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Strategies to Promote IT Project Success

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This is to certify that the doctoral study by

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Abstract

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MS, Embry-Riddle Aeronautical University, 1994

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Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Many project managers and business leaders lack effective strategies to manage information technology (IT) projects, which may inhibit business leaders from successfully implementing IT changes. The purpose of this multiple case study was to explore strategies that IT leaders use to successfully implement IT projects. The target population consisted of IT leaders in IT organizations located in the Saint Louis Metro East area. The conceptual framework consisted of the general systems theory and the coordination theory. Data collection included organizational documents and semistructured interviews with 6 qualified participants. Data analysis included coding and thematic analysis, member checking, and methodological triangulation. The 4 themes emerging from the data analysis included (a) effective communication, (b) project planning, (c) project execution management, and (d) project closure. The themes highlighted practical strategies to effectively manage the implementation of IT projects. Findings may enhance the organization's position and provide additional employment opportunities in the community.

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Dedication

I dedicate this doctoral study to my wife, Didi, and my daughters, Holly and Jennifer. They provided support during my military years and through this doctoral journey. They allowed me to work almost every Saturday in obtaining this doctoral degree. Thank you for your love, support, and encouragement.

I also dedicate this study to my parents, Ernie and Edith Scheuchner. My parents worked hard to give me a chance to succeed. Although not here today, I believe they would have been proud to introduce me as a doctor. Rest in peace Mom and Dad.

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Many people provided support and encouragement during my doctoral journey. I include my family members, peers, friends, and committee members. All helped to keep my motivation high during this long journey. I want to offer special thanks and gratitude to my committee chair and mentor, Dr. Ify Diala. Your support, guidance, and informative feedback helped me to obtain this goal. I also thank Dr. Brandon Simmons, second committee member; Dr. Yvonne Doll, URR; and Dr. Susan Davis, DBA program director. Thank you all for your advice and help throughout my journey.

Table of Contents

List of Tables

Section 1: Foundation of the Study

Information technology (IT) plays an important role in sustaining the capabilities of a business. Organizational leaders bolster their IT capabilities in efforts to improve their business operations and competitive advantage (Haron, Gui, & Lenny, 2014). Organizational leaders also use projects to advance their business operations (Papke-Shields & Boyer-Wright, 2017). By applying information technology innovations, organizational leaders connect organizational infrastructures across multiple organizations while sustaining dynamic systems (Thalmann, Bachlechner, Demetz, & Manhart, 2014). Organizational leaders require these capabilities to execute their business strategies and maximize business value; however, organizational leaders sometimes encounter failures with the implementation of their IT products and services.

Background of the Problem

Organizational leaders commit a significant amount of money for IT products to advance business operations and improve firm capabilities (Rivera & van der Meulen, 2014). However, organizational leaders have encountered increasing global competition as technological advances threatened established products and markets (Lucia-Palacios, Bordonaba-Juste, Polo-Redondo, & Grunhagen, 2016). Organizational leaders spent $3.8 trillion USD worldwide on IT products during 2014 (Chaysin, Daengdej, & Tangjitprom, 2016; Rivera & van der Meulen, 2014). Organizational leaders sought additional value and capabilities through IT products.

The continuing development of IT capabilities improved organizational proficiencies while creating complex infrastructures. Organizational leaders strengthened

their business operations and decision-making processes with IT investments (Haron et al., 2014). Organizational leaders established complex infrastructures to stretch capabilities across multiple organizations and support dynamic environments (Thalmann et al., 2014). With the increased complexity involved with IT capability, leaders face problems with implementation.

Increased IT complexity increases the risk of implementation failure. Complexity increases the risk level of IT project implementation (Williams, 2017). With most IT projects, organizational leaders experienced project cancellations or a failure to meet either budget, schedule, or functionality specified in the contract scope (Kaleshovska, Josimovski, Pulevska-Ivanovska, Postolov, & Janevski, 2015). The failure of IT projects presents organizational leaders with economic challenges and possibly leads to organizational failure.

Problem Statement

Ineffective IT project management may lead to revenue loss, lost market share, and the inability to sustain competitiveness (Cecez-Kecmanovic, Kautz, & Abrahall, 2014). The success rate of worldwide IT projects lingered around 35%, indicating that many organizations failed to achieve their strategic goals (Terlizzi, de Souza Meirelles, & de Moraes, 2016). The general business problem was that some IT projects fail due to project management leaders lacking the skills to effectively lead their projects, which can cause loss of profits, lost market share, and inability to sustain competitiveness for the organization. The specific business problem was that some IT leaders lack the strategies to effectively manage their information technology projects.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies that IT leaders use to effectively manage their IT projects. I collected data from six IT leaders in six organizations in the St. Louis Metro East area. I selected these organizations because the organizational leaders had implemented successful strategies to effectively manage their IT projects. Results from this study may help business leaders increase their IT project success rate and may contribute to social change through the creation of new jobs and economic development.

Nature of the Study

Three types of research methods were available. The methods are quantitative, qualitative, and mixed-methods (Chatha, Butt, & Tariz, 2015). I used the qualitative method because my purpose was to understand events rather than measure them (see Dasgupta, 2015). Qualitative methodology provides an opportunity to explore participants' challenges, provide deeper insight, and identify themes through data analysis (Gergen, Josselson, & Freeman, 2015). After considering quantitative and mixed-methods approaches, I did not find these methodologies appropriate for this study. The use of quantitative and mixed-methods approaches focuses more on the analysis of numerical data rather than on exploring the experiences of the participants (Browne, Pullinger, Medd, & Anderson, 2014). Quantitative researchers apply procedures and rules that allow the generalization of findings to a larger group (Gaskin & Chapman, 2014). Mixed-methods research involves the integration of quantitative and qualitative data in the study (Williams & Shepherd, 2015). The purpose of this study was exploratory in

nature. I did not include quantitative variables to examine their relationships. Therefore, quantitative and mixed-methods approaches were not appropriate for the exploration of strategies that IT leaders use to effectively manage their IT projects.

I used a multiple case study design. Case study research provides a means for gaining a deep understanding of real-world behavior (Yin, 2014). Business leaders benefit from case study research because the results of the open dialogue provide insight into a business problem (Mariotto, Pinto Zanni, & De Maraes, 2014). By using a case study, the researcher focuses on circumstances encompassing the experiences rather than the actual experiences (Sharma & Aniket, 2014). In addition, the researcher identifies the characteristics of real-life events through exploratory research within the related context of the events (Yap & Webber, 2015). After considering the use of the ethnographic, phenomenological, and narrative designs, I did not find these designs appropriate for this study. Ethnographic researchers investigate culturally oriented business problems by exploring the behaviors, beliefs, and experiences of a group of people (Eika, Dale, Espnes, & Hvalvik, 2015). With ethnographic investigations, researchers gain perspectives of people living within a culture by analyzing patterns or interactions within that culture (Flick, 2014). In contrast to the ethnographic design, the phenomenological design allows researchers to better understand the perspectives and opinions of the interviewees regarding the phenomenon being studied (Leedy & Ormrod, 2013). With the phenomenological design, researchers open up the possibility of self-serving attribution bias because some individuals may attribute failure to other factors while crediting success to their own endeavors (Shtudiner, Klein, & Kantor, 2017). With a narrative

design, researchers collect individuals' descriptions of a phenomenon, but may not obtain details and themes that the other participants identify (Wolgemuth, 2014). I considered the case study design more appropriate for this study than the ethnographic, phenomenological, and narrative designs because my purpose was to obtain a deeper understanding of strategies and challenges for addressing the business problem rather than examining subjective interpretations of experiencing a phenomenon.

Research Question

What strategies do information technology leaders use to effectively manage their information technology projects?

Interview Questions

1. What strategies did you implement to improve the success rate of your IT projects?
2. What strategies contributed the most to your IT project success?
3. What were the key obstacles to implementing the strategies for improving your IT projects' success rates?
4. What strategies did you use to overcome these key obstacles?
5. What other information would you like to add regarding IT implementation strategies that managers could utilize to improve the effectiveness of IT project implementation?

Conceptual Framework

The conceptual framework for this study was the general systems theory. The general systems theory is applicable to a variety of complex systems and presents the

principles of how activities of separate parts unite to form a whole (von Bertalanffy, 1972). Organizations have various operational functions that must interact supportively to perform successfully (Goretzki & Messner, 2016). Leonardi, Bailey, Diniz, Sholler, and Nardi (2016) noted that the management of complex systems and IT projects requires an interconnectedness within the operations of an organization. Leaders with the appropriate managerial expertise enhance an IT project team's capabilities and improve the chances of project success (Zhu & Kindarto, 2016). The successful implementation of an IT project requires a relationship between various departments within an organization. The implementation of an IT project requires leaders to understand and align the operational functions of the organization to apply the strategies that increase the effectiveness of their IT projects. The general systems theory was appropriate as a conceptual framework for this study because the lens allowed for examination of complex systems and how the separate parts contributed to the whole.

Operational Definitions

Iron triangle criteria: A measurement of project success based on the project's time, cost, and scope objectives (Cullen & Parker, 2015).

Project: A temporary venture to produce a unique product, service, or result (Project Management Institute [PMI], 2013).

Project management: The knowledge, skills, tools, and techniques used by project leaders to accomplish the requirements of the project (PMI, 2013).

Project manager: An individual appointed to lead the project team and be responsible for achieving the project objectives (PMI, 2013).

Project success: Determined by measuring the fulfillment of the time, cost, and quality objectives for the project (De Carvalho, Patah, & de Souza Bido, 2015).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are details relevant to a study that the researcher assumes are true and accepts in faith without verification (Francis, 2014). The identification of assumptions is a critical component of a viable study (Koch, Niesz, & McCarthy, 2014). I identified three assumptions for the study. First, the case study participants would truthfully acknowledge they possess the project management knowledge and experience requirements established for the study. Second, the case study participants would provide accurate and truthful responses to the interview questions related to the strategies of effectively managing their IT projects. Third, the case study participants would represent the views of most business leaders in the effective management of their IT projects.

Limitations

Limitations are elements associated with the study that may influence the interpretation of the results (Singh, 2015). Limitations are possible weaknesses related to the study (Cuhna & Miller, 2014). I identified two limitations for the study. The first limitation related to the restriction of the sample size and the single geographical location. The results of a study are limited in generalizability when researchers used small sample sizes (Kharuddin, Foong, & Senik, 2015). Due to the limited sample size and geographical location in the current study, the results may not reflect the views of other organizations and geographical locations. The second limitation related to possible

research bias. I may have influenced the data collection and analysis because of my professional experience with IT projects.

Delimitations

Delimitations are boundaries that restrict the scope of the study (Yin, 2014). Researchers identify the boundaries or scope associated with the study through the delimitation descriptions (Ruzow-Holland, 2014). Researchers limit the scope of a study by identifying the delimitations. The delimitations for this study included (a) business leaders working in the Saint Louis Metro East area, (b) considering only strategies used to effectively manage IT projects, and (c) business leaders having a minimum of 5 years of experience in managing IT projects.

Significance of the Study

The results of the study may add value to the business knowledge for managing IT projects and to the existing body of research knowledge. Understanding the strategies that business leaders use may provide insight into successful and efficient methods to enhance IT project effectiveness (Davies & Brady, 2016). The results of this study may encourage business leaders to improve their knowledge of the strategies enhancing the effective management of their IT projects.

Contribution to Business Practice

The results of this study could contribute to business organizations by enhancing revenues, increasing market share, and improving competitiveness and sustainability. Business leaders may find value in the study of IT project success so that they can implement the strategies associated with effective management of IT projects. By

understanding strategies that can enhance IT project success, business leaders can implement the processes and procedures that may increase the positive outcomes of their IT projects (Duffield & Whitty, 2015; Frame, 2013). With an increase in positive outcomes of their IT projects, business leaders may increase their organization's productivity and efficiency resulting in (a) a more stable business environment, (b) an improvement in their competitiveness and sustainability, and (c) technological growth and development (Adamczewski, 2016; Lappe & Spang, 2014).

Implications for Social Change

The results of this study may contribute to positive social change for families, municipalities, and communities. Business failures may result in loss of employment and household income for families and loss of economic sustainability and growth for municipalities and communities (Lawless, 2014). With the increase of an organization's overall business performance, society and local communities may also positively benefit with (a) an increase in economic sustainability, (b) a possible quality of life increase, (c) new business growth opportunities within the community, and (d) an increase in the hiring of employees (Frame, 2013; Nguyen, Newby, & Macaulay, 2015).

A Review of the Professional and Academic Literature

In this section, I provide a comprehensive review of the literature regarding the strategies that IT leaders used to effectively manage their IT projects. I organized the literature review from the broader view of the applicable theories and then narrowed the scope to IT project management and project success. I arranged the literature review into

four sections: (a) general systems and coordination theories, (b) projects and IT projects, (c) project management, and (d) project success.

In the first section, I lay the foundation of the conceptual framework by describing how the combination of the general systems theory and the coordination theory applied to this study. The selection of the general systems theory was appropriate because an IT project resembles a complex system consisting of interactive components (see Dorantes, Li, Peters, & Richardson, 2013; Von Bertalanffy, 1972). The selection of the coordination theory was appropriate because of the daily coordination required in successfully accomplishing an IT project (Aagaard, Eskerod, & Madsen, 2014). By using these two theories, I narrowed the scope of the study and incorporated vital aspects of the management of IT projects.

In the second section, I provide a review of the current literature regarding the different phases linked to the management of a project and identify the uniqueness of IT projects. The phases of a project include planning, executing, monitoring, and controlling the requirements of the project (Lehtiranta, 2014). The implementation of IT projects involves uncertainty due to the rapid changes in technology and the stretching of capabilities across multiple organizations while supporting dynamic environments (Thalmann et al., 2014). Organizational leaders execute business strategies by integrating IT technology capabilities throughout an organization. The success of these business strategies depends on the effectiveness of the IT implementation (Chipulu et al., 2014). With the importance that IT plays in the success of business performance, organizational leaders require project management to effectively execute these projects.

In the third section, I review the current literature associated with project management. The principles and procedures associated with project management set the foundation for project teams to deliver the products or services required from the project (De Carvalho, 2014). With the increased complexity of projects, project leaders require increasing levels of planning, coordination, and supervision to meet the project's goals and objectives (Adoko, Mazzuchi, & Sarkani, 2015). Project management provides the means for organizational leaders to succeed in achieving the goals and objectives established within the project framework. Determining the success of a project involves various perspectives and opinions.

In the last section, I review the current literature associated with project success. Experts and researchers offer several perspectives and provide numerous opinions on the definition of project success (Alias, Zawawi, Yusof, & Aris, 2014). The various definitions of project success involve several measurement strategies that include examining the perspectives of different stakeholders and their perceptions of whether the project was a success (Williams, Ashill, Naumann, & Jackson, 2015). The measurement strategies to determine project success continue to evolve and expand.

For the literature review, I gathered information related to the central research question from peer-reviewed articles, books, dissertations, and websites. I primarily used the Walden University databases and Google Scholar to locate the information. I used the Business Source Complete, ABI/INFORM Collection, Emerald Insight, SAGE Journal, ScienceDirect, Business Market Research Collection, ProQuest Central, and ProQuest Dissertations & Theses Global databases as the primary sources for collecting journal

articles. I used scholarly books to aid in the methodological development of the study. I also used various websites to locate articles and information related to the research topic. For the database searches, I used various keywords. The primary key words included *project success*, *project management*, *information technology*, *information technology project management*, *information technology projects*, *general systems theory*, and *coordination theory*.

