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Walden University

College of Management and Technology

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Mario West

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Walden University
2017

Abstract

Strategies to Manage Enterprise Information Technology Projects

by

Mario West

MAFM, Devry University, 2012

MBA, University of Louisville, 1999

BA, University of Louisville, 1998

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2017

Abstract

Since 2005, most midsize company information technology (IT) projects had a 62.4% failure rate because of wrong project team communication skills or cost overruns. IT leaders expect negative IT project outcomes will cost over $2 billion by 2020. Using the actor-network theory, the purpose of this single case study was to explore strategies used by IT leaders from a midsize IT company in Washington, D.C. to plan and execute projects under budget and on time. Using purposeful sampling, 5 IT leaders were selected for this study because of their experience in implementing successful strategies for projects. Data were collected using face-to-face semistructured interviews, company documentation, and internal organizational risk reports. Yin's 5-step process was used for data analysis to compile, disassemble, reassemble, interpret, and conclude the data. The interpretation of data, subjected to methodological triangulation and member checking to strengthen the dependability and credibility of the findings, yielded 3 themes of IT leader communication skills: IT leader strategy, IT leader knowledge, and implementation of cost savings. The findings indicated that IT leaders serve as the key actors in the IT project network, and leader communication skills are essential for implementing strategies for IT project completion and cost savings. With this knowledge, IT leaders can implement strategies to plan and execute projects under budget and on time. The implications for a positive social change includes the potential for IT leaders to reduce project production waste and contribute to economic expansion.

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Dedication

My God and Savior in my life, Jesus Christ, I owe this all to you. I offer a special dedication to my late mother, Yvette West, for helping me to understand my strengths and for encouraging me to work on my weaknesses. Also, I dedicate this to Grandma Nellie, Michael Clay, my best friend Nina Lee, Utulaina Petersen, brothers, sister, family, and friends that encouraged me to push forward including the Strive-for-Five study group.

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The study of the doctoral study would not have been possible without the help of my family, Walden University study group, and other supportive people in my life. My gratitude to my Lord and Savior Jesus Christ is primary in my life. In addition to support of my family, the Strive-for-Five support group substantially contributed to my success. Dr. Rocky Dwyer, the volunteered mentor of the support group, provided personal encouragement during periods where events appeared to be overwhelming. Dr. Melvia Scott, Jennifer Saber, Cad Shannon, Roxie Mooney, Dr. Ron Iden, Tina Depsin, and other 9,000 classmates truly encouraged me.

I thank my doctoral study committee of Dr. Ronald Jones (Chair), former chair Dr. Jeanne Dole, Dr. Ify Diala, Dr. Judith Blando (URR member), and Dr. Amy Swan (editor). Special thanks are due to Dr. Freda Turner, Dr. Arnold Witchel, and Dr. Fred Walker for inspirational words during Walden University residencies.

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Section 1: Foundation of the Study

With the introduction of the International Business Machine (IBM) 7090 in 1959, a new era was born: the era of the computer. Rapid growth in information technology (IT) and electronic data management (EDM) drove the need for data management software within the United States (Newsom, 2014). The utilization of technology and software is essential in almost every domain of the economy, including the private, public, and governmental sectors. IT leaders' strategies on IT projects can be costly, and companies cannot afford to overrun budgets on IT projects. Multinational businesses are under pressure to create IT project strategies to refine operational processes for software and hardware that can become costly over time (Hetrick, 2013).

Multinational business leaders develop new strategies for dynamic operational performance by identifying primary performance factors that contribute to organizational objectives (Newsom, 2014). Hetrick (2013) noted that increasing the rate of complex IT projects under budget in multinational firms will demand the identification of strong management archetypes. Multinational company leaders have struggled with technology implementation in addition to developing an innovation system framework that gives direction to the role of project leaders. Senior management and IT engineering practitioners efficiently handle complex multinational IT projects (Hetrick, 2013). The increased implementation of complex IT projects have shifted the boundaries of traditional mainframe environments by challenging multinational leaders seeking to manage resources that span organizations and geographical boundaries (Steinfeld & Beltoft, 2014).

Background of the Problem

Multinational enterprises leverage IT-skilled professions to identify strategies to successfully plan and execute IT projects (Bankole, Osei-Bryson, & Brown, 2013). Successful IT project strategies leveraging the efficiency and productivity of emerging technology enable organizations to communicate, manage, and secure business objectives and customer needs (Steinfeld & Beltoft, 2014). Investing in software development projects has been justified by researchers studying software project problems and strategies (Francis & Kumar, 2015).

Initiating an IT project remains an objective of most organizations in this electronic information age (Schweighofer & Ebner, 2015). Since 2002, the complex computing business environment, consisting of networks, hardware, and software, has expanded the demand for IT project outsourcing by 34% each year (Song, Li, Feng, & Dong, 2014). Multinational firms engage in IT outsourcing projects that include the creation of enterprise resource planning (ERP) systems (Bankole et al., 2013); however, business leaders remain concerned about cybersecurity and IT infrastructure (Ezell, Robinson, Foytik, Jordan, & Flanagan, 2013). Many companies depend on the domestic IT infrastructure for managing sensitive information as well as communicating with the public (Hetrick, 2013). Schweighofer and Ebner (2015) explained that business gaps in operational readiness are a primary issue and companies need extra steps to address IT project gaps. Implementing strategies to complete successful IT projects continues to challenge projects for IT leaders (Nangoli, Ahimbisibwe, Namagembe, & Bashir, 2013).

Problem Statement

Since 2005, 62.4% of technology projects fail because of cost overruns, wrong project teams, and bad implementation strategies (Reynolds & Yetton, 2015). Without a dependable project strategy and accurate budget, IT leaders working for midsized technology project management companies expect to lose over $2 billion by the year 2020 (Bankole et al., 2013). The general business problem affecting IT leaders was the challenge of completing projects while avoiding negative outcomes (see Corkern, Kimmel, & Morehead, 2015). The specific business problem was that some IT leaders lacked the strategies to successfully plan and execute projects under budget and on time.

