correlational approach to conduct this study. I examined the relationship between leadership style, level of project management experience, and the success of virtual teams. Use of virtual teams by organizations has increased significantly because of the benefits that virtual teams afford (Caya, Mortensen, & Pinsonneault, 2013). Virtual teams, however, have some unique challenges, including those related to leadership (Dulebohn & Hoch, 2017). An online hosted survey consisting of questions from MLQ 5x and PIP was the instrument for the collection of data for this study. Section 1 of this study dealt with the foundation of the study. This section addresses the processes of the approach to the examination of the relationship between the study variables.

Purpose Statement

The purpose of this quantitative correlation study was to investigate the relationship between leadership styles, level of project management experience, and the success of virtual teams. I used a survey, a nonexperimental tool, to collect the data required for the investigation. The independent variables for this study were leadership styles and level of project management experience; the dependent variable was success of the virtual teams. Van Dierendonck, Stam, Boersma, De Windt, and Alkema (2014) defined transformational leadership as a style of leadership in which the leader inspires and stimulates followers to achieve increased outcomes, and in that process, develop leadership capacity. Breevaart et al. (2014) described transactional leadership as a leadership style in which the leader sets clear goals and objectives and specifies rewards

for achieving the goals and objectives. Gemunden (2015) stated that the traditional measure of evaluating project success involves the iron triangle of time, budget, and scope. For this study, I used close-ended survey questions consistent with quantitative studies for collecting data.

The findings of this study may benefit virtual team leaders. Effective virtual team leadership may lead to better performing virtual teams and organizational success. Moreover, the findings of this study may add to the body of knowledge on virtual project leadership. The recommendations and limitations of this study may form the basis for further research. The findings of this study may also make positive contributions toward social change by providing strategies for effectively managing virtual teams to reduce their failure rate, which in turn could lead to greater job satisfaction and employee retention among team members and increased employment opportunities. Managing virtual teams effectively could support socioeconomic empowerment and a higher standard of living in local communities.

Role of the Researcher

The role of the researcher in a quantitative study is to generate acceptable knowledge and findings by developing numeric values and conducting statistical tests while maintaining separation from the subject (Wahyuni, 2012). The role of a researcher in a study can be challenging, given its level of importance and the potential for tainting the study findings. Researcher conduct can impact the credibility and acceptability of study findings. A researcher needs to maintain objectivity in collecting, analyzing, and discussing study data.

My role in this quantitative study was to collect data on the study variables and analyze the data such that I was able to answer the research question, test the hypotheses, and evaluate the outcome. I actively participated in all stages of the research process, including data collection, analysis, interpretation, and reporting. I performed my role as the researcher in full accordance with university guidelines. I secured approval of the research proposal from the Institutional Review Board (IRB) prior to executing the research plan.

In conducting this study, I complied with the three basic prescriptions of the Belmont Report (National Commission, 1979) and the National Institutes of Health (n.d.): beneficence, justice, and respect. The principle of beneficence prescribes that all participants must suffer no harm and no risk of jeopardy to self, reputation, or employment. The principle of justice prescribes that study participants must be selected using a fair sampling procedure such that all members of the study population have an equal chance of participating in the study and there is no offer of incentive for participation. The principle of respect prescribes courtesy and respect in the treatment of study participants.

I am a practicing project manager and a student member of PMI with over 5 years of experience managing projects. My project management experience includes being part of a hybrid team of managers that used computer-mediated tools to supplement face-to-face meetings. I have, however, never led or been a member of a total virtual project team.

Participants

The sample for this study consisted of practicing project managers who had obtained the PMI PMP® designation. I obtained a list of practicing project managers who had the PMP® designation from the PMI and selected the sample from that list by random sampling methods. Ward, Vaughn, Burney, and Ostbye (2016) stated that recruitment of an adequate sample is critical to the success of any study. I sent an invitation to the sample introducing myself and the purpose of this study and invited the participants to visit the SurveyMonkey website to take the survey. I considered using email to recruit the participants but rejected that option. Although web-based recruitment tools such as email may elicit quicker responses (Watson, Robinson, Harker, & Arriola, 2016), the postal mail procedure elicits a higher response rate (Hardigan, Popovici, & Carvajal, 2016). Some researchers have used hybrid tools of recruitment. Moe, Lytle, Nanney, Linde, and Laska (2016) used a variety of methods, including postal mail and email, to recruit participants for their study. I considered using a hybrid method to recruit the participants but rejected it as unnecessarily repetitious.

To try to establish a working relationship, I advised the sample in the introductory mail that consent and participation were voluntary and that participants could withdraw their consent at any time, that their responses would be confidential, and that I would hold their responses in a location accessible only by me. Kawar, Pugh, and Scruth (2016) stated that informed consent is an ongoing process of communication and mutual understanding between researchers and participants that requires researchers to disclose the purpose of the study, any reasonably foreseeable risks to the participants, any

potential benefits to the participants or other people, and the extent of confidentiality protections for the participants. Another strategy to establish a working relationship with the sample is to obtain an introductory letter from a local community partner. Ward, Vaughn, Burney, and Ostbye (2016) found that increased engagement with community partners increased the recruitment and participation rate in their study. The PMI agreed to provide me with a letter of introduction to share with any potential participants who asked for it. Last, I addressed concerns about participation and burdens on the participants in my introductory mail. Ward et al. found that addressing concerns that might be raised by participants helped to facilitate a better working relationship and higher participation rate.

Research Method and Design

One of the first tasks of a researcher after identifying the research problem and formulating the hypothesis is to establish the appropriate research method and design (Weathington et al., 2012). The researcher has to make a choice of research method from one of three established methods, quantitative, qualitative, and mixed methods. The researcher's philosophical worldview and the research purpose usually inform the choice of research method (Hewege & Perera, 2013). Quantitative methods are usually more appropriate for investigating relationships between variables through experimentation and correlation on a sample and then projecting the results to the whole population (Yilmaz, 2013). Qualitative methods are usually more appropriate when the research problem is exploratory and the researcher needs to conduct detailed inquiries into the problem (Yilmaz, 2013). Qualitative researchers use interviews, observations, and review of

records to answer research questions (Yilmaz, 2013). Mixed methods are a combination of quantitative and qualitative methods and use tools from both studies to answer research questions and test hypotheses (Tseng & Yeh, 2013).

Method

In this study, I used a quantitative approach. The quantitative approach is primarily deductive and is ideal for investigating generalizability, pervasiveness, and patterns of association of phenomena (Fetters, Curry, & Creswell, 2013). This approach by quantitative researchers flows from the objectivist epistemology and value-free stance of the positivist worldview (Yilmaz, 2013). Quantifying data makes it easier for the researcher to aggregate, compare, and test data (McCusker & Gunaydin, 2015).

The choice of methodology for this study derived from the study problem. The problem that spurred this study is the elevated failure rate of virtual teams as a result of ineffective leadership. The purpose of this study was to investigate the relationship between the independent variables, leadership styles and project management experience, and the dependent variable, the success of virtual teams. The objectivity, use of hard data, and statistical analysis characteristic of the quantitative approach are appropriate for an investigation of the relationship between variables (Yoshikawa, Weisner, Kalil, & Way, 2013). Thus, the quantitative approach is appropriate in cases where the variables are measurable in a reliable way.

I considered a purely qualitative approach for this study but rejected it. The qualitative approach is inherently subjective in nature because it is used to explore and understand the meanings people attribute to a problem or phenomenon (Bhati, Hoyt, &

Huffman, 2014). Yilmaz (2013) stated that qualitative researchers seek to understand how people interpret their experiences and what meaning they attribute to those experiences. Qualitative researchers collect data primarily through interviews and observations, which makes the data prone to bias, subjective interpretation, and inference (Yilmaz, 2013). The qualitative approach is the appropriate approach for studying complex issues and processes that occur over time (Snape & Spencer, 2013). Fremeth, Holburn, and Richter (2016) stated that while qualitative methods allow researchers to explore in-depth relationships, it is not easy to adapt them to the estimation of the direction or magnitude of the effects of a phenomenon. I rejected the qualitative approach because the purpose of this study was not to understand the meaning and interpretations the participants attributed to their experiences on virtual teams but to investigate the nature of the relationship among the variables.

I also considered the mixed methods approach for this study but rejected it. The mixed methods approach is a research approach in which a researcher can use some or all aspects of the two traditional research approaches in seeking answers to a problem (Tseng & Yeh, 2013). The approach has also been called *methodological eclecticism* (Biddle & Schafft, 2015) and *methodological pluralism* (Hantrais, 2014). Venkatesh, Brown, and Bala (2013) defined the mixed methods approach as a research approach in which the researcher combines elements of quantitative and qualitative approaches in one study. According to Frels and Onwuegbuzie (2013), researchers can use mixed methods to answer both quantitative-based questions and qualitative-based questions in the same study. A mixed methods study therefore has aspects of both quantitative and qualitative

approaches. Proponents of the mixed methods approach have cited confirmation and increased validation of findings and complementarity as some of the benefits of the approach (Fetters, Curry, & Creswell, 2013). I rejected the mixed methods approach because it would have been unnecessarily, repetitious, time consuming, and expensive. The mixed methods approach would not have justified the extra work it would have entailed.

Research Design

I used the correlational design to conduct this study. Correlation provides a unitless measure of association, usually linear, between variables. According to Weathington et al. (2012), correlational design will typically allow a researcher within one study to examine a large number of variables while checking for their potential relationships to each other. Correlation is appropriate in studies where the researcher has no control over the participants (Weathington et al., 2012), as was the case in my study. Correlational studies do not establish a causative relationship between variables. Instead, correlation establishes a probable connection between study variables (Altman & Krzywinski, 2015). The correlational design was appropriate for this study because the purpose of this study was to determine the relationship between the independent variables, namely leadership styles and level of project management experience, and the dependent variable, namely success of virtual teams.

I considered an experimental design for this study. Jensen, Mukherjee, and Bernhard (2014) posited that experimentation involves examination and comparison of the effect of an intervention on treatment and control groups. Researchers use

experimental design to determine a causal relationship between variables by testing the impact of a treatment or an intervention on an outcome, having controlled for all other factors that might influence that outcome (Weathington et al., 2012). Because my goal in this study was not to identify a causal relationship between the independent variables and the dependent variable, and because I did not plan to control or manipulate any of the variables, the experimental design was not appropriate for this study. Furthermore, an experimental design would have been unnecessarily tedious and time consuming. Aguinis and Bradley (2014) stated that compared to an online survey, an experiment takes more time and effort to conduct because of the tasks involved in setting up the experiment and administering the necessary treatments. Aguinis and Bradley also stated that experimental design studies tend to sacrifice external validity and generalizability to enhance internal validity.

Population and Sampling

The population for this study consisted of project managers who held the PMP® certification. The PMI awards the PMP® certification to project management professionals who meet certain educational and professional requirements. PMI is the leading international organization for project management professionals and has a membership in excess of 300,000 from over 170 countries (PMI, 2013b). Table 2 displays the requirements for PMP® certification.

Table 2

PMP Certification Requirements

Education	PM experience	PMP exam score	PM education
High school or associate's degree	5 years experience + >7,500 hours of project work	Passing score	35 hours
Bachelor's degree	3 years experience + >4,500 hours of project work	Passing score	35 hours

Note. Adapted from "About Us," by Project Management Institute, 2013 (http://www.pmi.org/aboutus/Pages/Default.aspx).

I obtained a list of project managers who held PMP® certification from the PMI. There were about 1,600 PMI members in the San Francisco Bay Area who held PMP® certification (PMI, 2013b). From this list, I selected 250 project managers by simple random sample. Acharya, Prakash, Saxena, and Nigam (2013) stated that sampling of a database will suffice if processing the entire database would be unnecessary, impractical, and too expensive in terms of response time and resource usage. Sampling allows a researcher to make predictions or draw conclusions about other things or conditions (Weathington et al., 2012). Sampling generates savings due to reduction in costs associated with retrieval, as well as reduction in costs associated with postprocessing of the sample (Acharya, Prakash, Saxena, & Nigam, 2013). *Random sampling* or *probability sampling* is a sampling method that gives every member of the target population an equal chance of being selected because the method of selection from the sample frame is random (Robinson, 2014). *Simple random sampling*, also called *simple random sampling with replacement*, is a subset of random sampling (Robinson, 2014).