Overall, I cited 271 literature sources in this study. Of the 271 sources, 257 were peer-reviewed and 260 were within 5 years of the publication of this study. In Table 1, I provide the literature source statistics for the (a) total number of sources, (b) number of peer-reviewed sources, (c) number of sources within 5 years of the projected graduation date of December 2017, (d) percentage of peer-reviewed sources related to the total number of sources, and (e) percentage of sources within 5 years of the projected graduation date of December 2017 related to the total number of sources.

Table 1

Summary of Literature Review Sources

	Total sources	Peer-reviewed sources	Sources published within 5 years (2013 - 2017)
Sources (number)	267	251	250
Percentage	100%	94%	94%

The focus of this qualitative multiple case study was the exploration of strategies used by IT leaders to effectively manage their IT projects. To explore these strategies, I used the general systems theory and the coordination theory as the conceptual framework for the study. The general systems theory allows researchers to examine and understand systems overall while the coordination theory involves the analysis of activities within individual functions and the evaluation of the organizational effectiveness through the coordination of individual activities (Caws, 2015; Crowston, 1997).

General Systems Theory

Von Bertalanffy introduced the general systems theory in 1937 and, by 1951, provided the foundation for the theory by identifying a systematic, theoretical framework describing general relationships of the empirical world. The basis of the theory included the establishment of universal principles applying to systems in general (Johnson, Kast, & Rosenzweig, 1964). Systems consist of a single or complex entity encompassing a set of interrelated components (Caws, 2015). In describing these systems, von Bertalanffy (1972) noted the distinction between open and closed systems within biological structures. Open systems offer exchanges across the boundaries of the various elements of a structure while closed systems do not offer this exchange (Caws, 2015). Structures consist of an aggregate of elements. How these elements work together depends on whether the system is open or closed. In contrast to the closed system, the open system offers the ability to provide continuous improvement (von Bertalanffy, 1972).

Within the general systems framework, an open system transforms itself into various states of increased order. Von Bertalanffy (1972) identified the principles of how

activities of separate parts unite to form a whole. The activities within open systems help avoid entropy by maintaining a continuous flow throughout the system and developing a steady state of improvement (Valentinov & Chatalova, 2014). Within an open system, the individual systematic behaviors and activities connect to form a dynamic and complex foundation that benefits the whole. The application of the general systems theory offers opportunities to investigate many systems.

The basis of the general systems theory presents an opportunity to explore and understand systems overall. The use of the general systems theory, like most scientific theories, is not restricted to fields of science. The use of the general systems theory offers researchers opportunities to investigate a wide range of systems (von Bertalanffy, 1972). By using the lens of the general systems theory, researchers gain an understanding of systems across an assortment of specialties (Morgeson, Mitchell, & Liu, 2015). By using the general systems theory, researchers explore phenomena and problems across a variety of disciplines (Caws, 2015).

The framework of the general systems theory expanded into the business management field with the identification of a business enterprise operating as a social system of cultural interrelationships. Human organizations and societies resemble the open systems within biological structures described by von Bertalanffy (Rousseau, 2015). Human organizations and societies contribute to continuous evolution by interacting with their environments and producing various processes and properties (Valentinov & Chatalova, 2014). Instead of considering organizations based solely on their individual components, researchers apply the lens of the general systems theory to organizational

structures (Caws, 2015). Through this lens, researchers explore the various components within organizations and the interaction of these components as a whole.

The functions, or subsystems, of business organizations operate as an open system because of their interdependence with other organizational functions or subsystems. The subsystems of most business organizations extensively interact with other organizational subsystems and with their environments (Hughes, Anund, & Falkmer, 2015). Within complex business organizations, the number of relationships and interactions between subsystems remains excessively large to make business adjustments for changing conditions and inputs from their environment (Terra & Passador, 2015). When viewed through the lens of the general systems, most business organizations resemble an open system.

The activities within organizations resemble the activities within a social system because the various organizational divisions interact with other divisions to create a dynamic whole. Von Bertalanffy (1968) identified the concept of the general systems theory as the examination of complicated structures or systems through a fundamental set of ideas and principles. When analyzed through the general systems theory lens, members of organizations mirror subsystems interacting within a system. The embedded members of organizations play an active role in the mutual interaction with other embedded members (Araujo, Bucher-Maluschke, & Pedroso, 2016). The use of the general systems theory lens provides researchers the opportunity to explore and break down various aspects and structures within a business entity. Researchers use the general system theory to investigate business problems and complex phenomena within the business entity.

Researchers apply the general systems theory to business structures and situations in an attempt to explore the operations of modern businesses operating in unpredictable business environments. Montgomery and Oladapo (2014) remarked that the use of the general systems theory provides the foundation for organizational leaders to tackle their complex business problems. By examining organizations through the general systems theory lens, researchers gain an understanding of complex phenomena within a business entity. In addition, the management of these businesses benefits from the increased awareness of the various organizational divisions and how these divisions interact and affect other divisions within the organization (Valentinov & Chatalova, 2016). Business leaders benefit from the evaluation of their organizational structure through the lens of the general systems theory.

Researchers applied the general systems theory to studies involving the fields of business management. Hitt, Xu, and Carnes (2016) remarked that the use of theory, such as the general systems theory, helps researchers understand phenomena associated with operations management. In addition, the use of theory in operations management enhances the researcher's ability to provide deeper insight about an organization's research questions (Hitt et al, 2016). Ceric (2015) applied the general systems theory in the examination of the value created through information communication technology (ICT). Ceric noted that the value created for a business resulted from the complex interactions between the organizational divisions and ICT. Fantazy, Tipu, and Kumar (2016) used the general systems theory to conceptualize the attributes and relative openness of supply chains and determine the effect on organizational performance.

Fantazy et al. used the general systems theory lens because organizational supply chains mirror the open system perspective established within the general systems theory. The use of the general systems theory applies to many different disciplines in the business field. The application of the general systems theory supports the exploration of strategies IT leaders use to effectively manage their IT projects.

The general systems theory lens applied to this study because of the complex and unique environments in which IT projects function. Organizational leaders develop dynamic IT infrastructures to support multiple organizations and their dynamic (Thalmann, et al., 2014). Through the integration of these IT applications, organizational leaders look to improve information flow, management decisions, and firm performance. To integrate these IT capabilities successfully, IT leaders include the business functions and processes extending across extensive components of the organization's value chain (Dorantes et al., 2013). The use of the general systems theory provides the foundation for researchers to explain a phenomenon within complex business organizations (Adams, Hester, Bradley, Meyers, & Keating, 2014). The lens of the general systems theory offered the opportunity to explore aspects and gain an understanding of a successful IT project implementation. In addition to the general systems theory, I narrowed the focus of this study by applying the principles of the coordination theory.

Coordination Theory

The principles associated with the coordination theory allow researchers to explore activities of individual functions and evaluate organizational effectiveness through the coordination of the individual activities. Malone and Crowston (1994)

defined coordination theory as the management of organizational dependencies between various activities. By managing dependencies between activities, the information processing performed by multiple team members exceeds the information processing performed by a single team member in achieving a goal (Crowston, 1997). The principles of coordination theory relate to the tasks within an organization or its components and the dependencies restricting the accomplishment of the tasks (Crowston, 1997). Researchers use the coordination theory as the framework for investigating business processes with expectations of improving organizational performance through improved coordination of the processes.

Enhancing the coordination practices within an organization improves the collaboration functions throughout the organization. Santos and Baptista (2015) posited that effective organizational performance involves coordination between the organization's economic and social influences. The level of coordination includes the functions and processes extending across the organization's boundaries. Luna and Terra da Silva (2015) noted that team members use coordination mechanisms to integrate the work of other individuals and create common reference points. These mechanisms include (a) forming shared goals and objectives, (b) building shared knowledge, and (c) developing common language. The use of coordination practices improves organizational capabilities through the sharing of knowledge and improving team coordination activities. The principles and practices of coordination apply to the management of IT projects.

The management of IT projects requires the means to coordinate several independent and contingent activities. To manage project activities effectively, IT leaders establish coordination processes crossing various functional boundaries within an organization (Jiang & Klein, 2014). The success of IT projects plays an important part in maintaining a competitive advantage in global operations. To achieve IT project success, IT leaders use coordination principles and practices to improve project effectiveness and enhance organizational performance (Aagaard et al., 2014). The implementation of IT projects require numerous essential coordination methods and procedures involving dependent and contingent activities. IT leaders concentrate on integrating and coordinating project team actions to achieve organizational goals.

IT project leaders require methods and procedures focused on coordination and cooperation. To achieve organizational goals during implementation of IT projects, project teams integrate the actions and knowledge of team members while supporting their individual objectives. Inadequate coordination creates irregularities and mistakes within the various functionalities of a project team. (Chang, Jiang, Klein, & Want, 2014). As the complexity of projects increase, the requirement for coordinated-related activities increases. Xia, Dawande, and Mookerjee (2016) identified the importance of creating a common understanding by increasing coordination activities that lead towards effective collaboration and integration functions. Organizational leaders require efficient coordination practices to effectively implement information technology activities and capabilities. When used in conjunction with the lens of the general systems theory, the coordination theory provides the theoretical foundation and narrows the focus of this

study. In addition to the general systems theory and the coordination theory, I also considered, but did not select, the contingency theory of management and the theory of constraints.

The concept behind the contingency theory of management suggests leaders shape their organizational structures based on the demands of their environments (Burton, Obel, & Hakonsson, 2015). Rather than using one management method, organizational leaders develop management actions based on internal and external influences because organizational performance correlates to the interrelationships between the environment, management, and performance criteria variables (Longenecker & Pringle, 1978). I did not select the contingency theory as the conceptual framework for this study because researchers using the coordination theory define situational factors affecting relationships between independent and dependent variables (see Burton et al., 2015). In contrast, the combination of the general systems theory and the coordination theory provides the approach for the exploration of management control strategies associated with the effective management of IT projects within interdependent systems (Montgomery & Oladapo, 2014; Santos & Baptista, 2015). I also considered the theory of constraints for this study.

Goldratt introduced the theory of constraints as a management philosophy designed to manage business operations and aid in achieving organizational goals (Cullen & Parker, 2015). The methodology associated with the theory of constraints is identifying the most important limiting factor within a set of activities and incorporating a sequence of steps to improve the limitation (Parker, Parson, & Isharyanto, 2015). While the theory

of constraints did offer a methodology for continual process improvement with the elimination of obstacles within organizations, I did not believe the theory of constraints was appropriate. The use of the theory of constraints did not allow for exploration of the interdependent systems associated with the problems and strategies of IT project implementation (Cullen & Parker, 2015). The general systems theory and the coordination theory, on the other hand, allow an investigation of the whole interdependent system and not just the individual units (Bronn & Bronn, 2015; Jiang & Klein, 2014).

By using the general systems theory and the coordination theory, I narrowed the scope of the study and encompassed vital aspects concerning the management of IT projects. The use of the general systems theory was appropriate because IT projects affect infrastructures across multiple organizations while fostering dynamic environments throughout various subsystems of the organization (Thalmann et al., 2014). The application of the coordination theory provided the principles to explain the coordination activities between team players and how these team players work together (Aagaard et al., 2014). By using these two theories, I explored the nature of the problem associated with IT projects and understood the successful strategies that IT leaders used to manage their IT projects effectively.

Projects

Projects are distinctive activities providing a specified product or service. Abrudan, Saveanu, and Saveanu (2016) remarked that projects have a specific measurable goal, a defined number of resources available, and an established period of

time for the planning and implementation of a product or service. According to the Project Management Book of Knowledge (PMBOK), the definition of a project is "a temporary endeavor undertaken to create a unique product, service, or result and the temporary nature of projects indicate that a project has a definite beginning and end" (PMI, 2013, p. 3). Organizational leaders use project teams to plan, execute, monitor, and control the requirements of the project (Lehtiranta, 2014). Through these temporary processes and activities, organizational leaders implement services or products required to meet their business needs. The use of projects to implement a product or service stretches across several industries.

Business leaders in various industries used projects to implement improvements within their organizations. Examples of industries using projects to implement organizational improvement include (a) construction, (b) manufacturing, (c) health care, (d) information technology, (e) energy, (f) telecommunications, and (g) transportation (De Carvalho et al., 2015; Papke-Shields & Boyer-Wright, 2017). The use of projects continues to increase as business leaders implement change and enhance organizational performance (Cullen & Parker, 2014). Business leaders seek a competitive advantage by implementing organizational change through the increased use of projects. The management of projects involves a life cycle extending from initiating to the closing of a project.

Since projects have a definitive timeframe, the life cycle of a project progresses through defined phases. The various phases of a project represent a series of associated activities aligned with accomplishing the project's goals and objectives (Hazir, 2015).

The phases associated with projects include (a) initiating, (b) planning, (c) executing, and (d) closing (Kloppenborg, Tesch, & Manolis, 2014). In addition, project leaders use monitoring and controlling processes to assess the performance and progress of the project (Hazir, 2015). Each phase represents a different stage of activities progressing towards the goals and objectives of the project. The initial phase of a project is the initiating phase.

Initiating. The initiating phase involves the identification of solutions and objectives for a recognized business problem. During this phase, project leaders address the recognized business problem by developing a project charter and identifying the goals and objectives in the business plan (Pak, Carden, & Kovach, 2016). The business plan contents include the scope of the project, financial requirements, resource availability, risk analysis, and possible solutions (Pak et al., 2016). Project leaders create work plans and produce a schedule defining the team member's roles and requirements (Kloppenborg et al., 2014). The results of the initiating phase include the development of a project plan from the identified business need and inputs from stakeholders. The planning phase commences after receiving project approval.

Planning. The planning phase consists of project leaders gathering all available information concerning the project and creating the overall project plan. During the planning phase, project leaders identify (a) necessary assets and resources, (b) financial budget, (c) project milestones, (d) project duration, and (e) deliverables for the project (Almgren, 2014). Project leaders also create the work breakdown structures (WBS). Within the WBS, project leaders incorporate the required activities and their expected

completion time in meeting the requirements of the project (Pak et al., 2016). To create a quality plan, project leaders document compulsory project activities and estimate completion times. After establishing an effective project plan, the project team executes the project plan.

Executing. During the execution phase, the project team accomplishes the activities established during the planning phase. By following the activities identified in the WBS, project teams implement the plan developed during planning (Pak et al., 2016). To provide the value of the expected goals, project leaders direct the project teams' actions and activities to produce the deliverables required by the project plan (Wang, Kunc, & Bai, 2017). During this phase, project teams use the designated resources to deliver the requirements identified by the organization. Once the execution phase is completed, the project enters the closing phase.

Closing. The closing phase involves different aspects of finalizing the project results. During the closing phase, the client validates the requirements of the project and formally accepts the deliverables (Kloppenborg et al., 2014). The successful closure of a project involves (a) evaluation of the project deliverables, (b) recording project design and technical data descriptions, (c) writing a final report, and (d) administratively closing the project through standard procedures (Havila, Medlin, & Salmi, 2013). As projects close, the customer evaluates and accepts the deliverables. After acceptance, the project leader implements the closing plans of the project. During these different project phases, project leaders use monitoring and controlling processes to review the progress and performance of the project.