Purpose Statement

The purpose of this qualitative single case study was to explore strategies that successful IT leaders utilize to plan and execute projects under budget and on time. The participants included experienced IT leaders with supervisory responsibilities for IT projects for a midsize company in the Washington, DC metropolitan area. Individuals were selected because they were most suited to identify the strategies leaders need to implement IT projects. The implication for positive social change includes the potential for IT leaders to reduce project production waste, thereby leading to economic expansion for those with limited technology resources (Schlabach, 2015).

Nature of the Study

The qualitative method contributed to a better understanding of the participants' experiences (Redman-Maclaren, Mills, & Tommbe, 2014). The qualitative method allowed me to explore IT project development strategies based on participants'

experiences (Röing & Sanner, 2015). I selected a qualitative method rather than quantitative method to explore strategies that successful IT leaders use instead of seeking to explain variables. Janczarek and Sosnowski (2015) referred to the quantitative method as theoretical testing consisting of statistical measurements of human problems. Quantitative researchers collect data in order to quantify IT managers' behaviors, attitudes, and work ethics instead of describing them (Berka, Olien, Rogelberg, Rupp, & Thornton, 2014); collecting numerical data for statistical testing did not fit the purpose of this study. Röing and Sanner (2015) added that the mixed method approach enables the researcher to seek information to solve the problems and variables of complexity by using the blend of quantitative and qualitative methods. A researcher uses mixed method inquiry to test hypotheses (Röing & Sanner, 2015); therefore, it did not meet the needs of this study. Qualitative research was more suitable to identify the cause of a problem instead of seeking to explain variables (see Janczarek & Sosnowski, 2015).

I used a single case design, allowing for the exploration of the development and context regarding how or why IT projects are successfully implemented over time (Schweighofer & Ebner, 2015). Yin (2009) explained that a single case study is an in-depth strategy that permits researchers to explore complex phenomenon within a real-world context. The reason I chose a single case study is to enable the exploration of the participants' experience, research, and data formatting for systemic discovery strategies. Ethnography was not appropriate because researchers use it to on an entire culture, social form, and individuals' conceptual world beliefs to gain perspectives from those who live in that culture (Stakes, 1995). Phenomenology was not appropriate for this study because

researchers use it to focus on individual reactions or perceptions of those experiencing a phenomenon instead of using exploration strategies (Akhavan & Pezeshkan, 2014; Stake, 1995).

Research Question

The central research question was: What strategies did IT leaders use to successfully plan and execute projects under budget and on time?

Interview Questions

1. What are the internal and external resources that are required for an IT project to be successful, with executing under budget and on time?
2. What strategies did you use that are most effective in executing IT projects under budget and on time?
3. What strategies did you use that are least effective to execute IT projects under budget and on time?
4. What were some of the barriers and challenges to plan and execute IT projects?
5. What were the strategies to successfully overcome barriers and challenges to plan and implement execute IT projects?
6. What else would you like to add regarding the strategies used in IT projects?

Conceptual Framework

I used Latour's (2005) actor-network theory as the conceptual framework for this study. Hardy, Sass, and Fifekova (2011) noted that Latour's conceptual theory built on the Callon's (1986) and Law's (1986, 1992) concept of actor-network theory and value-

based chain theory. Redman-Maclaren et al. (2014) used actor-network theory to illustrate an operations remedy for systematic management variables within IT projects. Labor networks are influenced by financial capital, human capital, and challenges in the work network (Law, 1992). IT projects and actor-network theory influence human capital, financial performance, and labor markets (Shahin, Balouei Jamkhaneh, & Cheryani, 2014). Actor-network theory bridges the gap between the start of an IT project and completion of the actors' training, network set, and commitment level to the project (Redman-Maclaren et al., 2014).

IT leader networks are critical to the operational sustainability of a project based on individuals' actions, influence, and communication (Hardy et al., 2011). The topological associations of actor-network theory assist in identifying the causes of IT project opportunity gaps that can be tracked down to an individual actor, opportunity deficiencies in the translations and relationships, or mediations of two or more actors (Li, Ma, Chun, & Pong, 2014).

Actor-network theory can be used to examine how an individual's behavior directed, sustained, and stopped during IT procedures in a centralized management enterprise (Redman-Maclaren et al., 2014). For example, Hardy et al. (2011) identified the key strengths and limitations of an IT leader network and offered to maximize capabilities of the network using this theory. Montenegro and Bulgacov (2014) determined that networks shape social interactions, financial systems, and political climates that contribute to the sustainability of the IT industry.

Operational Definitions

Asynchronous communication: Asynchronous communication occurs in different times via e-mail, web-sharing platforms, e-mail, or server-based services (Burns, Cunningham & Foran-Mulcahy, 2014).

Computer-based communication: Computer-based communication incorporates all forms of Internet or mobility based on communication between personals of networks (Schweighofer & Ebner, 2015).

Key person: An employee with technical skills, education, and experiences that guide the direction of the organization (Constantinescu et al., 2014).

Information technology professional: An individual that has skills in computer programming, such as computer technicians and IT leaders, who support and maintain computer hardware and software for organizations (Marchant, 2013).

Midsize company: A company that employs 100–9,999 workers (Wall, 2015).

Organizational satisfaction: An employee's state of mind about the organization (Daud, Holian, & Zhang, 2014).

Synchronous communication: Synchronous communication occurs through face-to-face interaction, video conferencing, or network broadcast conferencing (Roseth, Akcaoglu & Zellner, 2013).

Technology project firms: IT and telecom companies that engage in computer software, project management, computer hardware, computer peripheral devices, telecom infrastructure, telecom delivery software, telecom equipment, electronic manufacturers, and companies that provide professional services that based on or directly related to such

products. The North American Industrial Classification System (NAICS) code these companies as 3341 to 3346, 5112, 5182, and 5415 (Fleming, Artis, & Hawes, 2014; U.S. Census Bureau, 2014; U.S. Department of Labor, 2014).

Assumptions, Limitations, and Delimitations

My primary responsibility was to establish the boundaries and purpose of the study to justify the limitations of this study. Understood boundaries and restrictions in research help designate delimitations and limitations (Gill, 2014). I will state the assumptions, limitations, and delimitations in the following sections.