With simple random sampling, the researcher does not have to prescreen potential sample members prior to selection.

Random sampling is appropriate in cases where the researcher has a complete sampling frame or exhaustive population list and contact information. With random sampling, it is easier to generalize study results from the sample. According to Olofsson, et al. (2014), extrapolation is possible and more credible if the researcher uses random sampling methods to select the study sample. Also, random sampling is easier to use, takes less effort and time, can be cheaper, and avoids unnecessary assumptions about the population and sample (Ucar et al., 2016).

Simple random sampling was the appropriate sampling choice for this study because there was be an exhaustive population list with contact information. Every member on the population list had an equal chance of being selected to participate in the study thus eliminating the need to make unnecessary assumptions about the population and sample. Also, using simple random sampling may help me with achieving one of the goals of this study which is to extrapolate the findings to the population. The major weakness of simple random sampling is that the lack of prescreen may impact the number of useable survey responses. When the sample is selected blindly, review of the survey responses is the first time the researcher will find out if the individual sample members meet the study criteria.

Determining a suitable sample size for a study is important. Ryan (2013) stated it is important that the sample size be large enough such that there is a high probability of detecting an effect that is large enough to have practical significance but should not be

larger than is necessary such that the cost of the study becomes unnecessarily high. The sample size should be large enough to achieve a sufficient statistical power (Button et al., 2013). For this study, I used the G*Power 3.1.9.2 program to calculate the a priori sample. In a priori sample analysis, the sample size is a function of alpha value, the beta value, and the effect size. Based on a one tailed alpha value of 0.05, the beta value of 0.95, and the effect size of 0.3, the power analysis calculation recommended a sample size of 111.

The sample size for this study was 250. The decision on this sample size was intended to mirror the sample size of similar studies (Van Deusen, 2013). Norman, Monteiro, and Salama (2012) stated that in cases of doubt or ambiguity, guiding principle for the researcher in determining sample size is to mirror data from pervious similar studies. In a 2013 study on the stability of correlations, Schonbrodt and Perugini posited that to achieve stable estimates in correlational studies, researches should use sample sizes of around 250. I mailed 250 survey invitations to the sample. One hundred and sixty participants completed the online survey. This number represents a 64% response rate which is typical for studies such as mine. According to Ongori and Agolla (2008), a 60% response rate is considered typical for statistical studies.

Responses to web-based surveys are usually lower than responses to paper-based surveys (Sauermann & Roach, 2013). It is however possible to increase the response rate to electronic surveys if the wording is designed so as not to appear belittling or subordinating to potential respondents (Hitchcock, Onwuegbuzie, & Khoshaim, 2015) or researcher personalizes the invitation and sends out follow-up reminders to the

participants (Mol, 2016). I personalized the introductory mail for my survey and used clarifying language that did not belittle the recipients.

Ethical Research

The Belmont Report (National Commission, 1979) prescribed three basic principles for ethical research: beneficence, justice, and respect. I conducted this study in full adherence to those three principles. In keeping with the principle of beneficence, no participants in this study suffered any harm. There was no risk of any jeopardy to self, reputation, or employment for any of the participants. In keeping with the principle of justice, I selected the study participants using a fair procedure of random sampling. All members of the study population had an equal chance of participating in the study, and I did not offer any incentives for participation. Klitzman (2013) found giving financial incentives to study participants can be seen as undue influence on the participants. In keeping with the principle of respect, study participants were treated with courtesy and respect.

To comply with the three principles prescribed by the Belmont Report (National Commission, 1979), I obtained the informed consent of the participants prior to administering the survey. Informed consent requires voluntariness, comprehension, and disclosure. Obtaining informed consent prior to administering the survey ensures that participants fully understand the study and any potential harm or embarrassment (Mouton, Malan, Kimppa, & Venter, 2015). The process of obtaining informed consent involves making a full disclosure of the purpose and nature of the study to the participants. Said disclosure shall be in a form comprehensible to the participants, and

shall also advise the participants that their consent to the study is voluntary. Kass, Taylor, Ali, Hallez, and Chaisson (2015) stated researchers use introductory letters and consent forms to explain the research to prospective participants and document willingness to participate. For this study, I provided a letter of introduction and a voluntary consent form to each survey participant. I exhibited the letter of introduction in Appendix A. In the letter of introduction, I advised the participants their participation was voluntary, no incentive would be given for their participation, and that they could withdraw consent to participate in the study anytime. Klitzman (2013) found giving financial incentives to study participants is frequently viewed as undue influence and gives rise to ethical dilemmas. Participants were required to indicate their consent online before responding taking the survey. To further ensure that participants did not feel coerced, there was an *exit* button on each page of the survey website. Mikesell, Bromley, and Khodyakov (2013) stated in keeping with the principles of the Belmont report, participants should be made fully aware of their right to withdraw from the study and should be able to freely and easily withdraw from the study at any time without fear of reprisals. The participants could use this *exit* button to exit the study or limit their participation in the study if they became uncomfortable with the study at any time.

I conducted this study on the basis of full confidentiality as opposed to anonymity afforded to the participants. Confidentiality is greater than anonymity because confidentiality covers both deliberate and accidental disclosure of information obtained from a study participant in ways that make the participant identifiable (Lancaster, 2017).

Anonymity is one way of operationalizing confidentiality (Lancaster, 2017). To ensure confidentiality, I did not collect the names of the respondents.

I will hold the data collected and data results for this study in my personal computer. This personal computer has a *log on* and a password. Additionally, there is encryption software that automatically activates if there are five consecutive attempts to access the personal computer with an incorrect password. SurveyMonkey hosted the survey on their website over a 6-week period. I decided to use SurveyMonkey to host the survey on their website. Massie (2013) and Schlieper (2014) used the SurveyMonkey website to host their surveys and found the site easy for participants to navigate. At the end of the 6-week period, I took the survey down. I have backed up the contents of the personal computer to an external hard drive I will keep under lock and key at my office. After 5 years, I will erase all electronic data held in my personal computer and the external hard drive in order to guard against unintentional breach of the participants' privacy. Mikesell, Bromley, and Khodyakov (2013) stated in keeping with the privacy element of the Belmont report, participants should be advised of the storage method for their responses as well as the duration and mechanism of disposal of responses.

Data Collection

IRB Process

Prior to collecting data, I applied for and received the approval of the Walden University Institutional Review Board (IRB) for data collection. The IRB number for this study is 01-25-17-0182779.The IRB process is designed to protect the rights of human subjects involved in any research. Applying for IRB approval involves

completing the required ethical training modules, and submitting the required application forms. The IRB will usually perform a risk-benefit analysis to determine if the benefits of the study justify any actual or potential harm to the participants.

Instruments

In quantitative correlational studies, the design of the survey instrument is crucial because the primary objective of the instrument is to ensure the data collected will provide the intended measurement. The survey instrument should pull in a representative manner from all ways that could be used to measure the content of a given construct. The purpose of this study was to examine the relationship between leadership styles, the level of project management experience, and the success of virtual teams. The variable leadership style is a nominal variable. The variable project management experience is an interval variable. The variable project success is an ordinal variable. I used an anonymous three-part survey consisting of close-ended questions as shown in Appendices B, C, and D to collect the data necessary for the demographic information, the leadership information, and the virtual project success information respectively. I used the demographic survey I developed to capture information such as project management experience and communication tools. I used the MLQ developed by Avolio and Bass (2002) to measure the leadership part of the study and the PIP developed by Pinto & Slevin (1986) to measure the project success part of the study.

SurveyMonkey, a commercial online survey host hosted the survey on their website. I chose SurveyMonkey as the hosting site for the online survey because of the convenience and ease of use. Massie (2013) and Schlieper (2014) used SurveyMonkey to

host their online surveys and both researchers found the site easy for participants to navigate. Fernandes and Belo (2016) used SurveyMonkey in their study and found the website allowed quick access to the survey and facilitated faster responses. The introductory mail the participants received directed the participants to the SurveyMonkey website. At the website, the participants were able to access the survey questions and provide their responses only after they had acknowledged their understanding of study requirements and obligations, and provided their consent.

Demographics section of the survey. The first part of the survey was for collecting demographic information about the respondents. Collecting and reporting demographic information informs readers about the characteristics of respondents (Connelly, 2013). Moore, Leahy, Sublett, and Lanig (2013) stated demographic information helps readers compare the sample to the general population. In this study, I collected information regarding the respondents' qualification, experience with virtual teams, scope and complexity of projects, and project tools used. I used the demographic information to provide descriptive statistics relating to the population.

Descriptive statistics are used to describe raw data and include measures of central tendency such as mean, median, and mode (Carland, Carland, & Stewart, 2015). According to Proches (2016), descriptive statistics provide readers with options for visualization of data which makes it easier for readers to determine the differences between groups with different characteristics. I exhibited questions relating to the demographic section of the study in Appendix B.

Leadership style effectiveness section of the survey. I used the MLQ 5x to collect data and information on the leadership part of the study. MLQ 5x is used to measure styles of leadership and to examine the relationship between these leadership styles and effectiveness and satisfaction at the work unit. Since its development, the MLQ 5x has become widely accepted as the standard for examining leadership styles. Hemsworth, Muterera, and Baregheh (2013) stated MLQ 5x is the most widely used and is the standard instrument for measuring leadership. Aga, Noorderhaven, and Vallejo (2016) stated numerous studies have used MLQ 5x as a measurement instrument and have confirmed its validity and reliability.

MLQ 5x was the appropriate instrument to measure leadership style in this study. Similar studies to mine have used MLQ 5x to measure leadership for varying populations. Popli and Rizvi (2016) used MLQ 5x to investigate the effect of leadership styles on employee engagement. Chaimongkonrojna and Steane (2015) used MLQ 5x to investigate how effective leadership is developed and sustained among middle and top level managers in the furniture industry. Kalu, Lew, and Sim (2013) used MLQ 5x to investigate the effect of leadership style of IT professionals on the success of information technology projects. I selected the MLQ 5x for this study because of the applicability of the leader characteristics in the survey and because of the ease of use and its 360-degree properties that makes it adaptable.

Since its creation, the MLQ 5x has been subject to some criticisms. The primary criticisms of MLQ revolve around its conceptual framework and its structural validity (Van Knippenberg & Sitkin, 2013). MLQ 5x however remains the most widely used and

validated tool to examine leadership style (Hemsworth, Muterera, & Baregheh, 2013). Muenjohn and Armstrong (2008) tested the MLQ 5x, the most current version of the instrument and found it adequately measures the leadership factors that represent transformational, transactional, and non-leadership behaviors.

Project success section of the survey. I used the PIP project performance subscale (subscale) to examine the project success part of the study. Muller and Jugdev (2012) stated the PIP's project performance subscale was developed by Pinto and Slevin in 1986 to measure the success of projects. The PIP subscale is used to collect data on 12 project factors primarily related to the three parts of the project iron triangle of scope, budget, and time plus another factor of quality and customer satisfaction. In confirming the validity and reliability of PIP, Davis (2016) stated numerous researchers have adopted and replicated PIP success factors and it is the most widely used measure of project success available to the project management industry. Since the time it was developed, PIP has been widely used by researchers to measure project performance and monitoring. Amponsah and Darmoe (2014) used PIP as the instrument to collect data for a study on the success of public sector projects in Ghana. In a 2015 study, Rusare and Jay successfully used PIP to measure project success in non-governmental organizations.

As developed by Pinto and Slevin, the PIP is used to measure success of traditional projects not virtual projects (Lee, 2010). Due to the difficulty in finding a valid and reliable survey to measure both virtual project management and criteria for success of virtual projects, researchers use the PIP to measure the success of virtual projects (Lee, 2010). For the current study, the PIP will be used and the participants

were instructed to provide their responses based on their virtual project management experience.