Monitoring and controlling. During the various phases of a project, project leaders use monitoring and controlling processes and activities to oversee the project progress. The monitoring processes involve detecting any deviations that reduce productivity or negatively impact the planned budget, schedule or project requirements during the execution phase of the project. The controlling processes involve taking necessary actions to correct or minimize deviations identified during project execution (Isaac & Navon, 2014). Project leaders use monitoring and controlling processes to minimize the impact of deviations affecting the project plan. The use of monitoring and controlling processes helps to achieve the project goals and objectives by improving overall project coordination and control, enhancing communication, and implementing corrective actions (Hazir, 2015). By using monitoring and controlling processes, project leaders develop methods and strategies contributing to a successful conclusion of projects. While facets of different industries generate specific challenges in completing a project successfully, the distinctiveness of information technology presents unique challenges during implementation.

Information Technology Projects

IT projects differ from other type projects because of their unique composition and the rapid changes within the technology sector. IT projects are normally short-term in nature and present greater uncertainty (Wang, Wood, Abdul-Rahman, & Lee, 2016). The implementation of information technology within an organization presents challenges to their business operations. The challenges include the areas of hardware and software, network capabilities, security, and interoperability issues (Weingartner, Brascher, &

Westphall, 2015). When compared to other project types, IT project teams face different challenges and problems with the uncertainty and interoperability associated with the technology sector. Despite these challenges, business leaders benefit through the increased organizational capabilities with the implementation of IT.

Business leaders increase their organization's capabilities and processes by enhancing business performance through IT implementation. Organizational performance improves through the implementation of IT resources in several ways. The benefits of information technology include (a) cost reduction, (b) quality of service improvement, (c) improved work processes, and (d) an increase in sales and revenue (Sook-Ling, Ismail, & Yee-Yen, 2015). Organizational leaders investing into IT resources create a synergy within the organization. Through this synergy, organizational leaders improve business value with the transformation of organizational improvements and process efficiencies created with the implementation of IT resources. The benefits include greater customer satisfaction, improved delivery capabilities, reduction of defects, and elimination of redundancies throughout the business processes (Ghobakhloo & Hong, 2014). While IT projects present unique implementation challenges, organizational leaders use these projects to improve their business capabilities and enhance their business processes. As IT capabilities expand, the complexity of the applications increases.

IT systems evolved and increased in complexity over the years. Early use of IT resources included transaction processing through the use of mainframe computers. The services provided support for organizations with large daily operations through static reports (Obeidat & North, 2014). The next generation of IT systems involved personal

computers, computer off-the-shelf software (COTS) and networking. During this period, the expansion of the internet advanced communication capabilities and increased application development (Cortada, 2015). In recent years, the complexity of IT software and hardware increases with the introduction of cloud computing, human resource management systems, and enterprise resource planning (Daylami, 2015). As technology continues to expand and increase in complexity, the difficulty of managing the implementation of IT projects increases as well. To improve their organization's operations, leaders spend significant amounts of money to implement technology resources.

With the improved capabilities and enhanced proficiencies offered by new technologies, organizational leaders invest considerable dollars into technological operations. Global spending on IT resources was $3.4 trillion during 2015 (Gartner says, 2016). With this substantial investment in technology resources, organizational leaders strengthen their business operations and decision-making processes (Haron et al., 2014). Organizational leaders spend significant dollars on IT resources to develop, maintain, and increase global operations and improve operational capabilities. Organizational leaders sustain their global operations functions through the improved capabilities provided by technology resources.

The implementation of IT capabilities provides important operational functions for organizations competing in the global environment. IT resources deliver the lifeblood for every organization and enable organizational leaders to facilitate their global network (Haron et al., 2014). In addition, IT resources aid in the development of innovative

business models and processes that lead to an improvement in an organization's flexibility and capacity (Adamczewski, 2016). These improved capabilities also benefit organizations with the controlling, administering, and safeguarding of crucial information (Whitaker, Ekman, & Thompson, 2017). With competition in the global market increasing, organizational leaders need trustworthy IT infrastructures to compete globally and maintain their competitive advantage. Largely due to the improvement of IT capabilities, emerging markets appear as major competitors in the global marketplace.

With the increase in IT capabilities, emerging markets became global marketplace forces. Emerging countries, such as Brazil, Russia, India, and China (BRIC), leveraged the rapid advances in technological innovation to become strong competitors in the international business arena (Rubalcaba, 2016). India successfully developed and leveraged their domestic IT advancements into revenue growth. India expanded their global IT outsourcing services and eventually earned 52% of global revenues from these IT outsourcing services (Latukha & Selivanovskikh, 2016). As these emerging countries continue to expand their IT capabilities, organizational leaders encounter an intensified competitive global landscape and an increase in competition. With increased competition in the global marketplace, organizational leaders seek to develop a strong and robust infrastructure through the implementation of upgraded IT capabilities.

To compete in today's global marketplace, organizational leaders require a strong IT infrastructure. Mao, Liu, Zhang, and Deng (2016) remarked that organizational leaders need to enhance their information and communication technology (ICT) infrastructures to establish or maintain their competitive global position. Ashrafi and Mueller (2015)

confirmed a correlation between an organization's IT investment and a stronger international market position. Krishnan (2013) noted that the manufacturing processes of many organizations are maturing. With aging processes, these companies face the challenge of developing their technological infrastructure capabilities to remain competitive and create growth opportunities. As worldwide competition increases, organizations face pressure to develop and maintain a robust IT infrastructure. The implementation of an IT project encounters unique challenges.

While all projects have distinctive characteristics, the implementation of an IT project encounters unique challenges. The means to implement an IT system is a complex and ambiguous process (Gantman & Federowicz, 2016). In many organizations, the requirements for an IT infrastructure includes stretching capabilities across multiple organizations and supporting dynamic environments (Thalmann et al., 2014). The complexity of organizational infrastructures increases with the requirement to embed and synchronize resources across multiple processes (Williams, 2017). With the complexity and unique nature associated with IT projects, organizational leaders encounter challenges that disrupt the implementation of new technologies. As a result of these challenges, organizational leaders confront increasing risks with the implementation of IT projects.

Organizational leaders encounter additional risks when implementing IT projects than other project types. To remain competitive in the global marketplace, organizational leaders require complex IT infrastructures that align their business operations and increase information sharing. With increasing IT capability requirements, organizational

leaders encounter additional risks with the increasing level of complexity involved with implementing IT projects (Cagliano, Grimaldi, & Rafele, 2015). The risks associated with IT projects intensified with the significant resource requirements, technological uncertainty, mounting complexity, and regulations (Mishra, Das, & Murray, 2015). With the increased complexity and risks associated with IT projects, organizational leaders encountered a high number of IT project failures. The development of the Systems Development Life Cycle (SDLC) targets improving the effectiveness and success of IT projects.

The SDLC is a process utilized in conjunction with IT projects. To aid in the implementation of IT projects, the use of the SDLC model establishes baselines with prescribed and rational steps or phases. The steps or phases include (a) system planning, (b) system analysis, (c) system design, (d) system implementation, and (e) system maintenance (Church, Schmidt, & Smedley, 2016). These baselines or milestones are vital to the model's iterative makeup. Over the years, various software models grew as subsets of the SDLC. By using these software models, projects teams track the progress of the assorted tasks and events required for project implementation (Hazir, 2015). SLDC provides life-cycle assessment of the project's development through implementation. Despite the tools developed to aid in project implementation, the success rate of IT projects remains low.

The success of IT projects remains historically low. Emam and Koru (2008) investigated global IT departments between 2005 and 2007. The results of their study revealed that the IT project success rate fell between 26 to 34%. In a study of IT projects

between 2001 and 2012, Jorgenson (2014) noted that cancelled projects or projects completed with very dissatisfied customers comprised 37.5% of all IT projects. The success rate of IT projects has not achieved an overall 40% success rate because customers cancelled the project or the outcome of the project did not meet budget, schedule, or functionality specified in the contract scope (Kaleshovska et al., 2015). When the implementation of IT projects fail, business leaders encounter less organizational capabilities when trying to maintain their competitive advantage in the global marketplace. Despite their low success rate, the use of IT projects to increase organizational capabilities continues to rise.

Organizational leaders using projects to implement technological advancements became a widely used method to advance the capabilities of an organization. Over the last several decades, the use of projects to implement information technology in organizations increased at a steady rate (Papke-Shields & Boyer-Wright, 2017). Despite the increased complexity and possible dependence on new technology under development, organizational leaders increase the use of projects to develop their IT infrastructures (Whitney & Daniels, 2014). The use of projects to employ technology throughout an organization or multiple organizations continues to grow in recent years. With the growth in IT projects, the management of IT projects becomes significant to organizations.

The management of IT projects is important and unique to every organization. The implementation of IT projects is critical for organizations competing in the global marketplace. The effective management and supervision of IT projects creates

opportunities for successful implementation. The discussion of project management follows.

Project Management

Modern project management is a recent discipline and profession with roots in the 20th century. Seymour and Hussein (2014) identified four stages of modern project management. The four stages were a) prior to 1958, b) 1958 – 1979, c) 1980 – 1994, and d) 1995 to present. Each of these stages denote various changes to project management capabilities. The first stage introduced theoretical work identified with the basics of project management.

Modern project management emerged as a discipline after World War II, although researchers accomplished some theoretical work prior to World War II. Theoretical work prior to World War II included the invention of the Gantt Chart in 1910 and the network-like technique "Harmonogram" in 1931 (Packendorff, 1995, p. 321). In addition, Seymour and Hussein gave credit to Henry Fayol (1841 – 1925) for providing his managers instructions on following five functions with a project. These functions included:

- planning,
- organizing,
- commanding,
- coordinating, and
- controlling.

During the 1950s, two project management planning techniques were developed. The two techniques included the Critical Path Method (CPM) and the Project Evaluation and Review Technique (PERT) (Packendorff, 1995). The use of the CPM allowed for scheduling and managing of complex projects. When using the CPM, project leaders identify the project activities, if delayed, likely to affect other project activities or project completion (Orouji, Haddad, Fallah-Mehdipour, & Marino, 2014). The use of PERT includes three time estimates for each scheduled activity. The time estimates involve an optimistic, probable, and pessimistic times. When using PERT, project leaders calculate the expected completion time and the variances associated with each activity (Chrysafis & Papadopoulos, 2014). Even today, project management teams use these two techniques for complex projects (Seymour & Hussein, 2014). As technologies improved in later years, project management also evolved.

The second stage of project management began with the introduction of information technology, computer technology developments, and new management practices. With significant advances in technology, project managers began using software and newly developed tools and techniques to manage projects (Kaczorowska, Sloniec, & Motyka, 2016). Cleland and King (1968) expanded on the traditional project management theory by attaching analytical methods of system analysis. The newly formed Project Management Institute (PMI) introduced new project management practices. With the introduction of the PMI in 1969, the identification of project management as a scientific discipline began. The PMI also introduced various project management tools, techniques, and practices (Stoshikj, Kryvinska, & Straus, 2014). The

traditional project management views and practices changed with the introduction of science and information technology. The third stage of project management brought further change and development as technologies continued to expand.

The introduction of the personal computer and project management programs influenced the third stage of project management. Seymour and Hussein (2014) remarked that the personal computer and enhanced management software increased effective management and supervision of all type of projects, including complex projects. In the early years of project management, engineers received the majority of assignments for the project manager function (Seymour & Hussein, 2014). The basis for these decisions was the technical knowledge of the engineer. With the advent of project management standards, tools, and new responsibilities, the role of project management fell to business managers or project managers. The requirement for project managers to lead projects included knowledge of the business operations and the responsibility of making business decisions (Stoshikj et al., 2014; Too & Weaver, 2014). During this stage, the functionality of project management included project leaders becoming a dedicated manager of the project and involved project leaders operating across associated business functions. While the third stage displayed an evolution within project management, the fourth stage brought change to the strategic aspect of project management.

During the fourth stage of project management, project management became an integral part of the strategic business environment and involved throughout all organizational levels. Previously, project management centered on project execution; however, the strategic level of project management involved selecting and aligning the

projects with the corporate strategic project portfolio (Costantino, DiGravio, & Nonino, 2015). Davies and Brady (2016) verified that projects properly aligned with an organization's business strategy had a positive effect on the project outcome. The priorities of project management evolved with the identification of the strategic importance to properly align projects with the organization's strategy. As the project management field evolved, project managers required a unique and specialized set of skills. The Project Management Institute (PMI) defined the project activities and skills required to meet project requirements.

The creation of the PMI increased the development of processes and activities associated with project management. Prior to the creation of the PMI, project managers lacked operational procedures in managing projects and a measurement of managerial unity when determining performance (Pinto & Winch, 2016). With their introduction in 1969, the PMI began formalizing project activities and project management knowledge and standards (Pinto & Winch, 2016). In addition, the PMI continues to provide iterative concepts of good project management practices as new methodologies emerge (PMI, 2013). With the development of formalized processes, tools, and techniques, project management became a specialization within the project team. Another consideration with the management of a project was determining whether the project was a success or failure.

The definition of a project success can vary depending on the criteria utilized. This criterion has led researchers to search for factors that contribute to project success or

failure. As the investigation into the reasons for IT project failure has grown, one factor identified as a contributor to IT project failure rate is project management.

Project Success

The definition of project success continued as a debate for many years. Cullen and Parker (2014) remarked that determining project success was complex because one clear definition did not fit the various scenarios or their success criteria. The various definitions of project success afford a challenging scenario when determining whether a project was a success or a failure. Alias et al. (2014) noted various researchers theorized and established different project success meanings and definitions. The iron triangle, which established strict guidelines for measuring project success, was one of the early project success definitions.

One of the first criteria established to measure project success was the iron triangle. The iron triangle also has the nickname of the triple constraint. The iron triangle consists of three primary elements used in determining project success. These elements are the project's time, budget, and scope/quality requirements (Cullen & Parker, 2014). Berssaneti and Carvalho (2015) remarked that the iron triangle offers a clear definition of success or failure by measuring the project's economic and technical dimensions. The PMI base their project management practices for project managers on the traditional iron triangle constraints for formal control over projects (Cullen & Parker, 2014). With the clear definition that the iron triangle provided, project managers have defined boundaries when determining the success or failure of their projects. Project managers strive to complete the project tasks and activities within the constraints of the iron triangle. While

providing a clear definition of project success, project leaders questioned whether the iron triangle provided a clear portrayal of the success or failure of a project.

After its early years, project management teams questioned the strict conditions of the iron triangle in terms of the time, budget, and scope/quality requirements. In a measurement of overall project success, the use of the iron triangle did not account for customer or client satisfaction with the project results (Williams et al., 2015). Basten, Stavrou, and Pankratz (2016) commented that customers may consider the project a failure despite meeting the iron triangle criteria. Conversely, customers may consider the project a success even when the project did not meet the iron triangle criteria. Albert, Balve, and Spang (2017) noted some stakeholders may consider the project a failure based on the iron triangle criteria; however, specific stakeholders may believe the project a success based of the provided functionality. Researchers began searching for other means to measure project success because the iron triangle had limited inputs when determining project success or failure. Further research into project success led to a focus on success criteria.

As research grew around the definition of project success, researchers developed new theories involving the importance of critical success factors when attaining overall project success. Critical success factors are conditions, circumstances, events, or inputs that lead to the success of a project (Yamin & Sim, 2016). Pinto and Slevin (1987) developed a framework to successful project implementation by identifying 10 factors considered critical to project success. The authors identified the 10 key factors as:

- project mission;

- top management support;
- project schedule/plan;
- client consultation;
- personnel recruitment, selection, and training;
- technical tasks;
- communication;
- troubleshooting;
- monitoring and feedback; and
- client acceptance.

Expanding on the critical success factors identified by Pinto and Slevin, Wateridge (1998) added the importance of achieving the organization's strategic, tactical, and operational objectives as critical success factors for project implementation. The use of critical success factors established different criteria in determining the success or failure of a project. Another method developed from these critical success factors for determining project success was the project implementation profile.