Assumptions

Gill (2014) suggested assumptions, defined as social, environmental, and individual interpretations, comprise the details an inquirer assumed to be probable and genuine. According to Yin (2014), allowing the participants to complete the interview in a natural setting allows avoidance of workplace favoritism, which is why the participants responded to interview questions in a private meeting room of a public library. I assumed the participants used their knowledge to explain perceptions of the IT project strategies during the semistructured interviews and provided an honest account of their experiences in IT project management. I received access to company records and assumed the records were up to date and accurate. The basis of the assumptions was participants providing their experiences with no influence from me administering the study (see Yin, 2014).

Limitations

Gill (2014) defined the limitations of a study as the potential weakness beyond the

researcher's control. I identified three limitations for this study: a) limiting the sample population to five IT leaders might have weakened the results of the study, b) restricting the research to one organization in Washington, DC metropolitan area limits transferability for future research, and c) recalling information is not always accurate, meaning IT leaders' knowledge of the research topic and ability to recall past events of implementing IT project strategies may not have been accurate.

Delimitations

Delimitations are boundaries of the study that determine the scope of a single or multiple case study (Castello, 2014; Cheng et al., 2014). The delimitations excluded executives and IT leaders with no supervisory IT project, because those professionals did not know what strategies IT leaders used to plan and execute projects under budget and on time. Delimitations of the population are based on lived experiences of participants and did not address traits such as personality, despite potentially being a factor in responses and statements made regarding the workplace race and gender (Cheng et al., 2014). Another delimitation was the small sample size instead of a larger sample size that would add more time and cost to the study; purposeful sampling set boundaries for this case study (see Roseth et al., 2013). Finally, the location of the population was restricted to the Washington, DC area, meaning the results of this study might not transfer to future research on IT leaders in other midsized IT companies in other regions in the United States.

Significance of the Study

This study is valuable because it is imperative to IT leaders to understand the

value of successful implementation of IT projects under budget and on time. Palinkas et al. (2013) recognized that expansion of global organizations rely on the ability of upper management to maintain a large client base. The findings of this study can contribute to companies retaining clients, improving customer relations, and improving profits. Updating and expanding existing IT projects produces higher practice by leveraging technology and managerial decision-making to improve business expansion when needed (Shahin et al., 2014). The findings of this study contribute to the improved the percentage of IT projects meeting software objectives in lowering cost during business expansion.

Another value of this study is providing knowledge for organizational leaders looking to help IT manager develop strategies to lower costs of an IT project. Shahin et al. (2014) indicated that literary information has grown concerning new strategies IT leaders use to plan and execute projects under budget and on time, but the resident differences can result in open conflict under different IT leaders. The owner of the midsize IT company used this study to evaluate and improve IT project strategies and practices.

Contribution to Business Practice

Actor-network theory enables IT leaders and organizations to collaborate and achieve mutually beneficial outcomes. Actor-network theory can be used for (a) commitment, (b) transparency, (c) trust, and (d) communication to satisfy the relationship between IT leaders and organizations, reducing obstacles in project team relationships (Mendez et al., 2014; Shahin et al., 2014). Losada, Urretavizcaya, and Fernández-Castro (2013) indicated that IT leaders should apply networking strategies that could influence

the degree of the success of the IT project, reduce the project cost budget, and reduce the time during the IT project. Losada et al. (2013) argued that midsized companies need to hire skilled IT leaders that have a success rate over 70% in executing IT projects under budget. Experienced IT leaders identify and understand the most efficient strategies IT leaders use are reducing project budgets, increasing corporate knowledge, and reducing project time for the midsized IT company.

Exploring IT strategies may assist with cost reduction, increased profitability, and IT knowledge acquisition, leading future researchers to build on their success (Palinkas et al., 2013). IT leaders understand successful IT projects strategies enabled local midsize companies to include critical elements in their decision-making process. This study contributes to effective practices of business by helping in the adaption of innovation strategies and improving IT project market failures, thereby leading to the commercial success of IT project strategies.

Implications for Social Change

The implication for social change included expanding opportunities and providing sustainable living within the IT market beyond Washington, DC into the southern Maryland and northern Virginia area. In Washington, DC, the relationships between the government and private sector led to opportunities for economic sustainability. This study provides insight into the IT market, encouraging companies to create jobs and sustainable living for the communities in the Washington, DC metropolitan area. The understood business practices and implications for social change provide strategies for overcoming failed IT projects, which will help IT leaders identify strategies to

successfully plan and execute projects under budget and on time (see Iyer, 2014; see Shahin et al., 2014).

Another implication for social change is empowering people with little to no resources (see Verma & Sandhar, 2013; see White, 2013). The Washington, DC unemployment rate was 7.5%, and more than 27% live below incidence of poverty in the first quarter of 2015 (Kidd, Aust, & Copenheaver, 2014). The national unemployment rate was 5.1%, and the national incidence of poverty is 23.4% (Haggard & Lindsay, 2015; Scheeren, Fontes-Filho, & Tavares, 2013). The midsize company for this study created jobs for individuals with no apparent resources or advantages. In addition, the results of this study can increase the understanding of organizational leaders, improving job satisfaction and employee productivity (see Chih-Wei et al., 2013; see Ruiz, Luque, Ruiz, & Saborido, 2015).

A Review of the Professional and Academic Literature

The rapid growth of IT and electronic data management drives the need for data management software all over the world (Verma & Sandhar, 2013). The goal of this study was to explore strategies that successful IT leaders use to plan and execute projects under budget and on time. In the literature review, I will provide published research on these strategies that IT leaders use.

I used keywords and database searches from more than 260 references (see Appendix A). The primary databases and libraries included the Walden University Library, George Mason Libraries, SAGE, Walden University Thoreau search engine, ProQuest, ABI/INFORM Emerald Management Journals and Management, Google

Scholar, EBSCO Prime, and Science Direct. The components of a search strategy included keywords, screening for relevance, quality assessment on criteria defined, and timely data extraction (see Hjeltnes, Binder, Moltu, & Dundas, 2017).

My strategies for the literature review were (a) identifying key concepts and keywords, (b) searching on electronic databases with relevant keywords, (c) screening relevant documents to keep the literature review limited to the scope of the research, (d) assessing the selected materials for credibility, (e) considering the timeliness of the selected studies for the aligned research with updated developments in the field, and (f) constructing the literature review with relevance to the topic in an organized flow of information.