Scoring for the PIP subscale is easy and straightforward. Percentage scores that fall below the 50th percentile are considered low. Percentage scores that fall between 50th and 80th percentiles are considered fair. Percentage scores that fall over the 80th percentile are considered high or good.

The PIP has been subject to some criticism primarily around its reliability and validity. Finch (2003) stated that PIP does not reflect the competence of the project manager, the external factors that influence the project, the culture climate, and any differences between the types of projects. Despite this criticism, Finch found PIP to be a useful tool that can be used to measure success at any stage of a project.

Definition of the Variables

The aim of this study was to investigate the relationship between styles of leadership, the level of project management experience, and the success of virtual teams. For this study, I used a quantitative correlational approach. In correlational studies, the researcher seeks to find out the relationship between two or more variables. The variables in this study were leadership styles, level of project experience, and success of the virtual teams.

I used the MLQ 5x survey developed by Avolio and Bass (2002) exhibited in Appendix C to collect information on the leadership aspect of the study. I obtained the necessary license to reproduce and use the MLQ 5x survey for this study from Mind Garden, Inc. and same is included as Appendix E. The MLQ 5x is a structured omnibus

measure of leadership styles. The survey consists of 45 items covering what Avolio and Bass referred to as the full-range leadership model. The 45 items tap nine conceptually distinct leadership factors or scales covering three sets of leadership styles, transformational, transactional, and laissez-faire (Muenjohn & Armstrong, 2008). Five of the scales are characteristic of transformational leadership. These scales are idealized attributes, idealized behavior, inspirational motivation, intellectual stimulation, and individualized consideration. Two of the scales are characteristic of transactional leadership. These scales are contingent reward and management-by-exception (active). The last two scales are characteristic of laissez-faire leadership. These scales are management-by-exception (passive) and laissez-faire.

Issues of construct validity concern how accurately an instrument measures an ability or abstract trait (Chmielewski, Sala, Tang, & Baldwin, 2016). The focus for testing the validity of the MLQ-5x is by testing each of the six measured constructs or traits:

- Charisma or inspiration: Leader provides followers with a clear and energizing sense of purpose.
- Intellectual stimulation: Leader encourages followers to question current methods and beliefs.
- Individualized consideration: Leader is continually working to develop the potential of each individual follower.
- Contingent reward: Leader explains to followers what their rewards will be if followers achieve expected levels of performance.

- Active management-by-exception: Leader focuses on correcting possible performance problems that may arise, thereby maintaining the status quo.
- Passive avoidant: Leader reacts to problems after they have occurred and may even avoid making any decisions.

Numerous researchers have used the MLQ 5x to measure leadership. All of the studies have firmly established the validity of MLQ 5x as an instrument to measure leadership. Additionally, the reliability of MLQ 5x has been firmly established. A 2004 study by Avolio and Bass tested constructs of the MLQ 5x and the results showed the MLQ 5x has a high level of reliability. Avolio and Bass (2004) used a sample of 2,154 leaders from different leadership disciplines and different countries worldwide to measure the reliability of each of the constructs. The results showed reliability for each of the constructs between .74 and .94. This is generally a high level of reliability and indeed exceeded internal consistency levels (Avolio & Bass, 2004).

The MLQ 5x survey adopts a 5-point Likert scale with responses ranging from 0 to 4, with 0 = not at all, 1 = once in a while, 2 = sometimes, 3 = fairly often, and 4 = frequently, if not always (Avolio & Bass, 2002). MLQ 5x comes with a scoring key that is used to group the items by scale. The average score for each scale is calculated by adding together the scores for all the items within that scale and then dividing by the total number of responses within that scale. The average score for each scale is then compared against a validated score for the norm population to obtain a percentile range from 5% to 95% (Avolio & Bass, 2002). The norm may be for a universal group, a national group, or a defined group. Adopting the scoring key in the MLQ manual, a score of 4, for instance,

on any of the five transformational leadership subscales would translate to a 95 percentile ranking in transformational leadership compared to the norm population: (a) idealized attributes, (b) idealized behavior, (c) inspirational motivation, (d) intellectual stimulation, and (e) individualized consideration (Avolio & Bass, 2002). For this study, the defined group was the study participants. For operational definition purposes in this study, a person exhibits transformational style of leadership if they score an average of 4 or more on each of the five transformational subscales. A person exhibits transactional style of leadership if they score an average of 4 on each of the two transformational subscales. A person exhibits laissez-faire leadership style if they score an average of 4 on each of the two laissez-faire subscales.

To collect information on the variable, success of virtual teams, I used the PIP developed by Pinto and Slevin (1986) exhibited in Appendix D. According to Jugdev and Muller (2005), the PIP is the best current measure of project success. Researchers have deliberated what constitutes project success (Gemunden, 2015). A common definition of project success is meeting the time, financial, effectiveness, and customer satisfaction criteria (Pinto & Slevin, 1988). More recent definitions of project success have considered the actual perceptions of all stakeholders about the project and the project implementation (Davis, 2014). For this study, I adopted the Gemunden (2015) definition of project success.

I used the PIP project performance subscale to measure project success. The PIP was developed by Pinto and Slevin (1986) through an empirical process of distilling

responses and information from over 50 project managers. I exhibited the PIP in Appendix D.

Construct validity of PIP as a measurement instrument has been tested and established. The constructs measured by PIP are the critical success factors that are exhibited in Appendix D. Since 1986 when Pinto and Slevin developed the PIP, the instrument has been used by numerous studies to measure project success. Basamh, Huq, Dahlan, and Rahman (2013) described PIP as a comprehensive project management tool that has been used to measure success of projects in both the private and public sectors.

The PIP meets the reliability test as a tool for measuring project success. Pinto and Prescott (1988) tested the measurement of the 10 critical success factors in a field study conducted to investigate changes in the importance of project critical success factors across four stages in the project life cycle. The sample size on the Pinto and Prescott study was 408 project managers. Cronbach alpha scores from that study ranged from .70 to .90. These levels are above accepted levels (Pinto & Prescott, 1988).

The PIP is a diagnostic tool that measures the performance of projects against ten critical success factors identified in the ten-factor model. Each of the ten factors has five questions, making a total of 50 questions. Respondents are required to indicate their responses to questions on each of the success factors on a 7-point Likert scale ranging from strongly disagree to strongly agree. To obtain a combined measure of project success, I calculated the mean of the individual survey item scores using an equation developed by Pinto (1986) whereby success is a function of overall project performance based on the measured survey item, and the total number of items participants responded

to. I then compared the scores for each success factor against an existing database of 409 successful projects. Factors that score below the 50th percentile are low or critical and are coded as 1. Low scores indicate actual and present problem areas that require immediate attention. The project manager should consider committing more resources to the potential problem areas. Factors that score between the 50th and 80th percentiles are medium or fair and are coded as 2. Medium scores indicate there are no obvious problems in the areas but a strong potential for future problems. The project manager would be advised however to monitor those areas. Factors that score greater than the 80th percentile are high and are coded as 3. High scores indicate optimal performance in those areas. For this study, the operational definition of project success will be obtained from the responses to survey items 1 to 12 on the PIP survey, where 1 represents failure and 7 represents success.

The unit of measure for the variable, amount of project management experience is the number of years. The responses to the demographics survey exhibited in Appendix B will provide the information for this variable. Respondents will be required to check the box corresponding with the number of years of project management experience they have.

I administered the survey for this study on line. SurveyMonkey, a commercial hosting service hosted the survey on its website. I downloaded the survey responses from the SurveyMonkey website onto my personal computer and have store the raw data including the responses on my password-protected computer and avail them upon written request.

Even with established instruments, it is not uncommon for issues of validity and reliability of the data or scores to arise during the study (Barry, Chaney, Piazza-Gardner, & Chavarria, 2014). The main threat anticipated in this study was threat to content validity. The primary concern with content validity is whether the research instrument pulls in a representative manner from all the possible ways of measuring the content of a given construct (Johnson et al., 2014). One strategy to overcome this threat is to send reminders to the study participants to complete the survey. Sending reminders to study participants can increase the rate of response (McPeake, Bateson, & O'Neill, 2014). In a 2016 study designed to find ways to improve the response rates of electronic surveys, Mol found sending reminders to the respondents increased the response rate significantly. Mol (2016) was a methodological experimental study with a sample size of 15,651.

Data Collection Technique

The tool I used for data collection was an online survey. SurveyMonkey, a third-party commercial online survey host hosted the survey on its website. The introductory mail the study participants received contained a link for the SurveyMonkey website. Once at the SurveyMonkey website, the participants were able to indicate their comprehension of the instructions and their voluntary consent to participate. I chose online survey as the method of collecting data because of lower costs of administration and ease of use. Sauerman and Roach (2013) stated online surveys are less expensive, have a quicker turnaround, the inherent anonymity encourages truthfulness among participants, and the responses are can be delivered quickly. Similarly, Trepte and Reinecke (2013) found the lack of social and non-verbal cues inherent in online surveys

increased self-disclosure by participants. Zhou, Jin, Fang, and Vogel (2015) chose to use an online survey in their study because of its advantages over traditional paper-based survey including less missing data, more accurate and efficient data entry, and comparable reliability and validity.

Periodically, I downloaded the data collected from the survey responses onto spreadsheets to prepare for analysis. I am the only person who has access to the data. The recruitment and participation period for the study was six weeks. At the end of the 6-week period, I took the survey website down.

I did not conduct a pilot study. A pilot study is a smaller scale study conducted as a rehearsal for a larger study. Pilot studies are important because they can help a researcher learn more about the data collection process and test the instruments before committing plenty of time and resources. Because there is wide acceptance of the MLQ survey (Hemsworth, Muterera, & Baregheh, 2013) and PIP subscale (Finch, 2003; Jugdev & Muller, 2005), I did not need to conduct a pilot study.

Data Analysis Technique

In this study, I examined the relationship between leadership styles, the level of project management experience, and the success of virtual teams. The research question that guided this study was whether a combination of leadership styles and project management experience will predict success of virtual teams? The null hypothesis in this study was the linear combination of leadership styles and project management experience will not significantly predict the success of virtual teams.

Before starting the data analysis, I reviewed the responses to identify any data quality issues and rectify them. Data quality issues primarily arise during the collection and recording stage of a study (Hashem et al., 2015). Data cleaning involves detecting and removing errors and inconsistencies from data with the object of improving the overall quality of the data (Gill & Lee, 2015). Cleaning data helps reduce the probability of type II errors (Osborne, 2013).

The main data error I encountered in this study was missing data consisting missing responses or non-responses. Missing data is described as values not available but if observed, would be meaningful for analysis (Ware, Harrington, Hunter, & D'Agostino, 2012). Missing data occur when the study participants forget, neglect, or refuse to respond to one or more of the questions. According to Karanja, Zaveri, and Ahmed (2013), non-responses are a common occurrence in survey based research. I reviewed the responses to check missing data. I used two methods of data cleaning to deal with the missing data. The first method is the complete-case analysis. This method involves dropping the cases that have missing data and using only the cases that have complete data in the analysis (Cheema, 2014). Bartlett, Carpenter, Tilling, and Vansteelandt (2014) stated complete-case analysis is simple to apply and is the default method of dealing with missing data in statistical packages. I used the complete-case method to drop four cases with substantially incomplete data.

The second method is imputation. This method involves filling in the missing value with a plausible value (Bartlett, Carpenter, Tilling, & Vansteelandt, 2014). Imputation helps the researcher mitigate the impact of the missing data on the power and

bias of estimates (Burgess, White, Resche-Rigon, & Wood, 2013). Vickers and Altman (2013) described imputation as a sophisticated and preferred method of dealing with missing data especially in situations where there is a high incidence of missing data. I used imputation to cases where respondents missed one or two questions on the survey.