The basis of the project implementation profile (PIP) involves the factors considered critical in successful project implementation. The framework of the PIP is the ten critical success factors identified by Pinto and Slevin (1987). The PIP tool comprises a self-assessment methodology when considering the successful implementation of a project (Rusare & Jay, 2015). The project manager evaluates the success of a project through the metrics established for the project goals (Rusare & Jay, 2015). The use of the project implementation profile offers an assessment of projects based on factors

identified as critical to successful implementation of the project. Researchers continue to investigate the critical success factors associated with project success.

The deliberation over the determination of project success expanded with the introduction of critical success factors. Researchers continued exploring the dimensions of critical success factors. Rodriquez-Segura, Ortiz-Marcos, Romero, and Tafur-Segura (2016) stated that traditional methods of determining project success were inadequate. The authors recommended a framework supporting the selection of various criteria based on process efficiency and the fulfillment of the customers' desires. Yalegama, Chileshe, and Ma (2016) remarked that critical success factors varied in relation to different variables. These different variables include (a) project types, (b) organizations, (c) individual stakeholders, and (d) industries. Each variable presents a different dimension when determining the critical success factors important to successful project implementation Yalegama et al., 2016). After analyzing these various dimensions, researchers defined the selection criteria for the appropriate critical success factors important when determining whether a project is a success or failure. The determination of a successful project also varied by the type of industry and project.

The identification of critical success factors affecting project success varies across industries and depends on the identified project objectives. Diverse project objectives and different industry conditions require pinpointing the critical success factors appropriate to the success of a project. Within the construction industry, the critical success factors affecting project success fall into six main groups. The critical success factors affecting project success are (a) project management, (b) teamwork, (c) risk management

processes, (d) customer requirements, (e) internal and external environments, and (f) communication (Chileshe & Kikwasi, 2014). Within the IT industry, Gollner and Baumane-Vitolina (2016) identified five critical success factors signifying the properties of project management success and product success during the implementation of an enterprise resource planning system (ERP). The critical success factors include (a) project management, (b) time and budget, (c) ERP system quality, (d) user satisfaction, and (e) economic value. Within the offshore software development project sector, Sudhakar (2013) identified six critical success factors in achieving project success. The six factors include (a) trust, (b) efficient communication, (c) cultural understanding, (d) relationship between client and vendor, (e) contract type, and (f) knowledge transfer. By identifying the success factors critical to a specific project, project leaders improve their awareness of specific project dynamics and facilitate the management of a project towards a successful conclusion. The identification of the inclusive factors critical to the success of IT projects proves an elusive task.

The establishment of a benchmark list of critical success factors to IT projects proves elusive to researchers. The review of literature revealed a collection of critical success factors specific to IT projects did not exist (De Carvalho, 2014; Lehtinen, Mantyla, Vanhanen, Itkonen, & Lassenuis, 2014; Yalegama et al., 2016). Without an established group of critical success factors, project leaders seek to develop various strategies to effectively manage projects. To achieve positive business results, project leaders should establish various strategies for the varying conditions and factors associated with each project (Yamin & Sim, 2016). With IT projects, the identification of

the critical success factors essential to the project allows project leaders to develop strategies to effectively manage these projects. While not identifying a universal set of critical success factors, researchers recognize several common factors critical to IT project success.

Several critical success factors associated with IT projects are expected discussion points for strategies to effectively manage IT projects. Allen, Alleyne, Farmer, McRae, and Turner (2014) recognized several critical success factors contributing to IT project success. These success factors include (a) stakeholder partnership with project leaders, (b) team building, and (c) project scope, schedule, and budget. In addition to the traditional factors of managing stakeholder expectations, scope, schedule, and budget, Hidding and Nicholas (2017) identified several project management factors and practices associated with IT project success. These factors and practices include the (a) development of people-to-people relations, (b) involvement of a stake in the project with team members, and (c) agreement on project purpose, metrics, and end products. De Carvalho (2014) highlighted appropriate communication techniques and processes to minimize information breakdown with both team members and stakeholders. Researchers recognize these critical success factors as common dynamics associated with IT projects. By investigating strategies to effectively manage IT projects, I expected the participating IT leaders to identify strategies addressing these identified critical success factors.

Transition

In Section 1, I introduced the issue of the low success rates associated with the implementation of IT projects. I presented a brief introduction to the background of the problem while identifying the general and specific business problems, central research question, and the interview questions. Also in Section 1, I included the nature of the study, the conceptual framework, and the significance of the study in possibly contributing to positive social change. I concluded with a literature review of research pertinent to the objective of this case study. Within the literature review, I summarized the information related to the research topic in detail and provided a synthesized review of previous research related to this study and its relevance to today's IT project practices.

In Section 2, I expanded on the research methodology and design identified in Section 1. I focused on the proposed qualitative research concerning the strategies used by IT leaders to effectively manage their IT projects. In Section 2, I included a detailed examination of the topics of the study. I explained in further detail the (a) role of the researcher, (b) participants, (c) research method and design, (d) population and sampling, (e) ethical research, (f) data collection instruments, (g) data collection techniques, (h) data organization technique, (i) data analysis, and (j) reliability and validity of the study.

In Section 3, I provided a brief review of the study topic including the purpose statement and the research question. I included the detailed findings from the empirical evidence as the findings relate to the research question. I concluded Section 3 with recommendations for action, recommendations for future research, and the implications for social change.

Section 2: The Project

Organizational leaders use IT capabilities to improve their business processes and maintain their competitive advantage; however, the success rate of implementing IT projects remains low (Terlizzi et al., 2016). In Section 2, I introduce the focus of the study to explore the strategies that IT leaders use to effectively manage their IT projects. I explain in further detail the (a) research methodology and design, (b) population and sampling, (c) ethical research, (d) data collection instruments, (e) data collection and organization techniques, (f) data analysis, and (g) reliability and validity. I begin by restating the purpose of the study.

Purpose Statement

The purpose of this qualitative multiple case study was the exploration of strategies that IT leaders use to effectively manage their IT projects. I collected data from six IT leaders in six organizations in the St. Louis Metro East area. I selected these organizations because the organizational leaders had successfully implemented strategies to effectively manage their IT projects. Results from this study may help business leaders increase their IT project success rates and may contribute to social change through the creation of new jobs and economic development.

Role of the Researcher

I was the primary instrument for this research study. I explored the experiences of the participants related to the research question. I (a) selected participants, (b) collected data from the participants through interviews, and (c) conducted data analysis. For qualitative studies, researchers are the research instrument and the primary individual

interacting with the participants (Elo et al., 2014; Medico & Santiago-Delefosse, 2014). I collected data through semistructured, in-depth interviews with each participant and reviewed organizational project documents collected from the participants. To gain rich information from the interviews, I (a) asked probing questions, (b) used audio to record the interviews, (c) took handwritten notes, and (d) conducted follow-up interviews for clarification purposes. To gather additional information related to the research question, I reviewed organizational project documents provided by the participants. I have not led an IT, but these types of projects drew my interest.

Although I have not directly led an IT project, I have worked in conjunction with other project leaders involved with IT implementation. During my career as a project manager, I developed an interest in IT for two reasons. First, the success or failure of IT projects affects the performance of other types of projects. Second, I work for an IT organization, and successful project implementation is crucial to the survivability of the organization. I knew many of the project leaders and maintained business relationships with several of the participants in the study because I worked in the same geographical area selected for the study. To maintain the ethical standards for research, I followed the ethical principles and guidelines in the Belmont Report (National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research [NCPHSBBR], 1979).

The Belmont Report contained the ethical principles and guidelines to safeguard the rights and protect human subjects involved in research (NCPHSBBR, 1979). In the Belmont Report, the commission identified three ethical principles for human subjects

involved in research: (a) respect of persons, (b) beneficence, and (c) justice (NCPHSBBR, 1979). For this study, I ensured adherence to these three ethical principles. I treated each participant with respect and dignity. I explained to each participant the (a) purpose of the research, (b) research and interview protocols, (c) protection methods to ensure confidentiality, and (d) voluntary status of participation. I also ensured participants understood that I offered no compensation or incentives for their participation in the study. In addition to ensuring the ethical principles, I mitigated potential bias and avoided viewing data through a personal perspective.

I minimized researcher bias and avoided undue personal influences by using bracketing and member checking. Researchers may affect various aspects of the study by fostering potential personal biases because of the direct contact with the research participants (Anney, 2014). By focusing on the items directly related to the research question, researchers provide reliable results without injecting personal opinions or biases (Darawsheh, 2014). Researchers minimize potential biases or personal influences with the use of bracketing (Chen, 2015). I used bracketing and member checking to ensure reliable results. I minimized researcher bias through bracketing by writing notes during data collection and analysis and keeping a field journal during the research process. By having the participants member check, researchers increase the accuracy and quality of the data collected (Andrasik, Chandler, Powell, Humes, & Wakefield, 2014). To ensure the quality of the data collected, I had each participant check the content of their interview for accuracy.

I used a semistructured interview protocol with open-ended questions to gain insight and probe deeper into the strategies that IT leaders use to effectively manage their IT projects. The use of semistructured interviews allows researchers to develop a nonthreatening environment and create an open dialogue in which participants offer their perspectives with few or no limitations (Burgess & Wake, 2013). By using semistructured interview protocols, qualitative researchers encourage participants to discuss their experiences with a phenomenon and capture rich information by probing their experiences (Hohl, Gonzalez, Carosso, Ibarra, & Thompson, 2014). The use of a semistructured interview protocol allowed me to probe deeper into the strategies that IT leaders use to effectively manage their IT projects.

Participants

I selected participants with the appropriate experience and competence to provide answers to the interview questions. The eligibility requirement for the participants was a minimum of 5 years of experience in managing IT projects. To answer interview questions knowledgeably, the selected participants should meet the eligibility requirements established for the study (Nathan, Braithewaite, & Stephenson, 2014). Qualitative researchers select their participants because of their knowledge and experience with the phenomenon and their capacity to meet the established research objectives (Yin, 2014). I selected six participants who (a) were IT leaders from the Saint Louis Metro East area, (b) were knowledgeable about the topic of the study, and (c) met the established eligibility requirements.

To gain access to the participants, I used purposive sampling in the selection of participants. Qualitative researchers use purposeful sampling to select participants who are knowledgeable about the phenomenon and best suited for the investigation into the phenomenon (Merriam, 2014). The use of purpose sampling corresponds to the requirement that participants are relevant to the research topic (Kim, Giacomin, & Macredie, 2014). I sought voluntary participation from IT leaders who effectively managed their IT projects. Qualitative researchers select participants willing to share knowledge about the focus of the study to improve the quality and richness of the data collected (Turner, Kim, & Anderson, 2013). After receiving the institutional review board (IRB) approval to conduct the study, I e-mailed each candidate a letter of invitation explaining (a) the purpose of the study, (b) the privacy and confidentiality provided for each participant, and (c) the possible benefits from the study. I also included in the e-mail the informed consent form for participation in the study. To participate in the research study, each candidate responded affirmatively to the email. After receiving participants' return e-mail confirming their willingness to participate in the study, I contacted participants to coordinate their interview.

I built working relationships and trust with each participant. To build these relationships, I provided each participant with detailed information concerning the objective of the study, the interview protocol, and the confidentiality afforded to each participant. Additionally, I provided honest responses to any participant concerns. Qualitative researchers build a working relationship and earn trust by disclosing relevant information to the participants (Check, Wolf, Dame, & Beskow, 2014). I used an

informed consent form to demonstrate compliance with published ethical standards and ensure the legitimacy of the study. By using consent forms, qualitative researchers develop a level of trust with their participants and fashion a strong working relationship between the parties (Check et al., 2014; Miltgen & Peyrat-Guillard, 2014).

I ensured the participant characteristics aligned with the overarching research question. I ensured the selected participants (a) were qualified, (b) understood the phenomenon, and (c) could answer the research questions. Through the selection process, qualitative researchers select participants (a) knowledgeable in the subject area related to the overarching research question, (b) able to answer the research questions, and (c) familiar with the research phenomena (Leedy & Ormrod, 2013; Merriam, 2014; Yin, 2014). Through this selection process, I chose participants whose characteristics aligned with the overarching research question.

Research Method and Design

I used a qualitative research methodology and a multiple case study design for the study. The use of qualitative methodology offers researchers flexibility in gathering data and provides for the development of a rich understanding of the research topic (Cohanier, 2014). The use of the case study design permits broad portrayals and assessments of a phenomenon experienced by the participants (De Massis & Kotlar, 2014).

Research Method

I used a qualitative research methodology for the study. The researcher identifies the process or strategy to acquire knowledge about a topic with the research methodology (Khan, 2014). Qualitative researchers explore and gain a richer understanding of

phenomena while identifying emerging themes and patterns (Houghton, Casey, Shaw, & Murphy, 2013). The use of qualitative methodology does not limit researchers with a set of assumptions and offers flexibility in understanding the research phenomenon (Cohanier, 2014). Qualitative researchers construct a scientific understanding of participants' experiences (Medico & Santiago-Delefosse, 2014). The use of qualitative methodology allowed me to explore the experience of participants and identify themes and patterns. I found the qualitative methodology more appropriate than the quantitative or mixed-methods approach.

Quantitative methodology involves statistical procedures rather than exploratory research. In contrast to the exploratory nature of qualitative researchers, quantitative researchers examine hypothesis using measurements to (a) test theory, (b) evaluate statistical significance, and (c) establish relationships (McCusker & Gunaydin, 2015). Quantitative researchers use numerical data and measurable variables to test theories and relationships through structured statistical procedures and models (Gaskin & Chapman, 2014; Park & Park, 2016). The use of the quantitative methodology was not appropriate because the purpose of this study was to explore the participants' personal experiences of a phenomenon through open-ended questions. The quantitative methodology did not support the exploration of business leaders' perceptions and experiences (see Thamhain, 2014). I could have provided numerical data for a model of IT project success and failure, but I would not have been able to explore participants' experiences.

The mixed-methods approach combines quantitative and qualitative methodologies. Researchers use the mixed-methods approach when either a qualitative or

quantitative methodology does not offer sufficient capability to answer the research question (Mayoh & Onweugbuzie, 2015) The mixed-methods approach involves the statistical analysis of data and hypothesis testing (Mahoney & Vanderpoel, 2015; Maxwell, 2015). The objective of this study was the exploration of strategies that IT leaders use to effectively manage their IT projects. The use of statistical analysis and hypothesis testing was not appropriate for the study. Based on the exploratory objective of this study, the use of qualitative methodology was appropriate.

Research Design

I used a multiple case study to gain a rich understanding of the strategies that IT leaders use to effectively manage their IT projects. Qualitative researchers use a case study to investigate a contemporary phenomenon within its natural context (Yin, 2014). Qualitative researchers use the case study to obtain comprehensive portrayals and assessments of a phenomenon experienced by the participants (De Massis & Kotlar, 2014). Runfola, Perna, Baraldi, and Gregori (2017) added that researchers applying the case study design gain a deeper understanding of a complex phenomenon. I found the case study the most appropriate design to answer the research question and gain an in-depth understanding of the strategies used to effectively manage IT projects. In addition to the case study design, I considered the ethnographic, phenomenological, and narrative designs.

I did not find the ethnographic design appropriate for this study. Ethnographic research involves the systematic exploration of locally observed data over extended periods of time (Cappellaro, 2017). Ethnographic research is appropriate when exploring

the behaviors, beliefs, and experiences of a cultural group (Eika et al., 2015). Researchers use ethnographic designs to investigate the patterns or connections of people within a culture to gain perspectives of the culture (Birken et al., 2015). The ethnographic design was not appropriate because I was not investigating a culture.