Based on the conceptual framework, the literature review included analyzed perceptions and perspectives about IT projects success relevant to the study of the midsized IT enterprise (see Iyer, 2014; see Sanderson, 2015). Themes related to organizational transparency and relationship networking included conceptual framework constructs using actor-network theory. The literature review is organized as follows: (a) conceptual framework, (b), information technology, and (c) IT alignment cost.

I reviewed peer-reviewed articles including qualitative, mix method, and quantitative studies. Researchers employ literature maps to outline a visual summary of the research used to explore a topic (Maranhão, Marinho, & de Moura, 2015; Rahimi et al., 2014; Spillman, 2014); literature maps assist researchers in determining connections between subjects and highlight research gaps (Marchant, 2013). Using a literature map, I organized the research into five topics: actor-network theory, information technology, IT

alignment cost, IT project issues and cost, and IT project strategy gaps. Suborder themes led to consideration of additional elements for building an IT project environment and different project management styles. Throughout the literature review, the conceptual framework of Hardy et al.'s (2011) actor-network theory is presented to justify and explain other researchers' perspectives on strategies IT leaders need to plan and execute projects under budget and on time.

IT Actor-Network Theory

The actor-network theory provided a framework for analyzing sociotechnical processes and can be applied to the IT development process to surmise the causes of IT project opportunity gaps (see Callon, 1986; see Latour, 1986; see Law, 1986, 1992). Researchers can use actor-network theory to explore the role of a heterogeneous network regarding influencing outcomes and determining the behavior of individuals in the network (Montenegro & Bulgacov, 2014). Actor-network theory can also be used with inanimate sources, making this a pragmatic approach to model the causes for IT project opportunity gaps outside just the human domain. The term *actor* denotes each of the stakeholders, all of whom are aware of and respond to the overall network (Weaver, Ellen, & Mathiassen, 2015). Actor-network theory is important in examining the success of small and midsize companies (Montenegro & Bulgacov, 2014).

The three actor-network theory tenets are agnosticism, generalized symmetry, and free associations. Agnosticism is the elimination of preconceived notions within the network (Law, 1986). Generalized symmetry is nonhumans (e.g., IT, software, and IT strategies) and human (e.g., IT leaders, IT project team members, and budget analyst)

actors being incorporated within the network or framework with the equal agency (Callow, 1986). Free association is a concept that Latour (1986) described as between natural and social phenomena; this distinction in the network provides no value.

Actor-network theory enables analysis for the reasons IT projects succeed or fail, because it relates to people, places, and things in the same fashion that IT networks describe data, resources, and individuals (Montenegro & Bulgacov, 2015). During the IT project development process, the intersection of human beings, technological resources, and the environment in which they operate constitutes a social setting (Grabowski & Mathiassen, 2013). Companies that enter new or existing markets require a networking plan that provides access to various actors (Law, 1986); the formation of a network arises between the various *actors* and their environment. Examining these interconnections leads to conclusions regarding the causes of IT project opportunity gaps (Law, 1986).

The development of an IT project in the context of a business organization includes many critical actors, including the company team, design team, programmers, the project leaders, executive leaders, and contractors (Grabowski & Mathiassen, 2013). There are also nonhuman actors such as the development project software, hardware, and the network infrastructure (Hinkelmann et al., 2015). Other actors in IT project opportunity gaps and success include the end user, corporate stakeholders, shareholders, employees, and the IT industry (Alwadain, Fielt, Korthaus, & Rosemann, 2015). These actors intersect and create a complex environment considered the *network*.

An actor-network is also a social network that links systems and relationships in a global and nonlocal boundary (Law, 1986). The actor-network theory leads to (a)

translations, or human/nonhuman actors' forms, (b) mediation, or messengers that connect networks and folding networks, and (c) association, or human and nonhuman ways (Getz, Lyons, & Sippl-Swezey, 2015). Latour (1986) concluded that gaps in networks are ignored in actor-network theory, which suggests a social network should be applied to the study of certain networks. Gaps in actor-network theory also relate to the value of the network, where networks are not distinct entities like organizations and hierarchy organizational networks are different from social networks (Hinkelmann et al., 2013). Getz et al. (2015) explored actor-network theory hierarchy spectrum gaps with challenges in the IT environment, but planned IT project outcomes were not predictable and network trajectories were not focused on the IT projects.

The role of the project management professional is to monitor the network and evaluate the performance of the internal actors that contribute to the execution of IT development projects (Piscopo & Silveira, 2013). Exploiting the topological associations of actor-network theory revealed the causes of IT project opportunity gaps could be related to an individual actor and in the translations, connections, or mediations of two or more actors (Li et al., 2014). IT opportunity gaps also attribute to a lack of coordination between a nonhuman actor, such as a software application, and a human actor, such as a project manager (Pollack, Costello, & Sankaran, 2013). The project manager's opportunity gap could be a result of an inability to prevent cost overruns. The individual actor can take control over IT project cost and gap opportunities to ensure the project is under budget and on time.

Contrasting Theory

Actor-network theory is different than social development theory. Vygotsky (1978) stated that social development theory assumes that leaders do not copy ideas but instead develop strategies from their environment. The qualitative researcher using this theory explains that leaders construct their concepts through personal observation and experimentation with different strategies (Vygotsky, 1978). Li et al. (2014) argued that social development theory is not methodological but research based on moral decisions. Social development theory emphasizes that to learn new strategies the leader should become involved in problem-solving activities and receive leader feedback (Hinkelmann et al., 2015).

Vygotsky's (1978) development of social development theory advocates for individualized learning instead of the leader networking. The leader is taught based on a slightly higher level of thinking than other workers. Based on the work environment, the network can be both a tool and simulated activity system used by leaders to perform the strategic actions and operations of the network (Albrecht & Spang, 2014). The project leader should interact with the network as a guide or coach, not as the supplier of information. The leader's learning experience should use a virtual or face-to-face overseeing of the network (Hinkelmann et al., 2015).

Hinkelmann et al. (2015) recognized that social development theory is based on the premise that learning occurs through culture. Leaders' experiences and interactions are an external and internal mental process. Unlike actor-network theory, social development theory explains that leaders believe that growth occurs because of social interaction and learning.