The variable, project success is an ordinal variable. An ordinal variable is a variable that can be grouped into ranked categories. The measure of the project success variable is the extent to which the project meets time, budget and scope criteria. As indicated earlier, I utilized the survey questions contained in Pinto and Slevin's PIP exhibited in Appendix D to collect data for the project success variable. There are three categories for this variable, critical, fair, and good. Participants' responses to the PIP survey about their project determine the category of their projects.

The variable leadership style is a nominal variable. I used the MLQ 5x survey developed by Avolio and Bass (2002) and exhibited in Appendix C to assess this variable. The participants' responses to the questions contained in MLQ 5x will determine the categories. The variable, number of years of project management experience is an interval variable. The responses to the demographics section of the survey exhibited in Appendix B will provide the data and information for this variable. I used multiple linear regression analysis to examine the relationship between the variables. Multiple linear regression is used to analyze the relationship between two or more independent variables and a dependent variable (Hidalgo & Goodman (2013); Ramkissoon, Weiler, & Smith, 2013).

I collected demographic data such as gender, virtual project management experience, size and complexity of projects, size of project teams, and communication tools from the survey responses using the survey exhibited in Appendix B. This instrument collected data necessary to provide a number of descriptive statistics pertaining to the respondents' virtual project management experience, degree of virtuality of the team and how the team members communicated. Descriptive statistics are used to describe raw data and include measures of central tendency such as mean, median, and mode (Carland, Carland, & Stewart, 2015).

To analyze the data collected for this study, I used the statistical application SPSS version 23. SPSS consists of a series of computer programs that help researchers understand data from surveys and other sources, to analyze and maneuver the data, and to generate statistical reports from the analysis (Bhunia, 2013). SPSS application is beneficial in computing and presenting statistical analyses and optical analyses such as box plots, graphs, and scatter diagrams (Warne, 2014).

For each variable, the name, type, width, decimals, label, values, missing field, columns, alignment, and measure will be identified. I used descriptive statistics to show the basic attributes of the distribution of the data. Descriptive statistics will show the sample size, the mean, median, and standard deviation. I used multiple linear regression analysis to test the correlational relationship between the variables. Multiple linear regression allows a researcher to examine the relationship between multiple independent variable and a single dependent variable. According to Hidalgo and Goodman (2013), if there are two or more independent variables and one dependent variable, multiple linear

regression is the appropriate test for determining the relationship between the variables. Adopting this position by Hidalgo and Goodman, I chose multiple linear regression as the appropriate correlation test for this study. In this study, I examined the relationship between two independent variables, leadership styles and project management experience and one dependent variable, success of virtual teams.

I used the standard multiple linear regression analysis for this study. Standard multiple linear regression test is the appropriate test when examining how all the independent variables as a whole predict the dependent variable (Frasier, 2016). My focus in this study was how leadership styles and project management experience affect the success of virtual teams. I examined the two independent variables, leadership styles and project management experience as a whole. I considered using the hierarchical multiple linear regression model but rejected that. Hierarchical multiple regression analysis is appropriate when controlling for the influence of other variables (Woltman, Feldstain, MacKay, & Rocchi, 2012). Because I was not controlling for the influence of covariates, the hierarchical multiple linear regression test was not appropriate in this study.

Numerous researchers have used multiple linear regression to test relationship between variables. Su-Fen (2013) called multiple linear regression a widely studied and used method of testing relationships in statistics and other related studies. Babic, Savovic, and Domanovic (2014) studied the moderating effect of employee attitude on the relationship between transformational leadership style and post-acquisition performance of organizations. The authors used multiple linear regression to test the

relationship between two independent variables, transformational leadership style and employee attitudes and a dependent variable, post-acquisition performance. In another recent study, Iorio and Taylor (2015) used multiple linear regression to analyze relationship between the prior experiences of study participants and their leadership style. The prior experiences tested in that study were experience with leadership training, experience working in a distributed team, and experience working in a virtual team.

There are two underlying assumptions for the use of multiple linear regression. Violation of these assumptions in a study can lead to misleading study result. The first assumption is that there is a linear relationship between the variables (Williams, Grajales, & Kurkiewicz, 2013). This assumption is that there is a straight-line relationship between two or more variables. Linearity occurs when a change in the change in the expected value of the dependent variable associated with a small fixed increase in the value of an independent variable is the same regardless of the value of that independent variable. The second assumption is that the variables follow a normal distribution (Williams, Grajales, & Kurkiewicz, 2013). Data values that do not follow the normal distribution are outliers. According to Huang, Mehrotra, and Mohan (2013), an outlier is a single or low frequency occurrence of the value of a variable that deviates from the bulk of the values of the variable. Outliers usually are flawed data resulting from poor quality of data set or error in data conversion.

It is common to find violations of assumptions in studies especially if the sample size is large. According to Nimon (2012), the impact of violations of multiple linear regression assumptions can impact and be impacted by the size of the sample. The

researcher in a study has to monitor for, and deal with any violations in ways that do not compromise the findings. In this study, I reviewed the scatterplot of the variables to check for curvatures in the relationships of the variables and for the presence of outliers.

My tests did not detect a non-linear relationship. If I had found a non-linear relationship, I would have either incorporated curvilinear components or excluded the case that is causing the non-linearity. Curvilinear components analysis is a form of multidimensional scaling that moves output space points around to minimize non-linearity (Sun, Crowe, & Fyfe, 2013). Nimon (2012) posited that both of those are acceptable ways of dealing with a violation of linearity as long as the researcher notes them in the results. By using a polynomial form in powered terms, curvilinear relationships can be incorporated into multiple linear regression analysis (Williams, Grajales, & Kurkiewicz, 2013).

My test results detected some outliers. I used Cook's distance to determine if those outlier cases were influential. Cook's distance is a measure of the change in the regression coefficients that would occur if a case is excluded (Altman & Krzywinski, 2016). Outlier cases with Cook's distance greater than one are influential and outlier cases with Cook's distance less than one are not influential. Goldsworthy, Vallence, Yang, Pitcher, and Ridding (2016) used Cook's distance in their study to identify and exclude influential outliers. It is advisable however to include the fact of any outlier exclusion in the study report for fullness and robustness. Crawford and Pilanski (2014) excluded an outlier with a Cook's distance of less than one. The exclusion was precautionary since the outlier did not meet the Cook's distance measure for influential.

The authors however included the outlier in their analysis and noted fact of the exclusion in their report. I excluded outlier cases that were not influential have reported the fact of the exclusion in my findings.

The statistical tests I used for this study calculated statistical significance using an alpha level of 0.05 with a 95% confidence interval. I chose these levels because they are the levels that researchers commonly use in psychological studies. Pfister and Janczyk (2013) posited that in psychological research, it is customary to use 95% confidence interval and .05 alpha level. Walsh et al. (2014) also stated that an alpha value of 0.05% is the most used value of determining the threshold for statistical significance. The alpha level denotes the possibility of wrongly rejecting the null hypothesis. Thus in my study, the .05 alpha level means I allowed for a 5% possibility that the linear combination of transformational leadership and project management experience will not predict success of virtual teams.

Statistical significance evaluates the likelihood of the sample results. According to Ziliak (2016), statistical significance is the likelihood that an observed difference between two groups is purely as a result of chance. Statistical significance gives researchers confidence in the credibility of their hypotheses. According to Vermeulen et al. (2015), if the test results indicate there is statistical significance, the null hypothesis is rejected. To determine if there is statistical significance, I checked the probability value output of the statistical test. A probability value equal to or smaller than the alpha level of 0.05 suggests that the observed data is inconsistent with the assumption that the null

hypothesis is true and therefore the null hypothesis must be rejected (Vermeulen et al., 2015).

I also looked at the confidence interval for the study sample. Confidence interval estimates the amount of uncertainty associated with a parameter in the sample estimate of the study population. Confidence interval helps researchers measure the size of the difference of a measured outcome or group (O'Brien & Yi, 2016). The researcher in a study usually chooses the degree of confidence in the data. For this study, I chose a confidence interval of 95%. It means that if I take repeated samples and the 95% confidence interval computed for each sample, 95% of the intervals will contain the population mean.

Effect size measures the strength of a phenomenon such as the correlation between variables or the regression coefficient. According to Smith, Dickman, and Banks (2017), effect size represents an indication of the size of difference between two groups. The concern for researchers measuring effect size is to determine whether and to what extent an intervention or experimental manipulation has an effect (Lakens, 2013). A zero effect size means there is no effect because the sample results match the expectation specified in the null hypothesis. It follows that an output of a large value for effect size means there is a strong relation between the variables.

Reliability and Validity

Reliability and validity are concepts that help to ensure replicability and generalizability of studies (Wahyuni, 2012). Replicability and generalizability both improve the credibility and effectiveness of study findings. Validity deals with issues of

credibility of the study results and transferability of that to other organizations, industries, or regions (Wahyuni, 2012).

Validity

Validity in quantitative studies is concerned with the accuracy of the scale or survey regarding what it is supposed to measure and how the respondents interpreted the questions versus how the researcher interpreted the questions (Johnston et al., 2014). The purpose of validation is to give researchers and the society as a whole a high degree of confidence that the methods selected for the study are useful in the search for scientific truth. For this study, I was concerned with three possible validation issues: external validity, internal validity, and statistical conclusion validity.

External validity issues revolve around the generalization and replicability of study findings to the broad population (Cor, 2016). Pearl and Bareinboim (2014) defined external validity as the extent to which empirical findings are generalizable to new environments, settings, and population. The size of the sample, the use of validated and reliable instruments and the meticulous recording of the data collection, coding, and analysis procedures will minimize threats to external validity and will ensure future studies can replicate this study (Konradsen, Kirkevold, & Olson, 2013).

In this study, my concern was the findings and conclusions from the sample of 250 project managers will be generalizable to the broad population of project managers. I identified two threats to external validity in this study. The first threat to external validity was population validity. Ihantola and Kihn (2011) stated population validity is concerned with whether a relationship between two variables found in the sample also

exists in the population at large. I controlled for this threat by using a large sample size and by using random sampling to select the sample. According to Ihantola and Kihn, use of large sample size and random sampling techniques reduces the threat of population validity. Random sampling is better for population validity than convenience sampling because as Robinson (2014) noted, the sample chosen through convenience sampling is usually not truly representative of the study population, and there are no statistical grounds for generalizing the results of studies based on convenience sampling.

The second threat to external validity was ecological or environmental validity. Ecological validity refers to the extent study findings can be generalized across settings, conditions, contexts, and variables (Ihantola & Kihn, 2011). The concern with ecological validity is that the study findings are independent of the setting or location of the study. The target population of this study was project managers based in the Northern California area. The concern with ecological validity in this study is whether the study findings can be generalized to project managers outside of the Northern California area. I minimized this threat because the focus of this study is virtual project management. Even though Northern California is the base of the target population, they do their work virtually, and their responses to the survey are not limited to Northern California experiences.

Internal validity issues revolve around the justification and confirmation of stated conclusions about causal relationships (Bainbridge, Sanders, Cogin, & Lin, 2016). Internal validity issues are not of concern in this study. My purpose in this study was not to identify any causal relationship between the variables, but instead to see if there is a correlation between the variables.

Statistical conclusion validity is one way to justify the findings and conclusions of this study. Statistical conclusion validity is an assessment of the mathematical relationship between variables and the chances that this assessment represents the true covariance (Hales, 2016). Statistical conclusion validity holds when adequately analyzed data form the basis of study findings. Violation of statistical conclusion validity can lead to false positive errors (type I) or missed positive errors (type II) (Becker, Rai, Ringle, & Volckner, 2013). While it may not be possible to completely eliminate these errors, a researcher needs to make diligent efforts to control and minimize the level of the threats.