I did not consider the phenomenological design appropriate for this study. Phenomenological research includes the exploration and understanding of the lived experiences of participants in a specific phenomenon (Osborn & Smith, 2015). Phenomenological researchers explore a process from the standpoint of one or more individuals (Ezeobele, Malecha, Mock, Mackey-Godine, & Hughes, 2014). Phenomenological researchers explore a common lived phenomenon experienced by an individual or groups (Conklin, 2014). The phenomenological design was not appropriate because I was not investigating the lived experiences of a phenomenon.

I also considered the narrative design but did not find this design appropriate for the study. Researchers using a narrative design have participants reiterate life events and happenings through narratives or stories (Rooney, Lawlor, & Rohan, 2016). Narrative research offers the exploration of past experiences over a time frame and then organizing these experiences into a meaningful compilation of the consequences from the events (Seal & Mattimoe, 2016). Qualitative researchers using the narrative design collect individual descriptions of a phenomenon, but may miss facts or specifics other participants identify (Wolgemuth, 2014). The narrative design was not appropriate because I was not looking to explore life events or happenings through the participants' stories. The case study design was appropriate because I could obtain a rich

understanding of strategies and challenges intended to address the business problem rather than examining subjective interpretations of experiences with a phenomenon. I ensured the quality of the collected data by confirming data saturation occurred.

I ensured quality data collection by checking for data saturation. Qualitative researchers confirm the quality of the data collected by ensuring data saturation occurs (Hyett, Kenny, & Dickson-Swift, 2014). I detected the stage when significant information did not appear and new themes or patterns did not emerge from the interviews. Data saturation occurs when no new themes or patterns emerge from the data (Morse, Lowery, & Steury, 2014; Murgatroyd, Lockwood, Garth, & Cameron, 2015). To aid in achieving data saturation, I used member checking, follow-up interviews, and triangulation. Member checking and follow-up interviews offer researchers a method to achieve data saturation (Marshall & Rossman, 2016). Data triangulation provides the method to achieve data saturation (Fusch & Ness, 2015). I confirmed data saturation occurred to enhance the quality of the data collected for the study.

Population and Sampling

The target population for the study included IT leaders who managed or were currently managing IT projects in the Saint Louis Metro East area. The target population consisted of approximately 35 IT leaders who managed or are currently managing IT projects in the Saint Louis Metro East area. The target population aligned with the overarching research question. Qualitative researchers select participants (a) knowledgeable in the subject area related to the overarching research question, (b) able to answer the research questions, and (c) familiar with the research phenomenon (Leedy &

Ormrod, 2013; Merriam, 2014; Yin, 2014). The target population consisted of IT leaders with a minimum of 5 years of experience in managing IT projects and either managed or were currently managing IT projects. Based on these requirements, the target population for the study was knowledgeable in the subject area, able to answer the research questions, and familiar with the research phenomenon. I selected participants for the study from the target population.

To select the participants for this study, I used the purposeful sampling method. Purposeful sampling consists of a nonprobability sampling technique useful in narrowing down the population and finalizing the sample based on the understanding of the participants' experiences (Mooi & Mohsin, 2014; Poulis, Poulis, & Plakoyiannaki, 2013). Qualitative researchers use purposeful sampling to select participants knowledgeable about the phenomenon and best suited for investigation into the phenomenon (Merriam, 2014). I used purposeful sampling to select participant knowledgeable about the phenomenon. I identified six knowledgeable participants from six different organizations to take part in the semistructured interviews based on their years of experience in managing IT projects. I selected participants having a minimum of 5 years of experience in managing IT projects.

The selected sample size was appropriate for this multiple case study. The appropriate sampling size for a qualitative study depends on such factors as the (a) nature and scope of the study, (b) quality of interviews, (c) sampling procedures, and (d) qualitative method used (Boardman & Ponomariov, 2014). While no standards exist for sample sizes and ensuring data saturation, Molenberghs et al. (2014) noted a small

sample size is acceptable when accomplishing case study research. Boddy (2016) remarked that data saturation becomes evident with the accomplishment of six in-depth interviews. For multiple case studies, Yin (2014) argued a sample size of three provides sufficient data in determining replication within the phenomenon setting. The selection of six participants was appropriate for this multiple case study. By selecting an appropriate number of participants, I ensured data saturation occurred.

I ensured data saturation by identifying when no new (a) ideas, (b) themes, or (c) concepts emerged from the interviews. Qualitative researchers achieve data saturation when no new ideas, themes, or concepts emerge from the interviews (Cleary, Horsfall, & Hayter, 2014). Qualitative researchers use data saturation to improve the quality of the study. By substantiating the occurrence of data saturation, researchers improve the quality of the data collected (Hyett et al., 2014). When reaching data saturation, researchers assume the capture of all significant information related to the research question and no new information will arise by analyzing more data (O'Reilly & Parker, 2015). I ensured data saturation occurred by detecting the stage when significant information did not appear from further interviews.

The method for selecting participants was appropriate for the study. I selected participants meeting the established requirements. The participants were (a) IT leaders in the Saint Louis Metro East area, (b) knowledgeable about the topic of the study, and (c) currently managing or had managed IT projects for a minimum of 5 years. Qualitative researchers confirm participant selection is appropriate for a study by ensuring participants are (a) knowledgeable in the subject area related to the overarching research

question, (b) able to answer the research questions, and (c) familiar with the research phenomenon (Leedy & Ormrod, 2013; Merriam, 2014; Yin, 2014). By establishing a defined criteria for participation in the study, I increased the probability of acquiring substantial data related to the overarching research question.

With the defined selection criteria for this study, I increased the prospect of obtaining significant information related to the overarching research question. By restricting the population to IT leaders in the Saint Louis Metro East geographic region, I created a homogenous population rather than a heterogeneous population. A homogenous population contains individuals with similar characteristics whereas a heterogeneous population contains individuals with dissimilar characteristics (Tavor & Spiegel, 2016). With a homogeneous sample, qualitative researchers (a) increase the possibility of gaining meaningful information, (b) enhance the depth of the study, and (c) use smaller sample sizes to obtain information (Robinson, 2014; Roy, Zvonkovic, Goldberg, Sharp, & LaRossa, 2015). The defined selection criteria established was appropriate for the exploration of strategies to effectively manage IT projects. I also ensured the interview setting for each participant was appropriate.

I collected the data from the participants by conducting semistructured, open-ended, and in-depth interviews. I conducted the face-to-face interviews in a setting free from distractions and comfortable to the participants. To make the participants comfortable, I let the participants choose the date, time, and location for their interview. Providing an interview location preferred by the participants improves their involvement in the interview and reduces possible bias (Mealer & Jones, 2014). By having a say in the

interview location, participants feel empowered and the interviewer builds a level of trust with the participants (Lunnay, Borlagdan, McNaughton, & Ward, 2014). To gain rich information from the participants, qualitative researchers use interview settings where the participants feels comfortable (Caetano, 2015). By allowing the participants to choose their interview location, I built a level of trust and ensured the participants were comfortable.

Ethical Research

I obtained permission from the participants prior to their participation in the study. After receiving approval from the institutional review board, I e-mailed prospective participants the informed consent form. By using the informed consent form, I provided to the prospective participants the guidelines for participation in the study and the steps to protect their confidentiality. The guidelines included information on (a) details of the study, (b) procedures for conducting the research, (c) steps for withdrawal from the study, (d) benefits that may come from the findings, and (e) my contact information (telephone number and e-mail address). Researchers must provide to the participants the oversight procedures of the study and the plans to safeguard their identity for participating in the study (Bromley, Mikesell, Jones, & Khodyakov, 2015). To indicate their willingness to participate voluntarily in the study, the prospective participants responded to the e-mail with the words “I consent.” By not responding, prospective participants indicated their refusal to partake in the study. The participants had the option to withdraw from the study at any time for any reason.

The participants had the option to withdraw for any reason, or at any time, from the study. The participants did not incur a penalty for withdrawing. To withdraw from the study, the participants needed only inform me about their wish to not participate further in the study. Researchers need to inform their participants about the withdrawal opportunity for any reason (Rasmussen & Berntsen, 2014). I did not include any data collected from a withdrawing participant in the study. The participants did not receive any compensation or incentive for their participation in the study.

I ensured the ethical protection of the participants was adequate. I guaranteed the data collected for the study remained confidential. Qualitative researchers do not comprise the identity of their participants when using the concept of confidentiality (Lancaster, 2015). To ensure confidentiality, I assigned pseudonyms for the participants. The assignment of a pseudonym provides anonymity and privacy for the participants (Bourne & Robson, 2015). By applying case pseudonyms early in the research process, qualitative researchers provide anonymity and privacy for the participants while still being able to discuss various aspects of the research and maintaining ethical protection for the participants (Taylor, 2015). My ethical obligation was to ensure the confidentiality and privacy of the participants. To maintain the confidentiality and privacy of the participants, I assigned a pseudonym, such as P1, P2, and P3, for the participants and a pseudonym for their organizations, such as O1, O2, and O3. I maintained the pseudonyms in any study-related files and notes. In addition, I did not exploit any knowledge or reveal any information that caused embarrassment to the participants.

I will restrict access to all research data for 5 years to protect the participants' confidentiality and privacy. Researchers restricting access to the research data safeguard the confidentiality and privacy of the participants (Check et al., 2014). I will store all data collected securely for 5 years by keeping all electronic research data password-protected and paper research data in a locked filing cabinet. After 5 years, I will destroy any confidential evidence and materials associated with the study. The evidence and materials include any transcripts, interview recordings, documents, notes, and informed consent forms associated with the study. For this study, the Walden IRB approval number was 09-08-17-0623710.

To protect the confidentiality of the participants, I assigned pseudonyms for the participants and their organizations. I redacted any distinctive information connected with the identity of any participant or organization. I also ensured the manuscript did not include names or any other identifiable information related to the individuals or organizations. Bourne and Robson (2015) remarked that researchers provide their participants confidentiality by assigning pseudonyms. I safeguarded all collected data by keeping electronic data password-protected and paper data in a locked filing cabinet.

Data Collection Instruments

I functioned as the primary data collection instrument for the qualitative study. For qualitative studies, the researcher acts as the primary instrument and is the active instrument involved in the collection of data from interviews and other sources of evidence (Alshenqeeti, 2016; Elo et al., 2014; Medico & Santiago-Delefosse, 2014). To collect data for the study, I conducted semistructured interviews. By using interviews to

collect data, researchers gain a comprehensive knowledge about the phenomenon under study (Tsang, 2014). The protocol for the interview sessions involved five semistructured questions and supplemental probing questions (see Appendix A). Semistructured interview questions provide for comprehensive data collection to address the research question (Haraldsson, Christensson, Conlon, & Henricson, 2015).

I followed the interview protocol defined in Appendix A. Yin (2014) noted that an interview protocol is an important tool to improve credibility of the study. Before beginning the interviews, I ensured the participants understood the informed consent form. I used face-to-face interviews as the primary data collection method with the participants. For each interview, I scheduled one hour at a location convenient to each participant. For the semistructured interviews, I used the prearranged questions listed in the interview protocol (see Appendix A). The prearranged interview questions related precisely to the overarching research question concerning the strategies used to effectively manage IT projects. By using semistructured interviews, the researcher has flexibility to ask probing follow-up questions that may lead to richer information and more in-depth, detailed data (Roulston & Shelton, 2015). To accurately collect data during the interviews, I used an audio recorder, field journal, and a writing instrument. I supplemented the audio recordings by recording notes in the field journal to capture various gestures, nonverbal cues, and body language of the participants. After the completion of each interview, I recorded personal thoughts in the field journal to minimize any potential personal biases or influences. Chen (2015) argued that researchers minimize potential biases and personal influences by using bracketing, which involves

researchers writing notes during interviews and maintaining a field journal. By using these instruments during data collection, I ensured the transcribed recordings are accurate and reliable.

In addition to the collection of data through interviews, I asked the participants to provide any documents used by their organizations to aid in the management of IT projects and relevant to the overarching research question. I extracted and analyzed the information within these documents to search for material related to IT project management strategies. After analyzing these documents, I compared the analysis to the transcribed interviews to further enhance the credibility of the findings. Yin (2014) remarked that multiple sources of evidence help readers comprehend the data and improve the credibility of the findings. To further enhance the reliability and validity of the data collection instrument, I used member checking.

I used member checking with the participants to increase (a) data accuracy, (b) minimize erroneous data, and (c) strengthen the reliability and validity of the study. The member checking process consists of the researcher sharing data and interpretations of the data with the participants (Harvey, 2015). I reviewed the initial findings and interpretations of the data with the participants. Researchers using member checking validate the accuracy of the interview recordings (Harvey, 2015). The use of member checking with the participants allows researchers to strengthen the reliability and validity of the findings (Myburgh, 2014). I enhanced the quality and accuracy of the collected data and the findings by applying member checking.

Data Collection Technique

I collected data from one primary data source and two secondary sources. The primary data source was the use of semistructured interviews. The two secondary data sources were the field journal notes and organizational documents. For the interviews, I used face-to-face interviews as the primary method to collect data. Qualitative researchers use personal interviews, document analysis, and observations to collect information for their studies (Arseven, 2014; Haahr, Norlyk, & Hall, 2014). To gain rich data and in-depth knowledge related to the research question, I used semistructured interviews. With the use of semistructured interviews, I explored the strategies IT leaders use to effectively manage their IT projects.

I used the interview protocol (see Appendix A) as a guide in conducting the semistructured interviews. Yin (2014) noted that the interview protocol directs the format of the interviews. After receiving IRB approval for the study, I initiated contact with potential participants. I e-mailed the informed consent form to prospective participants. Potential participants acknowledged their consent to participate in the study by responding to the e-mail with the words "I consent." After receiving responses to the informed consent forms, I contacted the participants to schedule the date, time, and location for their interview. The participants chose the date, time, and location for their individual interview. Researchers allowing the participants to choose the location of an interview provide a sense of empowerment, build a level of trust with the participants, and allow participants to feel comfortable (Caetano, 2015; Lunnay et al., 2014; Mealer & Jones, 2014). One day before the scheduled interview date, I confirmed with the

participants the interview date, time, and location. I conducted each interview based on the following process:

1. introduce myself to the participant to build a connection,
2. summarize the research topic and purpose for the interview,
3. explain the informed consent form and guarantee of participant confidentiality,
4. seek approval from participant to record the interview,
5. inform the participant about the option to discontinue the interview at any time,
6. encourage the participant to answer interview questions to the best of his or her ability;
7. conduct the interview, and
8. thank the participant for his or her time and contribution to the study.

After each interview was completed, I documented any related data or details associated with the participants in a field journal. Interview details included the participant's name, date of interview, location, start time of interview, end time of interview, and general observations related to the interview. Researchers using a journal to record reflexivity and reflective interview notes enhance the trustworthiness and confirmability of the study (Hietanen, Sihvonen, Tikkanen, & Mattila, 2014). Qualitative researchers minimize potential biases and personal influences by writing notes during interviews and maintaining a field journal (Chen, 2015). In addition, the use of a field journal to record reflective and reflexivity notes permits researchers to explore additional

experiences from the participants (Davies, Reitmaier, Smith, & Mangan-Danckwart, 2013). By using a field journal, I increased the trustworthiness and confirmability of the study. In addition to the field journal, I collected secondary data from organizational documents provided by the participants.