Information Technology

Technology Systems

Researchers have defined the concentration of IT software upgrades, cybersecurity integrity, and updated technology infrastructure within almost all the sectors of the economy, including private, public, and government (local, state, and federal) sectors (Haggard & Lindsay, 2015). Prior research on IT project management focused on themes such as positivism theories and critical theory (see Haggard &Lindsay, 2015; see Spitsberg, Brahmandam, Verti, & Coulston, 2013). Researchers continue to study factors influencing strategies on IT project management among IT leaders including the IT manager's perception of the work environment (Marchant, 2013).

Initiating an IT project with the appropriate infrastructure remains essential for organizational functionality in this electronic era. Launching an IT project involves the local area network (LAN), wide area network (WAN), and electronic data interexchange. Information systems affect the networking of persons, who work together across different divisions, various companies under the same parent company, diverse cultures, different races, and different continents (Cheng, Leu, Ing-Xiang, Wu, & Zhu, 2014). Information systems also enable hardware and software to work together. Literature regarding IT leaders' success has been ongoing since the *year 2000 bug* (Y2K) or *millennium bug* (Tunçalp & Lê, 2014), but research has not focused on the IT organizations' ability to plan and execute projects under budget and on time. Research that explores strategies IT leaders are using is essential, especially because many organization leaders lack effective

strategies.

There are multiple issues that affect whether a project is under budget and on time. Cheng et al. (2014) investigated IT professionals and found that 20% of participants indicated that fights with direct managers were a factor for a project not being under budget and on time. Marchant (2013) found that 40% of participants felt the multinational companies did not value the professional or respect how IT leaders contribute to the team. However, data security and storage issues have increased the demands of the IT profession since the Sony and U.S. Office of Personnel Management (OPM) hacks (Haggard & Lindsay, 2015; Tan, Kwek, & Li, 2013). Commonly accepted globalization of markets continues to drive the IT workforce demand, while multinational companies seek to expand beyond regional borders (Marchant, 2013). IT projects are a top priority for most multinational enterprises (Cheng et al., 2014). Cheng et al. found that 45% of the participants believed that valuing IT leaders and better relationships with executive leaders and other departments would prevent issues with the success of projects. These research findings confirm that the behavior of IT leaders in a business organization is an essential element in plan and implement projects under budget and on time.

IT workgroups that use operation systems LAN connect people in various areas of the world and across diverse cultures (Cheng et al., 2014; Gizatullin & Gizatullin, 2014). Internal and external information systems that operate on mainframes or groups of computers over long distances from a WAN (Cheng et al., 2014). Information systems that perform functions in several organizations are defined as inter-organizational

information systems (Li-Hua & Lu, 2013; Tyworth, 2017). Interorganizational information systems configured and operated within a group of computers, not mainframes, have been in different organizations and connected through an inter-organizational network (Fang et al., 2016). Electronic data interchange (EDI) is a form of an inter-organizational network, which allows different multinational companies to exchange information or data without external connections, thus providing a more secure network (Liu, 2015; McKinney et al., 2015).

Researchers have shown the importance of IT's contribution. Salman (2014) indicated that IT could run most businesses operations more efficiently than multiple networking workers could. Effective information systems affected cross-cultural exchanges and multinational enterprises (McKinney et al., 2015). IT professionals have managed and maintained the latest hardware and software, developed new IT systems for operational usages, and supported end users (Sohn, 2013). IT professionals support an enterprise's server farms, product client services, outsourcing product and service systems, and widespread support (Salman, 2014).

The Department of Labor Statistics (2015) indicated that 78% of IT professionals are computer programmers, database administrators, IT project leaders, web developers, network architects, and network infrastructure specialists, who provide primary technical support for other businesses. The Department of Labor Statistics explored the increased use of the Internet to lower costs for business. Internet-based software increased usage to firms and allowed users more customization in mobile technology platforms and healthcare industries (Tyworth, 2017).

Maintaining IT projects creates a challenge for many leaders in private and public sectors, such as hacking, mobility platforms, and intellectual property security (Khamitov, Iskakova, & Khamitova, 2015). Scholars have described the significance and implication strategies that IT leaders use to successfully plan and execute projects (see Fang et al., 2016). Hoffman et al. (2014) noted that little research focused on essential elements of networking relationships, communication, and transparency with IT projects successfully executed and planned. Sohn (2013) found that relationship building in credentialing and training future IT project leaders supported organizational leadership, successful execution, and proposed IT projects.

Historical IT Project Issues

Pedroso and de Oliveira (2013) reported on software development and discussed the influence of the North Atlantic Treaty Organization (NATO) at the first conference of software engineering in Germany. NATO (1968) reported various problems in software development, many of which Budimac et al. (2014) did not provide solutions for (Budimac et al., 2014). Filho et al. (2015) associated the notion of mobile software and hardware crisis with the inability of the software industry to deliver cost-efficient projects promptly. The NATO (1968) report indicated that the field of IT development presented a multitude of opportunity gap risks. Duncan (2014) elaborated on the reasons for why software programs fail (see Figure 1). The business strategies IT leaders practice affect the operational process of an organization. Technology professionals, who engage in networking, produce operational success (Thibault, 2013).