In this study, I tried to minimize the types I and II errors by controlling the threats to statistical validity conclusion. The threats to statistical conclusion validity in this study included low statistical power and violated assumptions of statistical tests. The threat of low statistical power arises when sample size is set too low. Low statistical power increases the likelihood of accepting a null hypothesis when it is false. I controlled for this threat by using a sample size of 250 which is large enough to reduce the likelihood of a type II error. The threat of violated assumptions of statistical tests arises when the researchers fail to meet the underlying assumptions of the statistical tests Violating the assumptions of statistical tests can lead to difficulties in interpreting the findings.

The threat of reliability of treatment implementation arises when the treatment or instruction is not the same for all participants. Differences in treatment implementation or instructions can inflate error variance which in turn, can decrease the chance that a true difference will be detected. I controlled for this threat by using same survey instruments for all the participants. I used a standard biographic data survey to collect data on the

level of project management experience. I used MLQ 5x to collect data on the leadership style, and I used PIP subscale to collect data on project success. As noted earlier, these instruments have been tested in previous standards are generally accepted as valid.

Transition and Summary

The purpose of this quantitative correlational study was to investigate whether a combination of leadership style and project management experience can impact the success of virtual teams. In this section, I discussed the purpose of the study, the research methodology and design, the role of the researcher, possible ethical issues that may arise, as well as the target population and sample. In addition, I discussed the data collection and organization techniques, the research instruments, data analysis procedures including validity and reliability of tools in this section.

Section 3 began with a restatement of the purpose statement and a reminder of the research questions and hypotheses. The presentation and discussion of the findings of the study, the application of the study findings to business practice, and the implications for social change followed. Also in Section 3, I discussed the recommendations for action and the recommendations for further studies.

Section 3: Application to Professional Practice and Implications for Change

In this section, I present analysis, discussion, and interpretation of the data collected in this study, with a view toward addressing the research question and testing the hypothesis in Section 1. The specific business problem in this study was that some team leaders do not know if there is a relationship between leadership style, project management experience, and the success of virtual teams. In this section, I also present recommendations for project practitioners, further research opportunities that may expand possibilities for business application and positive social change, and my personal reflections.

Introduction

The purpose of this quantitative correlation study was to investigate the relationship between leadership style, project management experience, and success of virtual teams. With the increased level of global business activities (Knight & Liesch, 2016) and corresponding decentralization of business activities (Hitt, Li, & Xu, 2016), organizations are relying on virtual teams to plan and execute projects (Batarseh, Usher, & Daspit, 2017). Virtual teams, however, face some unique challenges over and above those of traditional face-to-face teams. One such challenge is leadership.

To fulfill the purpose of this study, I conducted a regression analysis to determine whether a statistically significant relationship exists between the independent and dependent variables. The independent variables were leadership style and project management experience. The dependent variable was the success of virtual teams. The results of the regression analysis presented a statistically significant relationship between

the variables. The conclusion thus was that leadership style and project management experience can predict the success of virtual teams.

To determine whether the independent variables offered a unique, significant contribution toward predicting the success of virtual teams, I used the *t* statistic to evaluate each one when the other independent variable was held constant. Only leadership style offered a unique, statistically significant contribution to predict the success of virtual teams ($p = .000$). Project management experience did not offer a unique statistical contribution toward predicting the success of virtual teams.

Presentation of the Findings

My primary goal in this study was to investigate the variables of leadership style, project management experience, and success of virtual teams and whether the research upheld the predictive generalizations. I used the quantitative method for this study. According to Fetters, Curry, and Creswell (2013), the quantitative approach is appropriate for investigating pervasiveness and patterns of association of phenomena. I used the correlational design for this study. According to Weathington et al. (2012), the correlational design is appropriate for studies where the researcher has no control over the participants. I used multiple regression analysis to explore the statistically significant correlations between the three variables. According to Hidalgo and Goodman (2013), multiple linear regression is the appropriate test for determining the relationship between two or more independent variables and one dependent variable.

To achieve the purpose of this study, I examined the potential existence of a significant relationship between leadership style, project management experience, and

success of virtual teams. My research question concerned the relationship between leadership style, project management experience, and the success of virtual teams. A research question helps a researcher to understand and examine the core concept of the problem statement. I constructed the research question in this study to align with and focus on the specific business problem.

In this study, I hypothesized that a correlation exists between leadership style, level of project management experience of team leaders, and the success of virtual teams. The hypotheses I tested in this study were as follows:

Ho: The linear combination of leadership style and project management experience will not significantly predict the success of virtual teams.

Ha: The linear combination of leadership style and project management experience will significantly predict the success of virtual teams.

I conducted multiple linear regression to address the research question. My aim was to determine whether leadership style and level of project management experience would predict the success of virtual teams. Statistical significance was determined using an alpha value (α) of 0.05. The independent variables in the regression were leadership style score and a score indicating the level of project management experience of the team leader. The dependent variable in the regression was a score for the success of the virtual team. The empirical evidence supported the alternative hypothesis *Ha*, showing statistically significant correlations between leadership style scores, scores for the level of project management experience of the team leader, and scores for the success of virtual teams.

One hundred and sixty participants completed the survey. I focused my initial data screening on the completeness of the responses. Four participants did not fully complete the survey, so I dropped those four cases from the dataset. Next, I focused my data screening efforts on finding univariate outliers on the three variables by examining the upper and lower limit values for their scores. For leadership style scores, where values above 3.98 or below 1.02 indicated outlying scores, there were no outliers. For project management experience scores, where values above 5.50 or below 1.50 indicated outlying scores, there were seven outliers. I removed the seven cases from the dataset. For the success of virtual teams scores, where values above 8.08 or below 4.76 indicated outlying scores, there were four outliers. I removed those four cases from the dataset. My final dataset for analysis consisted of responses from the remaining 145 cases.

Descriptive Statistics

Scores for leadership style ranged from 1.87 to 3.53, with a mean (*M)* of 2.57. Scores for project management experience ranged from 2.00 to 5.00, with $M = 3.45$. Scores for the success of virtual teams ranged from 4.75 to 7.00, with $M = 6.32$. I conducted Cronbach's alpha (α) test of reliability for each composite score. Reliability coefficients (α) were evaluated according to the rules of thumb by George and Mallery (2016), where $\alpha \geq .90$ = excellent, .89 to .80 = good, .79 to .70 = acceptable, .69 to .60 = questionable, .59 to .50 = poor, and <.50 = unacceptable. Table 3 presents the descriptive statistics on the composite scores. Figure 1 presents a chart on the composite means of the variables.

Table 3

Descriptive Statistics on Composite Scores

Scale	Min.	Max.	*M*	*SD*	Cronbach's α	no. items
Success of virtual teams	4.75 0.56	7.00	6.32		0.94	12
Leadership style	1.87 0.43	3.53	2.57		0.93	45
Years of project management	2.00 0.97	5.00	3.45		N/A[a]	1

Note. *N = 145*.
[a]Not a composite score.

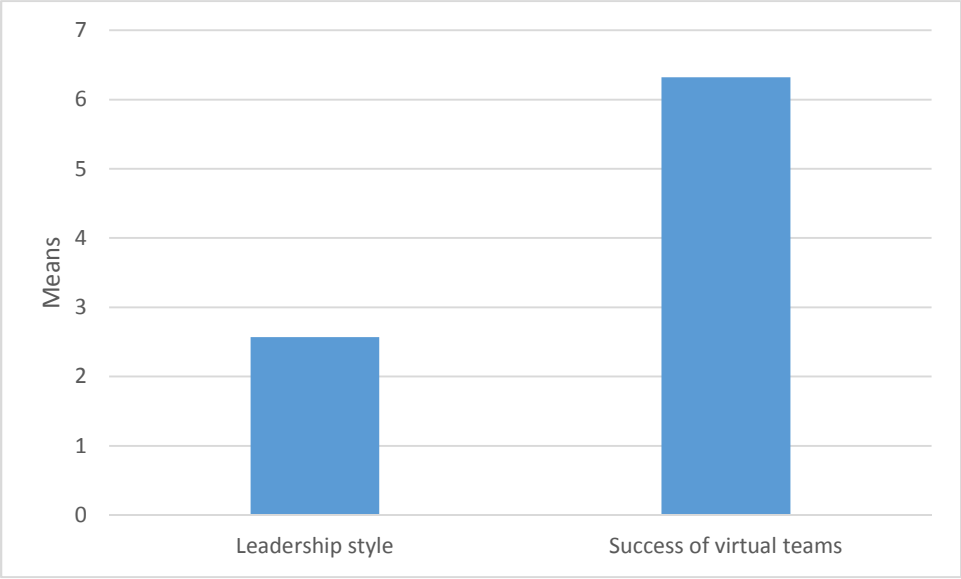

Figure 1. Means on the composite scores.

Prior to conducting the regression analysis, I assessed the assumptions of normality, linearity, homoscedasticity, and the absence of multicollinearity. Three Kolmogorov–Smirnov (KS) tests, one per score with statistically significant ($p < .05$) results for all three scores, tested the assumption of normality. I charted a scatter plot to test linearity and found little to no deviation from a linear distribution; the data met the assumption of linearity. I assessed the presence of multicollinearity with variance inflation factors (VIFs), where any VIF value above 10.0 indicated the presence of multicollinearity. There were no VIF values above 10.0, meeting the assumption of the absence of multicollinearity standard. Table 4 displays the KS significance values and VIF values. Figures 2, 3, and 4 display the normality on the individual scores.

Table 4

Assumptions Assessment of Normality (KS Significance Values) and Multicollinearity (VIF Values)

Composite score	KS significance values	VIF values
Success of virtual teams[a]	.000**	____
Leadership style	.024*	1.101
Years of project mgmt.	.024*	1.101

[a]Dependent variable.
** $p < .01$. * $p < .05$.

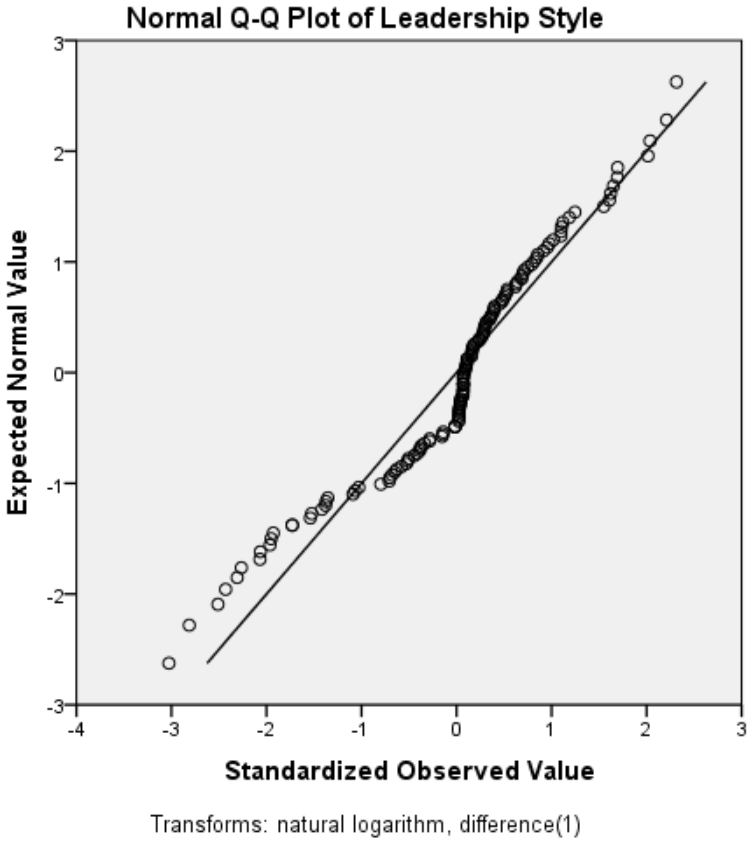

Figure 2. Normal Q-Q plot on leadership style scores.