I collected organizational documents relevant to the research question from the participants. After receiving their confirmation to participate in the study, I e-mailed the participants to provide any organizational documents related to the research question. Qualitative researchers use the analysis of documents as an effective means to support primary data (Arseven, 2014; Haahr et al., 2014; Yin, 2014). I used the organizational documents to crosscheck the primary data for consistency while enhancing the findings of the study. Researchers must consider the advantages and disadvantages of the various data collection techniques.

The use of semistructured interviews offers the researcher several advantages in collecting data. First, qualitative researchers design their interview questions to target the research topic (Yin, 2014). Second, researchers use semistructured interviews to allow participants an opportunity to express their views and opinions (Chin, Evans, & Choo, 2015). Third, the use of semistructured interviews allows researchers to collect rich data for analysis by exploring new paths emerging during the interview and providing an opportunity for participants to explain or clarify any details (Aguirre & Bolton, 2014; Doody & Noonan, 2013). By using semistructured interviews, Masse, Naiman, and Naylor (2013) collected richer data and gained deeper insights into their research

problem. Qualitative researchers must also consider the disadvantages of using semistructured interviews.

The use of semistructured interviews presents several disadvantages for the researcher. Disadvantages of using semistructured interviews include the misrepresentation of information by participants based on (a) errors in recalling information, (b) a desire to satisfy the interviewer, or (c) selective representation of the information (Doody & Noonan, 2013; Onwuegbuzie & Byers, 2014). In addition, participants may digress from the question related to the research topic (Yin, 2014). To keep participants engaged on the research topic, researchers must pay attention throughout the interview and build trust with the participant by exhibiting an unbiased demeanor (Doody & Noonan, 2013; Yin, 2014).

The use of a field journal for note taking has advantages and disadvantages. The use of a journal allows researchers to gather rich data and further insight into the phenomenon (Davies et al., 2013). By using journals, qualitative researchers improve their understanding of the interview data and enhance data reliability through the recording of nonverbal expressions and communication (Comi, Bischof, & Eppler, 2014; Onwuegbuzie & Byers, 2014). The disadvantages of using a field journal include adverse emotional reactions or poorly received data by the interviewer (Robinson, 2014).

The collection of organizational documents has advantages and disadvantages. Document review augments other collected data by allowing the researcher to validate and corroborate the data from multiple sources (Turner & Danks, 2014; Yin, 2014). Document review offers researchers a reliable source for corroborating evidence (Check

et al., 2014). The disadvantages of document review include chances that the documents are inaccessible, outdated, incomplete, or contain biases (Yin, 2014). To further improve the accuracy of the data, I used member checking with the participants.

I used member checking to improve the quality and reliability of the collected data. The member checking process involves the researcher providing participants a summary of the interpretations to their responses and participants verifying the accuracy of their summary (Andrasik et al., 2014). After the initial data analysis phase, I included the participants in a review of the initial findings and interpretations. I provided the participants a summary of their responses and my interpretations of their responses. I asked the participants if the summary accurately reflected their responses and to provide any additional information or clarity. The use of member checking in qualitative studies enhances the reliability and validity of the collected data (Harvey, 2015; Myburgh, 2014; Yin, 2014).

Data Organization Technique

I created a secure electronic filing system and hard copy folders to manage the research data collected. The organization and securing of data is an important phase prior to beginning data analysis (Potter, Mills, Cawthorn, Donovan, & Blazeby, 2014). For electronic data, I used Microsoft Word, Microsoft Excel, and NVivo 11 as the primary software applications to store, organize, and analyze data. NVivo is an appropriate software program for data organization, management, and analysis (Castleberry, 2014; Zamawe, 2015). I created file folders for all hard copy data collected. To develop an easy retrieval system for data analysis, I created pre-defined categories for the data collected. I

maintained the electronic filing system on two password-protected flash drives. I used one flash drive as the primary data storage and the second flash drive as the backup storage. I maintained hard copy folders in a locked filing cabinet. Researchers restricting access to the research data safeguard the confidentiality and privacy of participants (Check et al., 2014). I transferred as many of the obtained hard copy documents as possible to an electronic format for easier storage and retrieval. I shredded the hard copy documents that I successfully transferred to the electronic format.

I organized and stored the collected data, as appropriate, in either electronic or hard copy format. At the completion of each interview, I transcribed the recording immediately. By transcribing immediately after an interview, qualitative researchers minimize errors in data transcription and interpretation (Yin, 2014). After transcribing the interviews, I uploaded the data into the NVivo 11 software application for future analysis. NVivo provides an appropriate software program for data organization, management, and analysis (Zamawe. 2015). I organized and stored any organizational documents in the established pre-defined categories for later retrieval. Qualitative researchers increase their ability to summarize collected data when organizing the data into manageable units (Gill, 2014). During the data organization process, I replaced the identity of participants and organizations with the assigned pseudonyms. By assigning pseudonyms, I maintained the privacy and confidentiality of the participants.

In addition to the interview data and organizational documents, I organized the information collected within my field journal. When used appropriately, qualitative researchers use journals as a valid method of accessing rich qualitative data and exploring

additional participant experiences (Davies et al., 2013). Shek and Wu (2013) added that researchers taking notes during interviews may discover emerging themes from their journals. Researchers using a journal during the interview capture nonverbal communication or suggestive comments and may increase their understanding of the interview data (Onwuegbuzie & Byers, 2014). I included my field journal notes during the organization of the research data. With the collection of additional data, I reassessed my data organization strategy.

I reassessed my data organization and analysis techniques after collecting additional research information. To enhance the quality of the research results, qualitative researchers accomplish several changes to their data organization and analysis techniques (Vernon-Dotson, 2013). During data collection and data organization, I identified various categories and themes from the interview data, documents, and notes. The identification of these categories and themes differed from the pre-defined categories before data collection began. Qualitative researchers facilitating the grouping of data into categories and subcategories enhance their data analysis (Marshall & Rossman, 2016). Qualitative researchers produce a quality study by reviewing all data (Yin, 2014). In addition, I will protect the data securely for 5 years.

I will restrict access to all research data for 5 years to protect the confidentiality and privacy of the participants. Researchers restricting access to the research data safeguard the confidentiality and privacy of the participants (Bourne & Robson, 2015; Bromley et al., 2015; Check et al., 2014). I will store all data collected securely for 5 years by keeping all electronic research data password-protected and paper research data

in a locked filing cabinet. After 5 years, I will destroy any confidential evidence and materials associated with the research study. The evidence and materials include any transcripts, interview recordings, documents, notes, and informed consent forms associated with the study.

Data Analysis

I analyzed and interpreted meanings from the collected information. The purpose of data analysis is to identify themes addressing the central research question of the study (Thomas, 2015). In a qualitative study, the application of data analysis is a vital stage in identifying relevant information related to the central research question (Anney, 2014). Data analysis encompasses coding the data and developing meaningful themes (Paulus, Woods, Atkins, & Macklin, 2017). Through the analysis of the data, I identified emerging themes or patterns related to the research question. I also used triangulation to improve the rigor of the study.

The use of triangulation increases the confidence of the research findings. Qualitative researchers using triangulation offer a complete presentation of the data by analyzing of two or more objective sources (Overgaard, 2015). Qualitative researchers increase the rigor and trustworthiness of a qualitative study by using triangulation to combine data, connect sources, and draw conclusions (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014; Cope, 2014). The use of triangulation increases the confidence in the research findings because of the added rigor applied by the researcher. Different methods of triangulation exist for researchers to use with qualitative studies.

Four types of triangulation exist for use in qualitative research. The types of triangulation include (a) data triangulation, (b) investigator triangulation, (c) theoretical triangulation, and (d) methodological triangulation (Carter et al., 2014; Yu, Abdullah, & Saat, 2014). For this study, I used methodological triangulation. I used the interviews, associated documentation, and the reflexive notes maintained in my field journal for methodological triangulation. Owen (2014) remarked that a combination of interviews, associated documentation, and a reflexive journal assist in the triangulation of data. Researchers using methodological triangulation compare multiple sources of evidence to develop a comprehensive view of the phenomenon (Overgaard, 2015). When using the case study design, qualitative researchers use methodological triangulation as a common triangulation method (Anney, 2014). I used the interview data, company documentation, and my reflexive notes for methodological triangulation.

To analyze the information related to the strategies used by IT leaders to effectively manage their IT projects, I followed the five step process identified by Yin (2014). The five analysis steps include (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding. By breaking down and then regrouping the data through these steps, qualitative researchers ensure a detailed investigation and a high-quality analysis (Yin, 2014).

Compiling

During this initial data analysis phase, I gathered data from interviews, organizational documents, and journal notes. I compiled and organized the collected data in NVivo 11 and the Microsoft Word and Excel software applications. I began to read

and reread the transcribed interviews, examine organizational documents, and review my journal notes. Through this process, I gained a thorough understanding of the data. By repeatedly reading data, qualitative researchers identify concepts, phrases, themes, and terms associated with the study phenomenon (Aguirre & Bolton, 2014; Leedy & Ormrod, 2013; Vernon-Dotson, 2013). After compiling the data, I began to disassemble the data.

Disassembling

During this phase of data analysis, I disassembled the data to identify concepts, themes, phrases, and terms. While disassembling the data, I began coding by segmenting and tagging the data into the broad categories identified in the literature review. A code represents an abstract depiction of an object, experience, or phenomenon and provides a method of identifying themes or patterns within text (Lee, 2014). The coding process consists of detecting categories or themes and then grouping the data (Turner et al., 2013). I analyzed the audio and transcribed recordings, documents, and journal notes to identify any themes, patterns, or trends emerging from the data. During the coding process, I added additional categories or themes appearing during the data analysis process. Qualitative researchers should include new codes uncovered during data analysis (Elo et al., 2014). After identifying the codes associated with the data, I began to reassemble the data into emerging themes.

Reassembling

After disassembling the data, I reassembled the data into emerging themes. To aid in the development of themes, I used the NVivo 11 software application. The NVivo 11 software application is an appropriate software program for data organization,

management and analysis (Zamawe, 2015). I used the auto-coding and nodes functions in the NVivo 11 software to organize and identify emerging themes. The NVivo software affords researchers the opportunity to uncover groupings and themes (Sotiriadou, Brouwers, & Le, 2014). The identification of emerging themes is the crucial indicator of success during this step. I identified the emerging patterns and themes during this phase.

Interpreting

After identifying emerging patterns and themes, I interpreted the meaning of the data. I correlated the emerging themes with the overarching research question. I took these emerging themes and developed a meaningful understanding of the strategies that IT leaders used to effectively manage their IT projects. Qualitative researchers interpret data to provide an understanding and enhance the knowledge of the research question (Thomas, 2015; Yin, 2014). After completing data interpretation, I concluded the data analysis portion of the study.

Concluding

The final step of data analysis was finalizing the conclusions. To further enhance the reliability and validity of my findings, I sought the participant's perspectives on my interpretation of the data and provided participants an opportunity to add additional perspectives of my interpretations. Qualitative researchers increase the accuracy and credibility of the findings by allowing the participants to add their perspectives to the data interpretation (Harvey, 2015). I included direct quotes from the participants to maintain the integrity and trustworthiness of the study. Qualitative researchers improve the trustworthiness and integrity of the study by including participant quotes in the analysis

(Aguirre & Bolton, 2014). I refrained from incorporating any personal thoughts or biases that influence results. Qualitative researchers enhance the reliability and validity of their studies by reporting findings based solely on the data collected (Noble & Smith, 2015). I enhanced the accuracy and credibility of the study by reporting findings based exclusively on the data collected and refraining from incorporating any personal thoughts or biases.

I used NVivo 11 software to assist me in coding and identifying themes. The NVivo 11software application is an appropriate software program for data organization, management, and analysis (Zamawe, 2015). The NVivo 11 software offers the auto-coding and nodes functions that aid the researcher to uncover groupings and themes during data analysis (Sotiriadou et al., 2014). I then focused on the groupings and themes uncovered during data analysis.

I focused on the key themes discovered during data analysis. I correlated these themes with the themes identified in the literature review, new studies published since the writing of this proposal, and the conceptual framework. For this study, I used the general systems theory and the coordination theory as the conceptual framework. By correlating the emergent themes with prior literature and the conceptual framework, I attributed substance to the findings and assisted in answering the overarching research question. By associating emergent themes with the conceptual framework and prior literature findings, qualitative researchers add meaning to their findings and help answer the research question (Borrego, Foster, & Froyd, 2014; Yin, 2014). In addition, I included direct quotes from the participants to increase the integrity and trustworthiness of the study.

Qualitative researchers improve the trustworthiness and integrity of the study by including participant quotes in the analysis (Aguirre & Bolton, 2014). Through this process, I gained a better understanding of the context of this study, which was to identify strategies used by IT leaders to effectively manage their IT projects.

Reliability and Validity

Qualitative researchers develop the reliability and validity of a study to increase the quality of the findings. Reliability establishes the consistency of the findings so other researchers replicating the study would draw similar results (Munn, Porritt, Lockwood, Aromataris, & Pearson, 2014). Validity signifies the findings of a study deliver an accurate representation of the phenomenon (Chen, 2015). To obtain reliability and validity, qualitative researchers develop rigor within the study. Rigor represents the trustworthiness and confidence in the study findings, offers adequate details to replicate the study, and ensures the findings accurately represent the participants' meanings (Grossoehme, 2014). Qualities associated with rigor include dependability, credibility, transferability, and confirmability (Hays, Wood, Dahl, & Kirk-Jenkins, 2016). I included these qualities to improve the reliability and validity of the study.

Reliability

Reliability relates to the consistency, quality, and reliability of other researchers replicating the study and producing comparable results. When a study is reliable, future researchers will obtain matching results when repeating the research procedures within a study (Grossoehme, 2014; Munn et al., 2014). To obtain reliability for a study, qualitative

researchers ensure the research methods deliver accuracy and the data interpretation methods provide integrity (Hays et al., 2016).

Qualitative researchers focus on the consistency and relevancy of the participants' responses when developing dependability. Qualitative researchers use member checking to confirm consistency and reliability of their findings (Harvey, 2015). Data consistency and trustworthiness are two significant features of dependability. The dependability of a study improves when the researcher describes the processes for (a) selecting participants, (b) collecting data, (c) analyzing data, (d) interpreting data, and (e) reporting the findings (Elo et al., 2014). When creating dependability with their study, researchers establish the repeatability and replicability of the study (Chen, 2015). I fully described the research processes used in the study and used member checking to increase the dependability of the study.

Validity

Qualitative researchers enhance the truthfulness and accuracy of their findings by developing the validity of their study. Validity relates to the truthfulness of the findings and the results of the study accurately reflect the phenomenon observed by the researcher (Grossoehme, 2014). For qualitative research, Venkatesh, Brown, and Bala (2013) identified the essential principles when developing validity. The principles include (a) credibility, (b) transferability, and (c) confirmability. I addressed each of these principles and data saturation in further detail.

Credibility. The first element of validity is credibility. Credibility signifies the trustworthiness of the findings. When a study is credible, the results of the study are

reliable, believable, and accurately represent the participants' responses (Venkatesh et al., 2013). To ensure credibility, I used member checking and triangulation. I provided the participants a summary of their responses and my interpretations of their responses. I asked the participants to review the summaries, determine whether the summaries accurately reflected their responses, and to provide any additional information or clarity. Researchers strengthen the reliability and validity of a study by increasing accuracy through member checking (Harvey, 2015; Myburgh, 2014). I e-mailed the summaries to the participants and provided the participants 5 days to review and asked them to include additional comments or clarification.