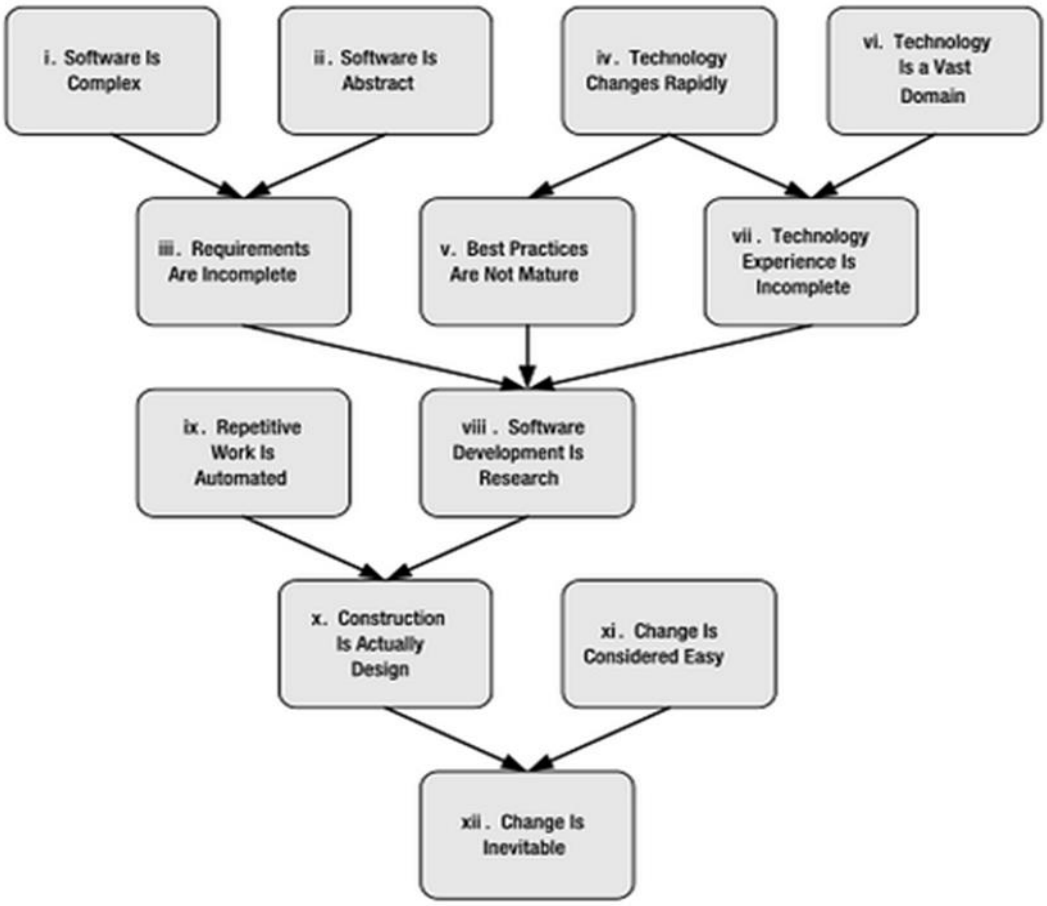

Figure 1. Technology software failure. Adapted from "Software Programming Secrets: Why Projects Fail," by G. Stepanek in 2012, Apress, p. 8. Reprinted with permission (see Appendix B).

In 2015, over 18 million personal records of U.S. federal employees' records got hacked during an alleged Chinese cyber-attack (Rein & Davidson, 2015). Security threats presented the need for IT projects to support business operations in the areas of data integrity, cloud computing, mobile operational process services, and products (Bos et al., 2016). The demand for technology professions is predicted to grow faster than other industries by 2030 (Marchant, 2013).

IT Alignment Strategies

IT provided an organizational tool that moved beyond functionality concerns Shahi, Sadoughi, & Ahmadi, 2015). The alignment between business and IT strategies remained significant, especially after the emergence of eBusiness models in the 2000s (Parente & Swint-Kruse, 2013; Shahi et al., 2015). The eBusiness models demonstrated various disruptions in business models, as rapid shifts in how technology enabled the delivery of products and services (Karnani, 2013).

Business strategies were not only abetted by IT strategies gaps, but IT continued to change operations and increase revenues (Duncan, 2014). Researchers studied fast-growing companies that depended on upon a dynamic and evolutionary IT strategy, which could support a range of shifting business objectives (Karnani, 2013). Duncan (2014) explained further studies needed to be done to address two significant gaps in user access and capability of the technological knowledge within a project team.

A sound IT strategy aligned with the mission and objectives of the organization contributed to higher functioning internal and external business relationships (Johl, Johl, Subramaniam, & Cooper, 2013). A sound IT strategy defined the management of data, which included methods for gathering, storing, and presenting the data through organizational software and hardware resources (Shahi et al., 2015). The Strategic Alignment Model (SAM) addressed four primary areas: IT strategy, organizational infrastructure and processes, information systems infrastructure, and systems operations (Shahi et al., 2015). The financial services industry used the SAM model to align

processes due to changing technology operations, especially within cloud services software (Iorizzo et al., 2014).

The vision, mission, objectives, strategies, and tactics (VMOST) model was proposed as a way to model and meta-model elements involved in IT alignment analysis (Iorizzo et al., 2014). Bos et al. (2016) explained that multinational company's goal was to measure the degree of alignment between the business processes and the software systems at work. The VMOST model proved useful for approaching application architecture design in the context of business operations (Iorizzo et al., 2014). Kitchenham and Breeton (2013) pointed out the need for more cost estimation modeling in this analysis, combining formal models with expertise judgment in the evaluation of software development efforts.

Iorizzo et al. (2014) mentioned that a few aspects of the IT alignment strategy persisted in the academic literature. Iorizzo et al. explained that the first concerned the modeling procedure; a step crucial for determining what information would collect for analyzing the alignment. Modeled Entities mapped according to the different tasks that needed to perform, and the information in each step (Bos et al., 2016). Iorizzo et al. stated that alignment evaluation conducted from a quantitative and mix method inquiry's perspective attempted to examine the entities from an objective point of view. Iorizzo et al. indicated that quantitative phase necessitated the development of precise metrics that quantified the models. The second phase, evolution execution, ensured that if the alignment did not meet a satisfactory level, a developed realignment strategy existed for increasing the levels to the desired order (Amarilli, 2014).

Formal modeling remained important for businesses and organizations, which underwent a significant overhaul at the infrastructure technology level (Karnani, 2013). The value of a strategic approach to alignment included ties to the capacity to identify alignment domains that would be critical to the IT implementation (Willcocks & Reynolds, 2015). The formal modeling's primary issue that arose indicated these strategies cannot be turned into operational tools, and there is a limited number of companies that possessed the structures to make IT decisions in an efficient manner (Amarilli, 2014; Zijl & Belle, 2017). Operational approaches tended to be more pragmatic in this respect, offering an order of actions and an iterative approach to reach alignment, or to revise information and communication technology (ICT) choices (Burlton, 2015; Willcocks & Reynolds, 2015).

Careful consideration needs for the alignment approaches adopted as they related to the structure and resources of the organization (Amarilli, 2014; Zijl & Belle, 2017). Nielsen and Hjørland, (2014) pointed out that an organization must think about the nature of change and stability, and how these factors shape the measurement of alignment. Sopelana, Kunc, and Hernaez (2014) pointed out three main areas of disturbance in organizations that may lead to (a) disturbances in IT alignment, (b) dynamism associated with changes in competition, (c) technological factors, and (d) complexity tied to the interconnectedness of environmental factors that lead to change.