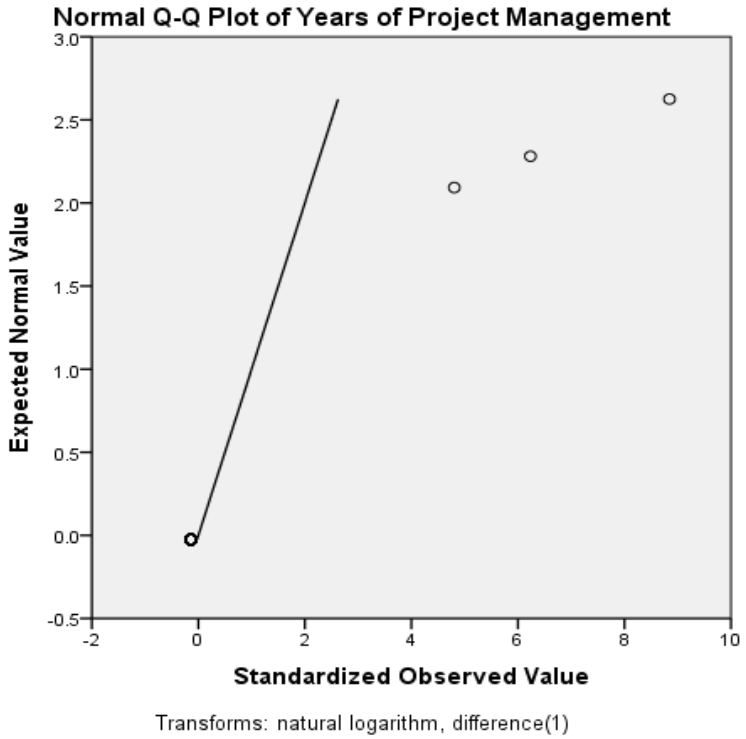

Figure 3. Normal Q-Q plot on years of project management scores.

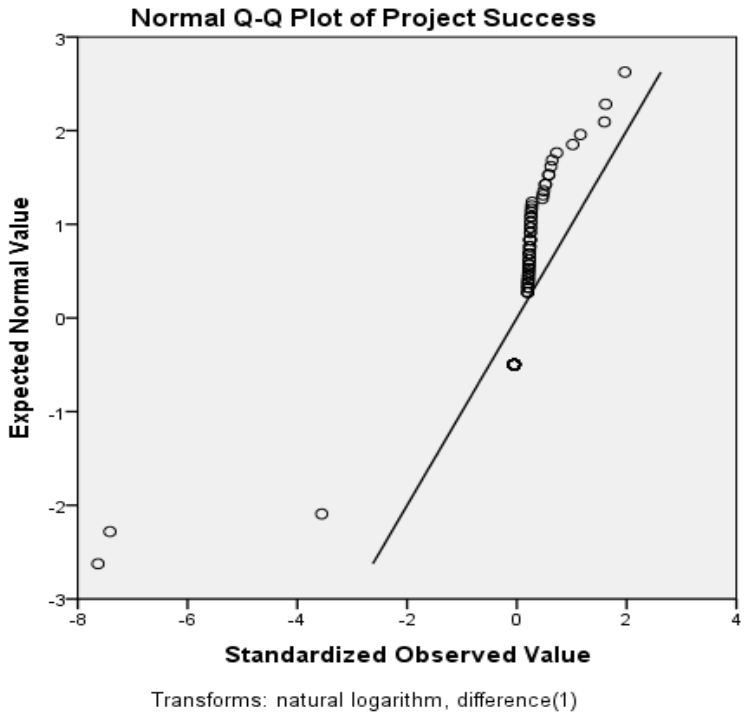

Figure 4. Normal Q-Q plot on success of virtual team's scores.

To assess the assumption of linearity, I used a scatter plot and found little to no deviation from a linear distribution; thus, the data met the assumption of linearity. I assessed homoscedasticity with a residuals scatter plot and found no nonrandom pattern; thus, the data met the assumption of homoscedasticity. Figures 5 and 6 display the scatter plots.

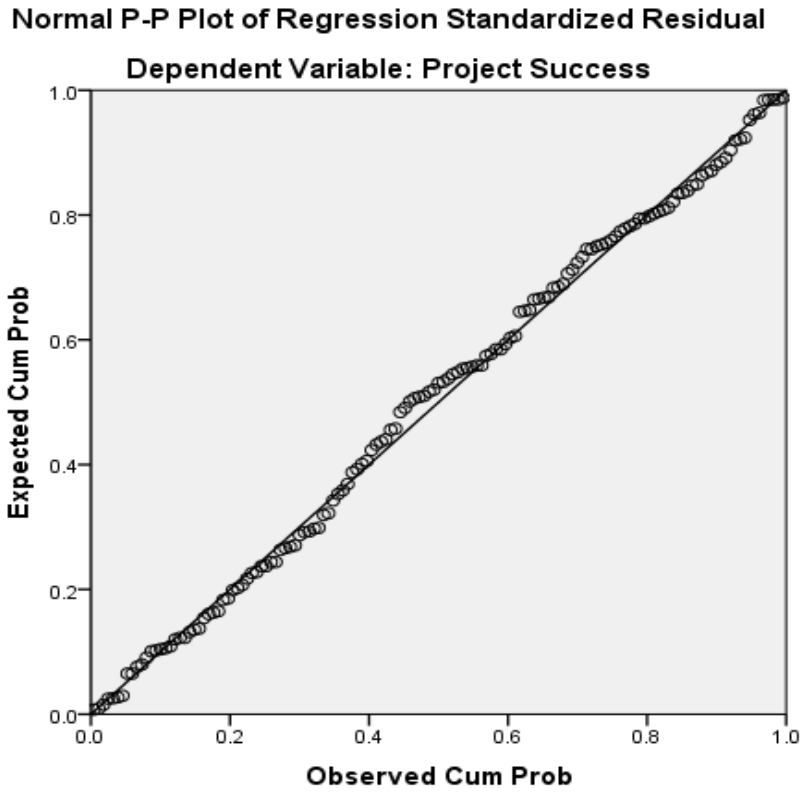

Figure 5. Linearity between the independent variables and dependent variable.

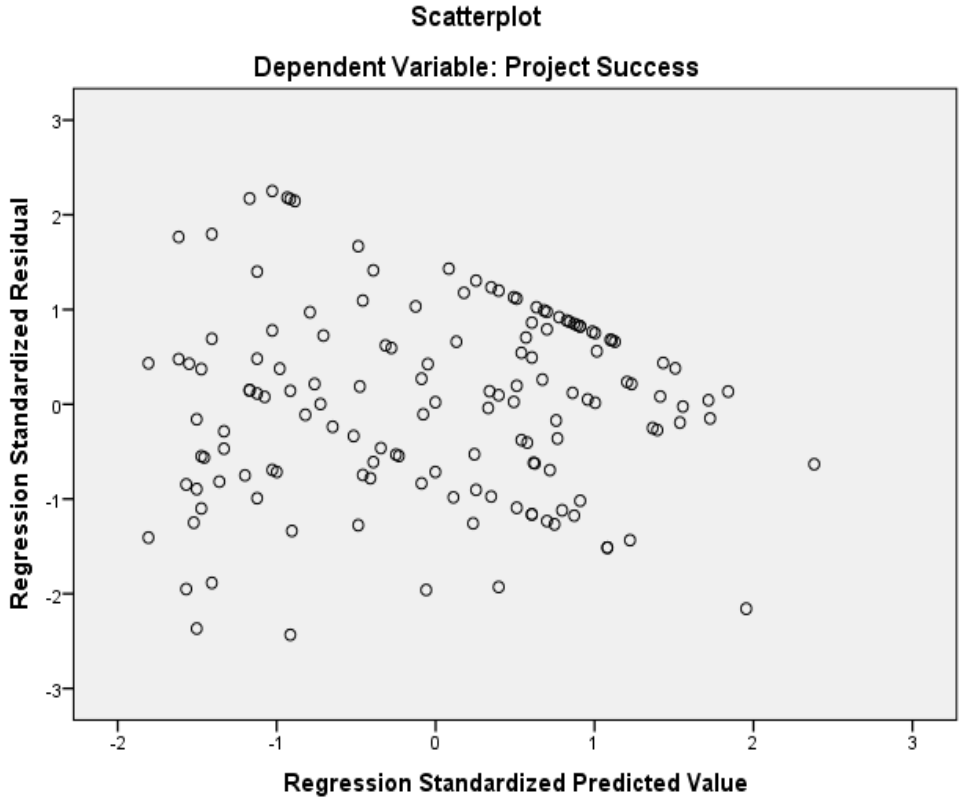

Figure 6. Homoscedasticity on residuals between the independent variables and dependent variable.

Discussion

The results of the regression analysis were statistically significant, $F(2, 142) = 39.21$, $p = .000$, $R^2 = .35$, indicating that leadership style and years of project management predict the success of virtual teams. The independent variables account for (R^2) 35% of the variance in the success of virtual teams. I assessed each independent variable to determine whether it offered a unique, significant contribution toward predicting the success of virtual teams. I evaluated this using the *t* statistic for each independent variable when the other independent variable was held constant. Of the two variables, only leadership style offered a unique, statistically significant contribution to predict the success of virtual teams ($p = .000$). Thus, the null hypothesis—that the linear

combination of leadership styles and project management experience will not significantly predict the success of virtual teams—is rejected in favor of the alternative hypothesis. Table 5 presents the results of the regression analysis.

Table 5

Leadership Style and Years of Project Management Predicting the Success of Virtual Teams

Coefficients (success of virtual teams)					
Source	*B*	*SE B*	*β*	*t*	*p*
Leadership style	.71	.09	.55	7.76	.000
Yrs. of project mgt	.07	.04	.12	1.71	.090

Note. $F(2, 142) = 39.21$, $p = .000$, $R^2 = .35$.

The findings from this study align with not only the path-goal theory of leadership as presented in the theoretical framework section but also with several other theories that posit a relationship between leadership style and team success. The path goal theory posits leaders can positively inspire performance, contentment, and motivation of employees by clarifying the path on how to achieve goals, by positive reinforcement through rewards for goal achievement, and by removing obstacles in the path of achieving those goals (Malik, Aziz, & Hassan, 2014). Path goal theorists believe leader behavior and characteristics can impact team performance. The leader is able to impact team performance by clarifying directions and removing obstacles (Hopkins, O'Neil, & Stoller, 2015). Transformational leadership theorists posit team members feel better about their work and work to exceed expectations when leaders act in ways that emphasize collective values and needs of the group (Van Dierendonck, Stam, Boersma, De Windt, & Alkema, 2014). Braun, Peus, Weisweiler, and Frey (2013) found

transformational leadership style positively related to team performance. Even when Braun et al. introduced trust in team members as a mediating factor, it did not impact the relationship between members' perception of leaders' transformational style and team performance. Authentic leadership is a pattern of transparent and ethical leader behavior based on openness in sharing the information needed for decision-making while at the same time, considering the input of the followers (Avolio, Walumbwa, & Weber, 2009).

Several researchers have investigated the relevance of leadership styles to the effectiveness and success of teams, virtual and face-to-face. Ziek and Smulowitz (2014) investigated emergent leadership in virtual teams and found leadership competencies especially in relation to asking questions, cognitive and creative ability, and vision setting impact virtual team performance. Hoegl and Muethel (2016) investigated shared leadership in virtual teams and found that type of leadership is more effective in certain virtual teams. Fan, Chen, Wang, and Chen (2014) investigated the impact of how leaders' use of motivating language and feedback on the performance of virtual team members. Fan et al. found a positive correlation between leaders' use of motivating language and team creativity and success. Pinar, Zehir, Kitapci, and Tanriverdi (2014) found the style of leadership of project managers impacted the learning and success of virtual teams.

The overarching theme in all the research is style of leadership impacts the success of teams. The importance of leadership style in team success is more critical in virtual teams where members have limited or no face-to-face contact than in traditional teams. According to Hoch and Kozlowski (2014), leadership is the key to maintaining

team effectiveness and minimizing motivation and coordination losses in virtual team settings. This important role of leadership in virtual teams is confirmed by the finding in this study that leadership style offered a statistically significant contribution to predict success of virtual teams.