I also applied triangulation to increase the credibility of the study. Researchers increase the consistency of the findings by using triangulation, or crosschecking the data collected from various sources (Behera, Mohanty, & Prakash, 2015). Triangulation creates a foundation for validating research data by eliminating attribution errors through corroboration of the collected data (Urban, Hargraves, & Trochim, 2014). Multiple sources of data provide researchers the means to substantiate and validate the evidence obtained (Yin, 2014). I cross checked the collected data through multiple sources and used member checking to confirm the accuracy of the interpreted account.

Transferability. The second element of validity is transferability. Transferability refers to the ability to extending the findings of a study to similar contexts. Qualitative researchers providing detailed descriptions of the research context and assumptions that are significant to the study enable other researchers to transfer the results of the study to similar settings (Cope, 2014; Houghton et al., 2013). By providing a detailed account of

the population and boundaries of a study, researchers enable others to transfer their findings to similar settings (Poulis et al., 2013). I provided a detailed account of the research context and assumptions to enable others to transfer these findings to similar settings.

Confirmability. The third element of validity is confirmability. Confirmability refers to the extent other researchers substantiate or verify the findings of a study (Venkatesh et al., 2013). Qualitative researchers reach confirmability when the results of the study reflect the participants' responses instead of any biases or interests of the researcher (Chen, 2015). In qualitative studies, researchers achieve confirmability by providing an audit trail of the judgments and decisions made during the study (Houghton et al., 2013). To address the confirmability of the study, I kept a field journal and documented my judgments and decisions during the research process. I also documented personal feelings, biases, and insights after the interviews in a reflexive journal as part of the field journal.

Data saturation. Qualitative researchers use data saturation to improve the quality of the study. By substantiating the occurrence of data saturation, researchers improve the quality of the data collected (Hyett et al., 2014). When reaching data saturation, researchers assume the capture of all significant information related to the research question and no new information will arise by analyzing more data (O'Reilly & Parker, 2015). Qualitative researchers achieve data saturation when no new ideas, themes, or concepts emerge from the interviews (Cleary et al., 2014). I ensured data saturation occurred by detecting the stage when significant information would not appear

from further interviews.

Transition and Summary

In Section 2, I provided detailed portrayals of the research methodology of the study. I validated the use of the multiple case study design as the most suitable for this study. I also discussed the role of the researcher, participants for the study, and their selection criteria. I explained the strategies used for the data collection procedures through the data analysis methods. I also outlined the procedures used to establish the reliability and validity of the study. In Section 3, I present the findings of the study, recommendations for action, recommendations for future research, and the implications for social change.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore strategies IT leaders used to effectively manage IT projects in the Saint Louis Metro East area. The use of methodological triangulation and thematic analysis for six semistructured interviews and related organizational project documents resulted in the identification of four emergent themes. The four emergent themes allowed for adequate discussion of the strategies that IT leaders used to effectively manage their IT projects.

Presentation of the Findings

The overarching research question for this study was as follows: What strategies do information technology leaders use to effectively manage their information technology projects? The four themes emerging from the analysis included (a) effective communication, (b) project planning, (c) project execution management, and (d) project closure. While discussing several strategies, the participants identified the first theme of effective communication as the predominant theme. The evaluation of risk analysis and mitigation connected the second theme of project planning and the third theme of project execution management. The identified themes and strategies linked to the conceptual framework and the literature reviewed in this study.

Theme 1: Effective Communication

The first theme was the importance of effective communication during the project process. All of the participants identified effective communication as a strategy to improve the success of IT implementation. These communication strategies included (a)

stakeholder engagement, (b) top management involvement, and (c) daily meetings (see Table 2).

Table 2

Strategies Used for Effective Communication

Strategy	n	%
Stakeholder engagement	6	100
Top management involvement	4	67
Daily status meetings	3	50

The theme of effective communication confirmed the findings from the existing knowledge in that an effective communication strategy is critical to the successful implementation of a project. Allen et al. (2014) noted that effective communication plays a significant role in successful project management. The participants indicated that they used more intensive communication techniques to manage and control their IT projects. The project leader's ability to communicate effectively is more important than experience, work history, education, and expertise (Whitney & Daniels, 2014). Each participant emphasized the importance of keeping all team members and stakeholders informed throughout the progress of the project. Lack of communication can inhibit the progress of a project by creating ambiguity with team members and stakeholders (Jorgenson, 2014). P3 stated "effective communication with the stakeholders prevented me from having to delay my project."

Stakeholder engagement. Each participant noted that stakeholder engagement

was a key component to successful project implementation. Stakeholders include individuals who are affected or have an interest in the new product or service (Yip, Phaal, & Probert, 2014). P1 and P3 indicated that they "went out of their way" to ensure the stakeholders remained involved with every aspect of their IT projects. A review of the organizational documents supported stakeholder identification and engagement as a key strategy for project success. In two of the organizational documents, the project manager needed to identify all stakeholders in the project charter.

The subtheme of engaging the stakeholders confirmed the findings in existing literature on effective business practice. Hidding and Nicholas (2017) remarked that engaging stakeholders is an important component of effective project management. Project leaders should engage and communicate with stakeholders as early as possible to develop relationships (Missonier & Loufrani-Fedida, 2014). The concept of engaging stakeholders through clear communication was critical in building shared values, achieving the goals of a project and ensuring project success (Berman & Marshall, 2017; Pak et al., 2016). P5 stated "one stakeholder only engaged the project at specific milestones. With the lack of interest and knowledge about the project, the stakeholder created problems and delays for the project."

Top management involvement. The participants revealed the involvement of top management as another strategy for effective communication. P3 and P5 indicated that communicating with top management throughout a project is essential to ensure success. P5 further remarked "keeping top management involved with regular updates increased the chances of success if the project encountered unexpected risks or problems." Obeidat

and North (2014) noted that the risk of an IT project failing increased when top management was not committed to the project and did not supply the necessary support to successfully complete the project. P6 also remarked “acquiring the correct team members was easier when keeping top management involved in the project.”

The subtheme of top management involvement confirmed the findings in existing literature on effective business practice. Landaeta Olivo, Garcia Guzman, Colomo-Palacios, and Stantchev (2016) noted that project managers must ensure top management support when managing projects. Obtaining top management support correlates to overall project success by aiding in (a) the resolution of any issues or conflicts, (b) the provisioning of appropriate resources to the project, (c) the removal of barriers that may inhibit successful implementation, and (d) the provision of corporate guidance and strategies (Landaeta Olivo et al, 2016; Liu, Wang, & Chua, 2015).

Daily status meetings. The participants identified the importance of daily status meetings to improve the chances of success for the implementation of IT projects. P2 and P3 used short daily morning meetings for status updates on their projects. From these meetings, P2 would reposition personnel to various tasks of the project that had fallen behind the scheduled time line. Through this process, P2 noted that “I had a better chance of keeping my project on schedule by reshuffling my people.” P5 also conducted daily meetings; however, P5 conducted these meetings at the end of each workday. P5 felt a review of the project events at the end of the day helped to develop a plan of attack for the next day.

The interesting point associated with this subtheme is that both P2 and P3 had obtained their Scrum certifications. The Scrum process is an agile project management framework that consists of specific development based on incremental growth of the product and fixed time iterations (Azanha, Argoud, Camargo Junior, & Antoniolli, 2017; Ozieranska, Kutchta, Skomra, & Rola, 2016). Ozieranska et al. (2016) further noted that regular meetings were important in communicating between team members and in the execution of tasks within the project. P2 and P3 applied the Scrum methodology to their IT projects.

The subtheme of daily status meetings extended the knowledge within literature on effective business practices. Researchers differed on the importance of daily status meetings. Previous researchers identified continuous communication as a critical success factor; however, researchers analyzing IT projects using traditional project management methods did not identify the use of daily meetings as a strategy to enhance communication channels (De Carvalho, 2014; Park, Lee, & Lee, 2014). With the use of agile methods such as Scrum to manage projects, researchers noted the value of employing daily meetings as a method of increasing communication and project effectiveness (Azanha et al., 2017; Ozieranska et al., 2016). The current study participants identified the significance of using daily status meetings as a strategy to increase the effectiveness of IT implementation.

Theme 2: Project Planning

The second theme was the importance of resourceful project planning prior to starting the project. Most participants identified project planning as a strategy to improve

the success of IT implementation. These planning strategies included (a) risk analysis, (b) selection of key project personnel, and (c) performance measures (see Table 3).

Table 3

Strategies Used for Project Planning

Strategy	n	%
Risk analysis	5	83
Selection of key project personnel	4	67
Performance measures	4	67

The theme of resourceful project planning confirmed the findings in the existing body of literature in that an effective project planning strategy is vital to the successful implementation of an IT project. Serrador and Turner (2015) noted a relationship exists between the planning effort and the overall quality and success of an IT project. The current study participants indicated that appropriate and resourceful project planning improved their chances of successfully implementing an IT project. P4 remarked "I spent more time planning the processes of a project because a good plan lays the foundation for good execution." A core element of project success is effective project planning (Zwikael, Pathak, Singh, & Ahmed, 2014). P6 noted a key element of successful planning is the analysis of risk associated with the project.

Risk analysis. The participants remarked that risk analysis during the planning phase was an important component in project success. Risk is a hypothesized condition that could seriously affect the success of an IT project (Liu, 2016). P1 remarked "even

though the risk may not occur during the project, the identification of a risk allowed for contingency planning to mitigate the risk." An examination of the organizational documents provided by three of the participants supported the identification of risk analysis as a key phase during project planning. Each document contained a risk management section in which the project manager was required to identify possible risks associated with the project. The identification of potential risks is pivotal in building response plans and managing risks during the execution of an IT project (Javani & Rwelamila, 2016). P6 remarked "identifying new risks can be difficult because most risk analysis is based on what happened in past projects." Yu, Chen, Klein, and Jiang (2015) remarked that literature provides lists and worksheets for risk analysis; however, many risks are unique to the system and not easily identifiable.

The subtheme of risk analysis confirmed findings in existing literature on effective business practice. Javani and Rwelamila (2016) revealed the significance of appropriate risk analysis during the planning process. Researchers extensively investigated risks associated with IT projects and established risk identification and analysis as an essential step to successful implementation of IT projects (Yu-Chih Liu & Asri Rizki, 2016). P4 stated "if I did not analyze risks that may occur within the project before starting the project, I was almost assured of failure."

Selection of key project personnel. The participants recognized the importance of selecting the appropriate project personnel for successful project implementation. P4 remarked "when I am first assigned to a project, I try to identify the right members I want for the project team. I want my team members to be competent and also be able to work

together without too much conflict." Project leaders should select their team members based on skills and experience so they can leverage their strengths when executing the project (Zhu & Kindarto, 2016). In addition to selecting the proper skills, project leaders need to select a team that can build good relationships and work collaboratively (Zou, Kumaraswamy, Ching, & Wong, 2014). P5 stated "getting the manpower assigned to my project can be difficult. Many times, these people have assignments to other projects and I have to share manpower with other projects." Chang (2017) noted that resource allocation is one of the most challenging issues with multi-project management. P2 further remarked "identifying the team members who can accomplish the project tasks plays a major role towards reaching project success."

The subtheme of the selection of key project personnel confirmed findings in existing literature on effective business practice. Bayiley and Teklu (2016) noted that the selection of key personnel and the development of working relationships within the team are essential components of a successful project. With the complex nature of IT projects, project managers encounter increased personality and interpersonal conflicts (Miller, Balapuria, & Mohamed Sesay, 2015; Zou et al., 2016). In addition, project managers face challenges with their necessity to share personnel resources with other projects (Chang, 2017).

Performance measures. The participants pinpointed the accurate identification of the project's performance measures as a basic requirement for successful project implementation. P6 noted "reaching the end goal was easier when I could clearly identify the required metrics." The identification of a project's fundamental metrics provided the

basis for analyzing and assessing the progress of a project (Martens & Vanhoucke, 2017). P5 further noted that identifying milestones of the project helped to recognize warning signs during the execution of a project. Kerkhove and Vanhoucke (2017) remarked that project managers obtaining an accurate assessment of how a project is performing impacts the quality of their decisions about the project.

The subtheme of performance measures confirmed the findings in existing literature on effective business practice. Hidding and Nicholas (2017) recognized a project's performance measures is critical to the success of an IT project. Project managers pinpointing the different phases and establishing detailed indicators in support of managing an IT project increase their opportunity to implement the project successfully (Kaczorowska et al., 2016; Martens & Vanhoucke, 2017). P1 remarked "keeping track of the project and measuring its progress was easier when the metrics were clearly identifiable to both the project team and the customer." Yin, Choi, de Oliveira, and Mulva (2016) indicated project managers using performance metrics can evaluate the performance of their projects during the various phases.

Theme 3: Project Execution Management

The third theme was the significance of the project manager to effectively execute and manage the IT project to completion. The participants identified the project leader's role in managing the project execution as an essential element in the success of an IT project. These project execution strategies included (a) leadership, (b) change management, (c) monitoring processes, and (d) risk mitigation (see Table 4).

Table 4

Strategies Used for Project Execution Management

Strategy	n	%
Leadership	4	67
Change management	4	67
Proactive monitoring processes	3	50
Risk mitigation	3	50

The theme of project execution management confirmed the findings in the existing body of literature in that effective project execution management is critical to the successful implementation of an IT project. Chileshe and Kikwasi (2014) noted that the management of the execution phase is crucial to the success of an IT project. The participants indicated that the project team leader manages the interpersonal relationships and provides the motivation for the team members. P4 remarked "the project leader needs to develop a sense of ownership within the team members." One factor affecting the performance of a project team is the project leader's ability to effectively influence the team members through their leadership and motivational skills (Haselberger, 2016). Hidding and Nicholas (2017) remarked that project management practices must include the development of people-to-people relations. P5 identified leadership as a key element to success during project execution.

Leadership. The participants identified the project leader's leadership ability as an important contributor to the success of an IT project. P3 indicated that the project

leader must use his leadership skills to keep the team members motivated, on track, and on schedule. When questions or concerns arise, the team members look to the project leader for guidance. P5 added "my team members are like a second family to me. I feel like the team members need my leadership and support in achieving the goals of the project." Project leaders with effective leadership skills enhance team performance by (a) fostering a team environment, (b) providing supportive communication, and (c) clearly defining the project scope, budget, and schedule (Matthews & McLees, 2015). P2 remarked "I feel like an orchestra leader. I use my leadership skills to direct the team members towards achievement of the project goal."

The subtheme of leadership confirmed the findings in existing literature on effective business practice. Consistent with previous research, effective project leadership influences the team performance and outcome of information and communication technology projects (Haselberger, 2016). Wang et al. (2017) remarked that project managers lead their teams' actions and activities established during the project plan. Researchers extensively investigated the role that leadership plays in the successful completion of IT projects and identified the significance of effective project leadership in the successful implementation of IT projects (Matthews & McLees, 2015; Zhu & Kindarto, 2016).

Change management. The participants noted that handling change management correctly was critical to the successful completion of an IT project. P6 implied that, unless handled properly, changes to a project can bring a project down. P4 further added "the problem with change is that everyone involved with the project has to be kept up-to-

date with the change. Working a change into the plan can create delays and confusion." Changes to an IT project can lead to budget or time overruns and implementation delays (Coeurderoy, Guilmot, & Vas, 2014). P3 remarked "stakeholders are the primary sources of the change requirements and these changes often occur because of the ever changing technologies and capabilities." The implementation of an IT project often encounter change for various reasons. These reasons include (a) conflicts with stakeholder expectations, (b) technological improvements, and (c) misinterpretation of scope (Butt, Naaranoja, & Savolainen, 2016). The requirement for project managers to actively manage changes in IT projects appeared in the review of organizational documents. One organizational document included the statement "all significant changes must be documented in writing and include the impact on the overall project."