These findings of Amarillo (2014) were dependent on the availability of data, its coherence, and the organization's resources for processing technological factors and IT alignment. For these reasons, Sopelana et al. (2014) proposed that a process-oriented

model of alignment is good for contingencies and the internal pressures of the technological change within the organization. Multinational and midsize companies need technological change to keep up with global business market supply and demand throughout difference business cycles.

A preferred framework for understanding process alignment focused on leveraging existing approaches and models in a contextual manner (Aleem, Wakefield, & Button, 2013; Amarilli, 2014). That is, such a discussion looked at a careful assessment of the parameters that are most easily gathered and measured quantitatively (Willcocks & Reynolds, 2015). A granular approach adopted, which attempts to get beyond the inapplicability of existing models, evaluated the organization's entire information system (Sopelana et al., 2014). This approach targeted the application portfolio of the organization (Ko & Jeng, 2015; Zijl & Belle, 2017).

A framework leveraged the existent approaches, instead of laying out new strategies (Biddle, 2013; Bos et al., 2016). The approach is valuable for targeting leaders, who wish to find the best configuration of the application portfolio that may not have significant experience in alignment models (Amarilli, 2014). The crucial aspect built flexibility into the design that identified the target application portfolio (Avenali, Battisella, Matteucci, & Nonino, 2013). The framework was dependent upon three areas of design and analysis: business needs assessment, assessment of the maturity of the information systems, and a gap analysis of the application configuration (Shahi et al., 2015).

Business Process Management (BPM) emerged as an important field concerned

with aligning IT to business models (Rahimi, Hvam, & Moller, 2014; Von Rosing, Foldager, Hove, von Scheel, & Falk Bøgebjerg, 2015). This program involved overlaying a form of governance to optimize the improvements made in information systems (Ko & Jeng, 2015). BPM encompassed both IT and business domains, emphasizing the conception, development, and implementation of IT competencies (Shahi et al., 2015). Subject matter experts (SMEs) brought in to make process operational improvements to align business strategies with the recommendation that would help organizations think about the alignment process (Bohmova & Pavlicek, 2015; Bos et al., 2016).

Business Process Governance (BPG) indicated a significant concept for the control of processes and efficient means for IT governance (Shahi et al., 2015). Process metrics were key to this outlook, as the IT governance joined performance and standards per IT resources (Rahimi et al., 2014). Iorizzo et al. (2014) suggested that BPG aligns with IT and business strategies over VMOST rather are not recommended for mobility software procedures.

IT Governance (ITG) included a connection to BPG, insofar as a top-down directive ensured IT offered benefits when compared to strategy (Berger, 2014; Zickert & Beck, 2013). ITG mechanisms provided a combination of structural elements, processes, and relations in the alignment stage (Bos et al., 2016). The alignment step is specializing how the organization's IT extended the general business strategies (Marchant, 2013). ITG processes delivered five primary IT decisions: IT principles, IT architecture, IT infrastructure strategies, business applications, and IT investment prioritization (Rahimi

et al., 2014; Zickert & Beck, 2013). IT leaders made such decisions, but business leaders decision-making roles increased during strategy planning (Lee, 2015).

IT strategy should embed within the company strategy. Business process thinkers needed to consult with IT specialists against unlikely cyber-attacks, improved value delivery, and improved business strategy (Rahimi et al., 2014). Value delivery considers what part of the delivery cycle, which weighed the promised benefits against the larger business strategy of the organization (Lee, 2015). Process owners were an essential element in this operational outlook, because the primary role of the BPG and ITG relationship was to generate a coherent process for improvements (Ko & Jeng, 2015).

The process owner often stands at the top of the pyramid in this configuration. Leaders, consultants, and network administrators report to the process owner (Rahimiet al., 2014). Strategy mapping remained relevant to this hierarchy, ensuring rule, principle, and investment priorities aligned to the IT projects (Lee, 2015; Willcocks & Reynolds, 2015). Business representatives who held a substantial role in process organization participated in IT decision-making, and held the decision right for the IT principals (Ko & Jeng, 2015). IT leaders supported the business representatives in the strategic decision-making phase, while communicating the business-level requirements at the local and global levels (Rahimi et al., 2014).

Lee (2015) described the alignment process and the role of the process owner in a Gamma framework. If an organization did not have a strong structure in place for a process owner relationship, an increased likelihood existed that the IT process may not work (Al Mushayt, 2015). Scholars recognized a need exists to set up a governance

group at the corporate level accountable for implementing the BPM framework along these lines (Marchant, 2013). BPM demarcated the functional domains in the process most relevant to strategy implementation (Rahimi et al., 2014).

The centralized IT groups provided a central core of services that used IT leaders and other consultants (Willcocks & Reynolds, 2015). Each functional domain represented an ownership group that included subject matter experts in business and IT (Lee, 2015). The management of the IT portfolio included divisions among these stakeholders. The literature suggested the more distributed the stakeholders, the better the chances for successful implementation (Marchant, 2013). A cross-functional aspect existed regarding the alignment that remains relevant for how to measure the success of the enterprise (Rahimi et al., 2014).

The primary strategic interest intends to create a structure of coordination between process and IT analysis (Rahimi et al., 2014). For this reason, the hierarchical or pyramid model included acceptance as a valuable strategy (Marchant, 2013). Business alignments with IT depended upon strong cohesions between the IS board, the business process owner group, the business forums, and the subject matter panel of experts (Marchant, 2013). One area of concern, especially for smaller organizations, arose when insufficient resources were available to create a collaborative structure. The collaborative structure remained a strategic problem that also affected larger apparatuses, including some governmental institutions (Rahimi et al., 2014).

Wu, Cegielski, Hazen, and Hall (2013) suggested that the best way to remediate these issues was to have IT consultants collected the process organization and

requirements and to report to the governance structure. Ko and Jeng's (2015) case study research explored the relationship between IT governance, investors, and small business owners. Thus, Rahimi et al. (2014) investigated the possibility that IT governance impacted and provided study ramp structures that may be a reliable solution for organizations, not as well equipped to hire process owners, who have expertise in IT infrastructure.