The findings of this study also align with the generalization that the level of project management experience can impact success of teams. Easton and Rosenzweig (2012) found the experience level of project managers impacts success or failure of teams. According to Hwang and Ng (2013), project management experience is one way project managers can develop competency which in turn helps them manage their teams successfully.

The importance of experience for the success of virtual teams was considered by Erez et al. (2013). Erez et al. stated leaders' hands-on experience is important for success of global virtual teams. Erez et al. noted however new team leaders lack this experience. To overcome this, the authors proposed an experiential learning approach for new global virtual team leaders. Similarly, the results of interviews conducted by Verburg, Bosch-Sijtsema, and Vartiainen in their 2013 study and confirmed by Iorio and Taylor (2015) showed team leaders' project management experience was an important factor in virtual teams.

Other researchers have found a symbiotic relationship between leadership style and project management experience. In a 2013 study on the factors that impact success of information technology projects, Keil, Lee, and Deng found leadership skills and scope management skills of team leaders can derive from their project management

experience and the level of project management experience of team leaders can inform their leadership skills and scope management skills. Keil et al. found both leadership style and project management experience are important determinants of success of teams. This finding is in line with the result of the regression analysis in this study which showed a statistically significant relationship between the three variables. Thus, I conclude in this study that a combination of leadership style and level of project management experience can predict the success of virtual teams.

Applications to Professional Practice

The findings of this research will be valuable to organizations that use virtual teams and for project managers who lead virtual teams. There has been a proliferation in the use of virtual teams by organizations (Mattarelli, Tagliaventi, Carli, & Gupta, 2017) because of the perceived advantages of their use. This proliferation has been made possible because of improvements in technology (Ford, Piccolo, & Ford, 2017). As Yilmaz (2016) stated, virtual teams are ubiquitous in organizational settings. Presenting information and empirical evidence about the success of virtual teams could be of beneficial interest to organizations that use these teams and the project managers who lead the virtual teams.

The findings and implications of this study may help organizations improve the effectiveness and success of their virtual teams by refocusing on the leadership and composition of the teams. The findings show leadership style both by itself and in combination with project management experience can predict success of virtual teams. Organization leaders may want to look at how they hire project managers and who will

lead their virtual teams. Suggestions in this regard will include hiring leaders with project management experience and whose goals and views align with those of the organizations. Another suggestion could be designing a collaborative experiential training programs for virtual team leaders as proposed by Erez et al. (2013).

The findings and implications of this study may help virtual team leaders design their leadership styles to improve the effectiveness and success rate of their teams. A consensus exists among scholars that style of leadership impacts success of teams. Scholars however disagree on what style of leadership bodes best for teams. Researchers such as Iscan, Ersarı, and Naktiyok (2014) have posited transformational leadership is best suited for team success. Other researchers have argued no one leadership style fits all situations (Larsson, Eriksson, Olofsson, & Simonsson, 2015) and the appropriate leadership style will depend on the context of the team. Some researchers have argued project managers should align their leadership style to factors such as the setting of the team (Strang, 2011), stage of the project (Nixon, Harrington, & Parker, 2012) or composition of the team (Tuuli, Rowlinson, Fellows, & Liu, 2012). Strang (2011) found the contingent reward feature of transactional leadership style was more appropriate for virtual teams than transformational leadership style.

This study did not include an investigation of the impact of any one leadership style on the success of virtual teams. The relevant variable in the study is leadership style. Accordingly, the findings are not specific to any specific style of leadership. I agree with Larsson, Eriksson, Olofsson, and Simonsson (2015) that no one leadership style will work best in every situation. Garza, Bryant, Guerra, Rivera, and Rodriguez

(2015) stated the ability of a leader to adapt to different internal and external factors is critical for success of the team. Accordingly, virtual team leaders should adjust their leadership styles as necessary for team success and to meet organizational goals.

Another implication for professional practice is the findings are readily applicable and generalizable to the practicing community. The population for this study was practicing project managers who have earned the PMP® certification. This population contrasts with population of much of other virtual team research which are based on student population. Gibbs, Sivunen, and Boyraz (2017) stated much of the research on virtual teams are based on student samples which are easy to access and control.

Lastly, this study adds to the existing body of knowledge on leadership of virtual teams. Numerous studies in existence indicate a positive correlation between leadership style and success of virtual teams. There is however a dearth of research on the nature of that relationship when a moderating factor such as project management experience is introduced. This study helps to fill that gap in knowledge and also becomes a reference point for project managers and academicians.

Implications for Social Change

The findings of this study present some implications for positive social change in society. The continuing growth in the use of virtual teams means there is likely to be a continuing increase in the number of people who work virtually. Failure of these virtual teams could have adverse impact on psyche of workers and the community. Researchers have found effective leadership is important for the success of teams (Cunningham, Salomone, & Wielgus, 2015; Heldal & Antonsen, 2014). Tourish (2014) stated better

leadership is the panacea for business failure. The findings of this study and the literature presented confirm that relationship between leadership style and virtual team success. I hope that armed with that knowledge, virtual team leaders will tailor their style of leadership appropriately to reduce the failure rate of their teams.

A reduction in failure rate of virtual teams could lead to higher job satisfaction and improved morale and retention among team members. Huang et al. (2016) stated organizations should promote employee job satisfaction since it correlates with performance and turnover. Huang et al. restated Vermeeren, Kuipers, and Steijn (2014) who had found a positive relationship between effective leadership, human resource management, and job satisfaction which in turn led to increased performance of team members.

Another positive social implication of this study is effective leadership and successful virtual teams could support socioeconomic empowerment and mobility leading to a higher standard of living in the local communities. Continued and successful use of virtual teams may lead to creation of new jobs and higher wages for new and existing jobs which may create a more socially and economically viable segment in the population. Gentrification and reduced flight of capital may also result from successes of virtual teams. Gentrification refers to the increase in real estate value in an area usually as a result of rehabilitation and influx of investments (Mahmoud, 2017). With gentrification usually comes increased property values and modern amenities and infrastructure which improve the quality of life (Guerrieri, Hartley, and Hurst, 2013).

Lastly, another implication for social change is improved knowledge and tolerance of cultural and geographic diversity. Virtual teams are made up of people who collaborate on projects but have little or no face-to-face time (Lilian, 2014). Members of virtual teams, especially global virtual teams may come from diverse cultural and geographic settings (Hosseini, Zuo, Chileshe, & Baroudi, 2013). As team members work together and build trust among themselves, they may develop an appreciation and tolerance of their diversities.

Recommendations for Action

Use of virtual teams by organizations although still growing, has not reached its full capacity. Organizations and leaders are still skeptical about the effectiveness of these teams as tools for achieving their goals (Purvanova, 2014). This skepticism derives from the fact that a high percentage of teams fail to deliver their projects in a timely manner or at all, leading to financial and intellectual losses (Davenport, 2016). Virtual teams offer unique benefits which traditional face-to-face teams are not able to. Such benefits include flexibility and responsiveness (Gupta & Pathak, 2017). These benefits outweigh the unique leadership, trust, and communication challenges virtual teams face (Dube & Marnewick, 2016; Fernandez, & Jawadi, 2015). The discussion in organizations and professional associations should focus on how to overcome the challenges and leverage the benefits of virtual teams.

There is a body of literature on the challenges faced by virtual teams and recommendations on overcoming those for dealing with those challenges. According to Olariu and Aldea (2014), virtual teams can outperform traditional face-to-face teams if

the right processes are instituted. The results of the regression analysis in this study indicate leadership style and project management experience can predict success of virtual teams. It is incumbent on virtual team leaders to adopt the findings of this study and other studies in their practice to try and reduce the failure rates of their teams.

The findings in this study could be beneficial to virtual team leaders. I am willing to participate in discussions of the findings in any audience setting. I will contact the local branch of PMI and offer to speak about the study at one of their events. I will also contact my sample and offer a copy of a synopsis of the study to each of them. Lastly, this study will be published and be held in the annals of the ProQuest database.

Recommendations for Further Research

In this study, I investigated the relationship between three variables, leadership style, project management experience, and success of virtual teams. The finding show a combination of leadership style and project management experience will predict virtual team success. I did not investigate how a combination of particular leadership styles and project management experience will impact virtual teams as that would have been too time consuming. I recommend further research into the relationship between particular leadership styles, project management experience, and success of virtual teams.

To collect data on the success of virtual teams, I used the PIP subscale developed by Pinto and Slevin (1996). As designed, the PIP is for collecting data on traditional face-to-face teams not for virtual teams. Since currently no instrument is designed to collect data on success of virtual of teams (Lee, 2010), I used the PIP for this study. I recommend further research to develop an instrument for collecting data on virtual teams.

Another area that requires further research is limiting bias in responses. The study participants were required to self-report their responses. According to Kormos and Gifford (2014), self-reporting is susceptible to bias as there is no way to cross check and validate them. I recommend further research on how to limit or eliminate bias in self-reporting.

This study is correlational. The findings indicate a correlational relationship between the variables. Correlation is not causation (Panizza & Presbitero, 2014). Further research is needed to determine if leadership style by itself or in combination with another variable will cause virtual teams to succeed.

Reflections

In this study, I investigated the relationship between leadership style, project management experience, and success of virtual teams. I am passionate about this topic for two reasons. First, I have always had an interest in leadership as a subject. Second, I wanted to contribute in some way to help improve the success rates of teams.

The subject of leadership has held a fascination for me since my childhood. My interest in the subject started during my middle school years in Nigeria studying the great kingdoms and empires of Africa, Europe, and the Middle East. My interest continued in college when I studied the political philosophers of the Renaissance and Reformation era such as Machiavelli, Thomas Moore, and John Locke. I was always fascinated by how people acquire, retain, exercise, and lose leadership and power. As I began my professional career, I realized that work activities and projects were team-based and each

team had a leader or leaders who provided direction for the members. That realization led me to start contemplating what if any impact those leaders had on the teams.

As I became more exposed to the literature and practice of project management, I learned of the high rate of team failures. Most of the team failures, especially on teams with virtual components were a result of leadership challenges. Given my interest in leadership and being a practicing project manager who has led both virtual and face-to-face teams, it was natural that I gravitated towards the topic of my study. When I started this study, I had the preconceived notion that leadership style will have an effect on team performance. The study findings validated my belief. In conducting my study, I tried to mitigate or control any biases that may result from my preconceived notion. In my review of existing literature, I presented both studies that supported and contradicted that notion. I used simple random sampling method to select the sample so each member of the population had a chance of being selected.

Walden University provided me the appropriate forum to conduct this study. The Walden University doctoral program is a rigorous and challenging program. When I started the program, I had no illusions that it would be easy but I did not think it would take as much time as it did. I had numerous moments of self-doubt and thoughts about quitting. I am glad I persevered and have completed my study.

Conclusion

The purpose of this quantitative correlational study was to determine if a combination of leadership styles and project management experience could predict success of virtual teams. The independent variables were leadership style and project

management experience. The dependent variable was success of virtual teams. The research question I sought to answer was: what is the relationship between leadership styles, project management experience, and the success of virtual teams? In answering that question, the hypotheses I tested were:

Ho: The linear combination of leadership styles and project management experience will not significantly predict the success of virtual teams.

Ha: The linear combination of leadership styles and project management experience will significantly predict the success of virtual teams.

The results of the regression analysis presented a statistically significant relationship between the three variables, thus rejecting the null hypothesis. Following on those results, the answer to the research question is that a combination of leadership style and project management experience can impact the success of virtual teams.

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Appendix A: Introduction and Informed Consent

INTRODUCTION AND CONSENT FORM FOR

Study Investigating the Correlation between Leadership Style, Project Management Experience, and Success of Virtual Teams

You are invited to take part in a research study designed to understand the relationship between leadership style, level of project management experience, and the success of virtual teams. This form is part of a process called "informed consent" to allows you to understand what this study is about before deciding whether to take part. This study is being conducted by a researcher named Albert Udom, who is a Doctor of Business Administration student at Walden University. You were selected as a possible candidate for the study because you are a member of the Project Management Institute and hold the PMP® certification.