The subtheme of change management confirmed the findings in existing literature on effective business practices. The use of change management is a finding consistent with previous research by Ali and Lai (2016) who voiced the concern that requirements change is one of the major causes of software project failure. The inability to manage change requirements leads to inconsistencies and may result in (a) time overruns, (b) implementation delays, and (c) failure of the project (Coeurderoy et al., 2014; Obeidat, 2016).

Proactive monitoring processes. The participants emphasized the importance of the project manager using appropriate proactive monitoring processes to assess the progress of a project. P3 remarked "I find monitoring a project very time-consuming. I am following the project's progress and trying to find indicators of problems." P4 noted

that finding deviations early can help keep the project on time and on schedule. Project monitoring includes identifying deviations and implementing corrective actions to minimize the impact of deviations (Hazir, 2015). P2 remarked "I use different monitoring tools based on the project. The primary areas I assess when monitoring a project are scheduling, risk analysis, and budget." Schedule and budget monitoring of an IT project is one of the critical functions for a project manager (Hazir, 2015; Khamooshi & Golafshani, 2014).

The subtheme of proactive monitoring processes confirmed the findings in existing literature on effective business practice. The findings concerning proactive monitoring processes are consistent with previous research by Yamin and Sims (2016) who acknowledged the positive association between effective project monitoring and project success. Khamooshi and Golafshani (2014) added that project monitoring is a critical function in the success of an IT project. The monitoring and controlling processes offer the project manager assistance in achieving the project goals and objectives (Hazir, 2015).

Risk mitigation. The participants identified the importance of risk mitigation as an essential element to a successful IT project implementation. P5 noted "I can do good risk analysis during planning, but I have to be able to mitigate any risks appearing during the execution of my project." P3 remarked "risks will always appear, but it is my job to reduce the impact of the risk during implementation." Verner, Brereton, Kitchenham, Turner, and Niazi (2014) noted that the failure of project managers to effectively mitigate risks is one of the primary causes of IT project failure. Verner et al. further added that

special issues will arise with IT projects because of their complexity and rapidly changing technologies. P2 remarked "risk management and mitigation strategies are needed so the same mistakes are not made over and over again. Vincent, Higgs, and Pinsker (2017) noted that the identification of strategies to mitigate IT risk is critical to the success of the project.

The subtheme of risk mitigation confirmed the findings in existing literature on effective business practices. The findings in this study align with existing literature in that project managers must monitor risks closely and implement strategies to mitigate any risks encountered (Verner et al., 2014). Risks not effectively managed create problems with the schedule and cost objectives of the project (Patanakul, 2014). Muriana and Vizzini (2017) further added that current literature focuses on risk identification and assessment, but lacks studies into the investigation of risk monitoring and mitigation.

Theme 4: Project Closure

The fourth theme was the importance of closing the project correctly. The participants identified this phase of the project as critical because the closing phase is the last impression left on the customer. These closure strategies included customer satisfaction and lessons learned (see Table 5).

The theme of project closing confirmed the findings in existing literature in that an effective project closing strategy is important to the successful implementation of an IT project. A relevant observation from previous research by Vom Brocke et al. (2016) identified the significance of executing a project to the end because the customer only considered the project a success when realizing the intended business impact.

Table 5

Strategies Used for Project Closing

Strategy	n	%
Customer satisfaction	4	67
Capturing knowledge/Lessons learned	3	50

The participants indicated that the closure process determined the success or failure of the project because the customer decided whether or not to accept the product or service. Basten et al. (2016) noted that customers will view a project as successful when the functionality performs appropriately despite not meeting the constraints of the project.

Customer satisfaction. The participants identified customer satisfaction as a key component when determining whether or not an IT project is a success. P5 remarked "even when I've communicated with the customer throughout the project, the acceptance stage always provides a nail-biting scenario. This is the stage where the customer evaluates and decides if the product meets the specifications." P2 noted "the closing phase is the last impression the customer will have about you. I want this part to go well because this could determine whether my company will be considered for future work." Basten et al. (2016) remarked that, even if projects do not meet the iron triangle criteria, the customer was satisfied with the product and evaluated the project as successful. Haverila and Fehr (2016) noted that customer satisfaction is vital to an organization's continued success in the global marketplace.

The subtheme of customer satisfaction confirmed findings in existing literature on

effective business practice. Related to this theme is the finding by Haverila and Fehr (2016) who noted that customer satisfaction plays a vital role in determining the success or failure of a project. Researchers extensively investigated the importance of customer satisfaction and identified how the contractor benefits when the customer is satisfied with the final product (Basten et al., 2016; Williams et al., 2015). P3 remarked "the customer expects the product or service which he asked for and anything less than that expectation is a failure."

Capturing knowledge/lessons learned. The participants identified the capturing of knowledge and lessons learned as an important component of project closing. P4 stated "we need to learn from past projects. Whether good or bad, I can use those experiences and apply them to my projects." Poor knowledge or inadequate sharing of reusable information is a barrier to the effective implementation of IT projects (Landaeta Olivo et al., 2016). P5 remarked "my organization maintains a database on knowledge gained from projects. I have used this database to research for ideas about how to address and tackle different aspects of a project." Organizational leaders developing a knowledge sharing and transfer network create a competitive advantage (Alkhuraiji, Liu, Oderanti, and Megicks, 2016). The review of organizational documents did not highlight the capturing of knowledge or lessons learned. The documents did not contain verbiage or checklists concerning the capture of this knowledge.

The subtheme of capturing knowledge and lessons learned confirmed findings in existing literature on effective business practice. Evidence from previous literature revealed the effectiveness of project performance increases with the use of replicated

knowledge (Alkhuraiji et al., 2016). The use of knowledge offers alternative solutions and helps resolve problems (Khedhaouria & Jamal, 2015). P3 noted that their organization captured lessons learned from projects, but did not have appropriate methods for knowledge reuse. The inability to reuse knowledge creates a barrier to successful IT implementation (Landaeta Olivo et al., 2016).

Findings Related to the Conceptual Framework

The basis of the conceptual framework for this study was von Bertalanffy's (1972) general systems theory and Malone and Crowston's (1994) coordination theory. Von Bertalanffy (1972) noted that systems consist of complicated and interdependent components interacting with other organizational components and their environments. Malone and Crowston (1994) remarked that leaders require successful coordination practices and processes to achieve organizational effectiveness and enhance performance. The relevance of the general systems theory and the coordination theory to understand the management of IT projects epitomizes the findings of this study. The successful implementation of IT projects crosses multiple subsystems of an organization while requiring effective coordination activities throughout these systems (Aagaard et al., 2014; Thalmann et al., 2014). I specifically applied the lens of these two theories to identify the strategies which IT leaders used to effectively manage their IT projects.

The findings from this study supported the application of the general systems theory and the coordination theory to IT project research. Barata and Cunha (2017) noted that IT systems are complex because of the complicated functions required to direct and sustain global business operations. The current study participants identified how the

management of IT projects was more complex than the management of other project types. Additionally, the current study participants pinpointed the importance of effective coordination in the implementation of IT projects. The identification of effective coordination as a significant factor in the implementation of IT projects was relevant as various researchers recognized that ineffective coordination continued as a critical problem (Aagaard et al., 2014; Jiang & Klein, 2014).

Findings Related to Existing Literature

The findings from this study add to the existing body of literature to improve the effectiveness of IT project implementation. Researchers acknowledge the importance of identifying the best strategies for successful implementation of IT capabilities in an organization (Lonial & Carter, 2015; Purkayastha & Sharma, 2016). Most strategies uncovered in this study aligned with existing literature on the factors affecting the success of IT project implementation. The use of daily status meetings was somewhat consistent with existing literature.

One finding that may contribute to the effective implementation of IT projects and add to existing literature is the use of daily status meetings. The participants identified the use of daily status meetings as a strategy to improve the implementation of IT projects. Researchers examining agile project management methods identified daily meetings as an effective method to improve IT implementation success (Azanha et al., 2017; Ozieranska et al., 2016). In contrast, researchers examining traditional project management methods did identify effective communication as an important component in project success, but

did not recognize daily status meetings as an important strategy (De Carvalho, 2014; Park et al., 2014).

Applications to Professional Practice

The purpose of this study was to explore the strategies that some IT leaders used to effectively manage their IT projects. Organizational leaders require IT capabilities to stretch across multiple organization and support dynamic environments (Haron et al., 2014; Thalmann et al., 2014). The findings of this study may have a positive impact on the practices and strategies used for the implementation of IT projects. By using the results and recommendations from this study, IT leaders may better understand why IT projects fail and implement strategies to improve the effectiveness of future IT projects.

The results are relevant to professional practice because the findings of this study contained applied strategies from IT leaders who successfully implemented IT projects. The results offer insights into successful implementation practices and strategies for IT projects. IT leaders continue to struggle with successful implementation of IT projects as the majority of these projects continue to fail (Kaleshovska et al., 2015; Terlizzi et al., 2016). The results could guide struggling IT leaders to improve their practices and strategies with implementing IT projects. Current and future IT leaders could use the findings from this study as a practical guide to change and improve their business practices associated with the implementation of IT projects.

Implications for Social Change

The findings from this study may promote positive social change by ensuring sustainable business growth and enhancing the community standard of living.

Organizational leaders investing in IT resources create a synergy within the organization. Through this synergy, business leaders improve business performance with the transformation of organizational improvements and process efficiencies created with the successful implementation of IT resources. Improved business performance provides innovative services to society and reduces the cost of products and services to their customers. Benefits include (a) greater customer satisfaction, (b) improved delivery capabilities, (c) quality of service improvement, (d) elimination of redundancies throughout the business processes, and (e) an increase in sales and revenue (Ghobakhloo & Hong, 2014; Sook-Ling et al, 2015).

Families and the local communities may also benefit from the improved business performance of organizations. The use of strategies to improve IT project success benefits families because organizational leaders may consider hiring new employees when business performance improves. Communities may benefit from an organization's improved business performance with the leaders' willingness to (a) improve local health and well-being programs, (b) stimulate social and economic inclusion, and (c) participate in civic engagement, such as community volunteering and charitable giving (Stephan, Patterson, Kelly, & Mair, 2016).

Recommendations for Action

The findings of this study may help current and future IT leaders manage the challenges associated with IT projects. In this study, I explored the strategies used by IT leaders to effectively manage their IT projects. Based on the research results, I recommend current and future IT leaders:

- develop an effective communication network throughout the organization and within the project team,
- implement daily status meetings,
- adopt a customer-focused culture which integrates the end user requirements and expectations in the project plan,
- develop a project plan which identifies and formally documents the requirements of the stakeholders,
- develop risk management and mitigation strategies, and
- enable knowledge sharing by capturing lessons learned and knowledge realized during project execution.

The results of this study are significant to project managers, IT professionals, and organizational leaders because they may benefit from the participants' experiences and the strategies disclosed from the successful implementation of IT projects. To circulate these strategies, I will disseminate the results of this study through journal articles and professional literature. I will offer to present the study findings at the local PMI Metropolitan Saint Louis Chapter. I will also present the findings of this study at conferences and seminars.

Recommendations for Further Research

The purpose of this qualitative multiple case study was to explore the strategies that IT leaders used to effectively manage their IT projects. For this study, I identified two limitations. The first limitation concerned the sample size and geographic location of the study. The population for this study consisted of IT leaders in the Saint Louis Metro

East area. The sample size included six IT leaders from the selected area. To overcome this limitation, future researchers could increase the sample size and expand the geographical region of the population. The second limitation was the use of a qualitative method of study and the possibility of research bias. To overcome this limitation, future researchers could use other methodologies to reduce the subjectivity of the responses. Based on the limitations and other considerations, I recommend future research consider:

- using a greater sample size to explore the strategies to effectively manage IT projects;
- expanding the geographical region of the population to include other regions of the country or expanding into other countries;
- using other research methodologies and designs in order to reduce the subjectivity of the responses; or
- narrowing the scope of the study by investigating the management of specific IT projects, such as web-based customer applications, cloud technology, or enterprise systems.

Reflections

The DBA Doctoral study process posed a challenging, yet fulfilling learning experience. Before embarking on this journey, I did not anticipate the amount of time, research, and coordination required to complete the doctoral study. I did not have any preconceived ideas or thoughts about the results of this study. I identified my personal biases in the study and I did not allow these biases to cloud the findings. I followed the established protocol when conducting the participant interviews. To reduce any possible

bias when analyzing the participants' responses, I used NVivo software to aid in the generation of themes and the interpretation of results. To further confirm the reliability and credibility of the findings, I used member checking by having the participants review a summary of their responses and my interpretations of their responses.

As I completed the interviews with the participants, I was impressed with their knowledge of managing IT projects and their commitment to achieving a successful project. From this process, I have a better grasp of the challenges associated with IT projects and the strategies used to manage IT projects effectively. I identified four major themes associated with the effective management of IT projects. I believe the knowledge discovered during the study provides valuable information to IT leaders. The participants expressed interest in receiving a summary of the findings.

Conclusion

In this qualitative multiple case study, I explored the strategies IT leaders used to effectively manage their IT projects. I collected data from IT leaders in the Saint Louis Metro East area. I used methodological triangulation to analyze the two sources of data until I reached data saturation. Four major themes emerged from the data analysis with several strategies that IT leaders could use to improve IT implementation effectiveness. The four major themes included (a) effective communication, (b) project planning, (c) project execution management, and (d) project closure. The strategies to effectively manage IT implementation included (a) stakeholder engagement, (b) top management involvement, (c) daily status meetings, (d) risk analysis and mitigation, (e) selection of key project personnel, (f) performance measures, (g) leadership, (h) change management,

(i) monitoring processes, (j) customer satisfaction, and (k) capturing knowledge and lessons learned. I analyzed each theme in relation to existing literature and used the general systems theory and the coordination theory to address the complex, interdependent systems found within the management of IT projects. The main contribution to business practice is the identification of the essential strategies to effectively manage IT projects.

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Appendix A: Interview Protocol

Participant #:_____ Participant Initials:_____ Date/Time:_____

Introduction:

The purpose of this qualitative multiple-case study is to explore the strategies used to effectively manage information technology projects. I believe that the sharing of effective strategies from information technology leader experiences within multiple organizations may contribute to improved business practices and social change. Improved business practices may lead to enhanced revenues, market share, and competitiveness. Society and local communities may positively benefit from improved business practices with increased hiring of employees, economic stability, and new business growth opportunities.

Central Research Question:

What strategies do information technology leaders use to effectively manage their information technology projects?

Background/Profile Questions:

1. What is your job title and duties/responsibilities?
2. How long have you been in this position?
3. What other positions have you held in your current or other organizations?
4. How many years of experience do you have with leading information technology projects?

5. Can you provide organizational documents (process/procedure checklists, archived information, or examples of project plans) that may relate to the central research question?

Interview Questions:

1. What strategies did you implement to improve the success rate of your IT projects?
2. What strategies contributed the most to IT project success?
3. What were the key obstacles to implementing the strategies for improving you IT projects' success rates?
4. What strategies did you use to overcome these key obstacles?
5. What other information would you like to add regarding IT implementation strategies that managers could utilize to improve the effectiveness of IT project implementation?

Interview Wrap-Up:

Thank you for your participation in this study. I will transcribe the audio recording of this interview. With your permission, I will provide you a copy of the transcribed interview for your review so you can validate the transcribed interview before inclusion into the final report.