Background Information

The purpose of this study is to determine if style of leadership and level of project management experience will affect the success of virtual teams. Data will be collected on the style of leadership adopted on the identified teams, the level of project management experience, and the success or otherwise of the project/teams. It is hoped that the findings and recommendations of this study will be of valuable assistance to project managers in their approach to leading teams with dispersed members who have little or no face-to-face contact.

Procedures

If you agree to participate in this study, you will be asked to take an electronic survey. The survey will be in three parts, each part designed to collect information on your level of project management experience, leadership style, and project success. The survey adopts a Likert-style response system. The survey is about 3 pages long and I anticipate it will take approximately 30 minutes to complete. The survey is completely anonymous. You do not have to provide your name, email address, or any identifying information to participate in the study.

Voluntary Nature of the Study

Your participation in this study is voluntary. Your decision to participate or not to participate in this study will be respected. No one within your professional association or organization will know about your decision to participate or not participate in the study. If you decide to participate in the study now, you can still change your mind during the study. If you feel stressed during the study you may stop at any time. You may skip any questions that you feel are too personal.

Risks and Benefits of Being in the Study

Your responses to the survey will anonymous. You do not have to provide any personal information, so there is no personal risk associated with participating in the study, nor will it have a negative impact on your standing within your organization. The study does not involve any physical risk and it is highly unlikely that you will be psychologically affected. The benefits of the study include improvement to teleworking, virtual, dispersed

employee networks and teams. This study could help provide a better understanding of what style of leadership is better suited to for managing these virtual teams.

Compensation:

There will be no compensation provided for your participation in this study.

Confidentiality:

Any information you provide will be kept confidential. The researcher will not use your responses for any purposes outside of this research project. All information will be kept in password protected electronic files and hard copy data will be locked in a protected filing cabinet. Only the researcher will have access to these electronic and physical records. These records will be destroyed five years after the research project is completed.

Contacts and Questions:

The researcher conducting the study is Albert Udom. The researcher's doctoral study chairperson is Dr. Cheryl McMahan. If you have questions, the contact information is: Albert Udom, MBA. PO Box 3381, Danville, CA 94526. Telephone: (925) 202 1067. E-mail: albert.udom@waldenu.edu.

Dr. Cheryl McMahan. E-mail: Cheryl.McMahan@waldenu.edu

If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 3121210. Walden University's approval number for this study is 01-25-17-0182779 and it expires on January 24, 2018**.**

Please retain a copy of this consent form for your records.

Statement of Consent:

___I am a member of the Project Management Institute, have the PMP® designation, and am over the age of 18.

___I am not a member of the Project Management Institute and/or do not have the PMP® designation and/or am not over the age of 18 (If you check this option, you will not be able to take part in this study).

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By copying the below link to the electronic survey onto or web browser and entering the survey site, I am agreeing to the terms described above.

Copy this link and paste it on your web browser to go to the survey:

https://www.surveymonkey.com/r/UDOM

Appendix B: Demographic Information

Questionnaire – Part A
Demographics

Please check the response to each statement that best describes your situation.

Personal Information

Gender: ☐ Male ☐ Female

Age: ☐ 20-25 ☐ 26-30 ☐ 31-40 ☐ 41-50 ☐ >50

In what year did you obtain your PMP Certification? _____

How many years of project management experience do you have?

☐ <1 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ >20

How many years of virtual project experience do you have?

A virtual project means any project consisting of team members distributed geographically. Virtual project team members could also be from different organizations, different cultures, or working in different time zones. However, the key is because of geographic dispersion, a virtual team has to rely on communications technologies like e-mail or chat rooms to achieve project goals.

☐ <1 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ >20

Education Level: Highest degree obtained: ☐ Associates ☐ Bachelors ☐ Masters ☐ Doctorate

Project Information

Is your project a virtual project, as described above? ☐ Yes ☐ No

What industry is your firm in? ☐ IT ☐ Telecom ☐ Manufacturing ☐ Other

What is the scope of your firm? ☐ Regional ☐ National ☐ Global

What is the size of your project team?

☐ <6 ☐ 6-15 ☐ >15

What is the planned schedule for the project?

☐ <6 months ☐ 7-12 months ☐ >12 months

What is the approximate budget for the project?

☐ < $100,000 ☐ $100,000 - $250,000 ☐ $251,000 - $500,000 ☐ > $500,000

Continued →

What is the greatest time difference between you and other project team members?

- ☐ There is no time zone difference
- ☐ Time zone difference is less than 3 hours
- ☐ Time zone difference is between 4 and 9 hours hours
- ☐ Time zone difference is greater than 10 hours

Which statement best describes the number of organizations or firms represented by project team members?

- ☐ Team members represent a single organization
- ☐ Team members represent two or more different organizations

How often do you personally use video conferencing to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use email to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use voice mail to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use the telephone to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use Web-based intranet tools to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use conference calling to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use an electronic meeting system to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐
How often do you personally use instant messaging to work with team members on the project?	1-Never ☐	2-Seldom ☐	3-Moderately ☐	4-Frequently ☐	5-Almost always ☐

Appendix C: MLQ 5x

Multifactor Leadership Questionnaire

Leader Form

My Name: _____ Date: _____

Organization ID #: _____ Leader ID #: _____

This questionnaire is to describe your leadership style as you perceive it. Please answer all items on this answer sheet. **If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank.**

Forty-five descriptive statements are listed on the following pages. Judge how frequently each statement fits you. The word "others" may mean your peers, clients, direct reports, supervisors, and/or all of these individuals.

Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

1.	I provide others with assistance in exchange for their efforts	0	1	2	3	4
2.	I re-examine critical assumptions to question whether they are appropriate	0	1	2	3	4
3.	I fail to interfere until problems become serious	0	1	2	3	4
4.	I focus attention on irregularities, mistakes, exceptions, and deviations from standards	0	1	2	3	4
5.	I avoid getting involved when important issues arise	0	1	2	3	4
6.	I talk about my most important values and beliefs	0	1	2	3	4
7.	I am absent when needed	0	1	2	3	4
8.	I seek differing perspectives when solving problems	0	1	2	3	4
9.	I talk optimistically about the future	0	1	2	3	4
10.	I instill pride in others for being associated with me	0	1	2	3	4
11.	I discuss in specific terms who is responsible for achieving performance targets	0	1	2	3	4
12.	I wait for things to go wrong before taking action	0	1	2	3	4
13.	I talk enthusiastically about what needs to be accomplished	0	1	2	3	4
14.	I specify the importance of having a strong sense of purpose	0	1	2	3	4
15.	I spend time teaching and coaching	0	1	2	3	4

Continued →

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	1	2	3	4

16. I make clear what one can expect to receive when performance goals are achieved 0 1 2 3 4
17. I show that I am a firm believer in "If it ain't broke, don't fix it." 0 1 2 3 4
18. I go beyond self-interest for the good of the group 0 1 2 3 4
19. I treat others as individuals rather than just as a member of a group 0 1 2 3 4
20. I demonstrate that problems must become chronic before I take action 0 1 2 3 4
21. I act in ways that build others' respect for me 0 1 2 3 4
22. I concentrate my full attention on dealing with mistakes, complaints, and failures 0 1 2 3 4
23. I consider the moral and ethical consequences of decisions 0 1 2 3 4
24. I keep track of all mistakes 0 1 2 3 4
25. I display a sense of power and confidence 0 1 2 3 4
26. I articulate a compelling vision of the future 0 1 2 3 4
27. I direct my attention toward failures to meet standards 0 1 2 3 4
28. I avoid making decisions 0 1 2 3 4
29. I consider an individual as having different needs, abilities, and aspirations from others 0 1 2 3 4
30. I get others to look at problems from many different angles 0 1 2 3 4
31. I help others to develop their strengths 0 1 2 3 4
32. I suggest new ways of looking at how to complete assignments 0 1 2 3 4
33. I delay responding to urgent questions 0 1 2 3 4
34. I emphasize the importance of having a collective sense of mission 0 1 2 3 4
35. I express satisfaction when others meet expectations 0 1 2 3 4
36. I express confidence that goals will be achieved 0 1 2 3 4
37. I am effective in meeting others' job-related needs 0 1 2 3 4
38. I use methods of leadership that are satisfying 0 1 2 3 4
39. I get others to do more than they expected to do 0 1 2 3 4
40. I am effective in representing others to higher authority 0 1 2 3 4
41. I work with others in a satisfactory way 0 1 2 3 4
42. I heighten others' desire to succeed 0 1 2 3 4
43. I am effective in meeting organizational requirements 0 1 2 3 4
44. I increase others' willingness to try harder 0 1 2 3 4
45. I lead a group that is effective 0 1 2 3 4

Appendix D: Project Implementation Profile

Questionnaire - Part B

Project Implementation Profile
Project Success

Think of the virtual project you just described in Part A. Consider the statement below and rate each statement according to the degree to which you agree with the statement as it concerns your project. A rating of 4 indicates that the statement is neutral and you neither agree nor disagree. A rating above 4 indicates agreement with that statement as it concerns your implementation. A rating below 4 indicates disagreement with the statement.

	Strongly Disagree			Neutral			Strongly Agree
1. This project has/will come in on schedule	1	2	3	4	5	6	7
2. This project has/will come in on budget	1	2	3	4	5	6	7
3. The project that has been developed works, (or if still being developed, looks as if it will work	1	2	3	4	5	6	7
4. Given the problem for which it was developed, this project seems to do the best job of solving that problem, i.e., it was the best choice among the alternative	1	2	3	4	5	6	7
5. The results of this project represent a definite improvement in performance over the way clients used to perform these activities	1	2	3	4	5	6	7
PROJECT SCORE (Total items 1-5 above)	1	2	3	4	5	6	7
6. The project will be/is used by its intended clients	1	2	3	4	5	6	7
7. Important clients, directly affected by this project, will make use of it	1	2	3	4	5	6	7
8. We are confident that non-technical start-up problems will be minimal, because the project will be readily accepted by its intended users	1	2	3	4	5	6	7
9. I am/was satisfied with the process by which this project is being/was completed	1	2	3	4	5	6	7
10. This project has/will directly benefit the intended users: either through increasing efficiency or employee effectiveness	1	2	3	4	5	6	7
11. Use of this project has/will directly lead to improved or more efficient decision making or performance for the clients	1	2	3	4	5	6	7
12. This project will have a positive impact on those who make use of it	1	2	3	4	5	6	7
CLIENT SCORE (Total items 6-12 above)							
OVERALL SCORE (Total of all items 1-12)							

Appendix E: Mind Garden License

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her research:

Instrument: ***Multifactor Leadership Questionnaire***

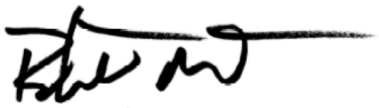
Authors: ***Bruce Avolio and Bernard Bass***

Copyright: ***1995 by Bruce Avolio and Bernard Bass***

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any published material.

Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

Appendix F: Innodyne PIP Consent Letter

INNODYNE, INC.

Advanced Systems for Management

734 ORCHARD HILL DRIVE - PITTSBURGH, PA 15238
412 - 963-6701

December 14, 2016

Mr. Albie Udom
P.O. Box 3381
Danville, CA 94526

Dear Mr. Udom:

I am happy to provide you with a copy of the *Project Implementation Profile (PIP).*

This denotes our permission for you to use the PIP as a survey instrument for your research project. Please note that this permission is only for research purposes and does not include using it for consulting, training, or any other commercial reason.

Best of luck with your research.

Regards,

Susan M. Slevin
Innodyne, Inc.
734 Orchard Hill Dr.
Pittsburgh, PA 15238
412-963-9691
e-mail: dpslevin@katz.pitt.edu

Appendix G: NIH Completion Certificate

Certificate of Completion

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

Date of completion: 03/10/2012.

Certification Number: 884917.