Forming a subject matter expert group was a sound strategy for formulating an IT alignment strategy, when effectively applied to the flexible business strategy of an organization. Research indicated the need exists for more cross-functional professionals in the IT projects industry, as technologies and business operations change rapidly (Rahimi et al., 2014). Following from alignment, a need existed to create a development strategy that permitted the organization to adapt quickly to altering business conditions (Marchant, 2013; Zijl & Belle, 2017).

IT Development Strategies

The IT development strategy is improved efficiency and effectiveness of software and hardware, when used in development and acquisitions (Vega, Jiménez, & Villalobos, 2013). Experts used two primary development approaches, single-step and iterative (Karnani, 2013). With a single-step approach, a solution moved through the development cycle once, whereby there is an acquisition, followed by a system deployment in a single effort (Albrecht & Spang, 2014; Bols, Smits, & Weijenberg, 2015). Prior researchers explored the strategy works best for software acquisition projects with understood, defined, supported by precedent, stable, and low-risk requirements (Karnani, 2013).

Mahy, Ouzzif, and Bouragba (2016) explored over 225 IT projects, worth over $7 billion, where planning or execution failed to produce the desired software objectives.

With an iterative approach, the researcher gaps in the solution underwent multiple development cycles of design, development, delivering requirements, and components of a solution; all of which went through a refinement process (Moselhi & Roofigari-Esfahan, 2013). An initial core capability identified a modular and robust system architecture that allowed the system to expand, as requirements added to the system based on user feedback, or approval of additional project resources not available when first fielded (Agrawal, 2014). This strategy worked well when the needs for systems with requirements did not exceed beyond the core capability (Wu et al., 2013).

This procedure employed acquisitions where all or most elements known up front, but the full capacity cannot be fielded because of a lack of funding, resources, time, user's criticality of need, or another constraint (Vega et al., 2013). In this situation, the user benefitted from receiving a partial capability early and accepting an inferior solution as a trade-off (Moselhi & Roofigari-Esfahan, 2013). This approach assumed the total solution is modular and can accommodate capability upgrades (Wu et al., 2013).

Within each type of development strategy, eight scholars supported there are software development paradigms, or models that show how the software development tasks function (Alsaade, Zaman, Hassan, & Abdullah, 2014). Two types of single-step software development paradigms were labeled (a) waterfall and (b) incremental (Bergenti, Franchi, & Poggi, 2013). Three types of iterative software development paradigms identified as (a) iterative incremental, (b) evolutionary, and (c) spiral

(Rasoolzadegan & Barforoush, 2014). I focused much of the research on case study research using actor-network theory concepts. My case study proposes to explore and examine sustainability, relationships, and networking.

Waterfall Software Develop

The waterfall software development paradigm described a single-step, highly structured development (Stoica, Mircea, & Ghilic-Micu, 2013). Each stage of this paradigm cascades into the next with limited opportunity to revisit a completed stage, much like a waterfall (Crawford, Leonard, & Jones, 2013). Stakeholders reviewed documentation at each phase to approve the project and proceed to the next phase of development, until the software development is completed (Stoica et al., 2013).

The waterfall development paradigm suited the needs for projects that were considered precedent systems, where the requirements developed at the beginning of the project had little chance that needed change later in the process (Oluwafemi & Olanrewaju, 2014). Returning to the earlier stages in these types of projects did not work. The stages of the waterfall development paradigm aligned with capital planning and investment control (CPIC) and the typical project management phases (Oluwafemi & Olanrewaju, 2014).

The advantage of the waterfall development paradigm is cost and schedule estimates tended to be more accurate (Stoica et al., 2013; Zickert & Beck, 2013). Critical issues typically encountered with this paradigm were (a) lack of observable progress and success until late in the project, (b) modifications usually did not occur until post-implementation, (c) limited feedback at each stage, and (d) lack of a working product

until later in the project (Oluwafemi & Olanrewaju, 2014). The IT project leaders were aware of the core requirements up front for the record management application, including the menus and options customized to the end user requirement (Crawford et al., 2013).

Incremental Software Development

The incremental software development paradigm involved developing software in pieces or increments (Crawford et al., 2013). Each project increment underwent the development cycle, separately, either sequentially or concurrently (Kim, Park, & Lee, 2013). The project integration included orchestration of elements by key personnel to increase added capability (Vega et al., 2013). A limited likelihood of changed existed because the simplest development model requirements existed for the project or program up front (Kim et al., 2013). This paradigm met the needs for projects that required prompt delivery of critical functionality, as well as projects that needed a definite future funding plan.

The incremental software development paradigm allowed for faster delivery of useful segments of capability to end users (Agrawal, 2014). Kim et al. (2013) indicated that increased management control and lowered risk by grouping increments into more manageable chunks help capability to end users. The incremental software development paradigm reduced overall project cycle time when increases developed concurrently (Oluwafemi & Olanrewaju, 2014).

Some key disadvantages of the incremental development paradigm included (a) all requirements known at the beginning of the project; (b) formal reviews include more sophistication for additional releases, than for single-step development; (c) interfaces

must be managed carefully over time, ensuring increments fit together; (d) operations include more frequent impacts, than with single-step development; and (e) although the project can absorb simple changes to requirements, there must be a policy and process in place to accommodate critical changes or additions to requirements during the project (Vega et al., 2013).

In incremental development, each piece or increment included development singularly or concurrently that comes together as an integrated system (Vega et al., 2013). When using either of the single development strategies, no opportunity existed for feedback and improvements of the increments (Lampka, Perathoner, & Thiele, 2013). In the iterative incremental software development paradigm, each incremental release benefitted from user feedback regarding the previous version (Oluwafemi & Olanrewaju, 2014). This paradigm met the needs for projects that require delivery of early functionality and with stability requirements (Lampka et al., 2013; Oluwafemi & Olanrewaju, 2014). Additionally, this paradigm is useful for projects with funding uncertainties, as each cycle produced a working system with low to medium risk levels (Vega et al., 2013).

Key advantages of the iterative, incremental software development paradigm suggested a usable product from the first release can be modified (Crawford et al., 2013). The modified usable product increase revenue immediately in a lower time cycle as other development paradigm (Parente & Swint-Kruse, 2013). Each cycle delivered improved functionality, while spreading risk over multiple cycles, thereby making project management easier (Lampka et al., 2013).

Disadvantages of the iterative, incremental software development paradigm included the requirements that must be known at the beginning of the project (Bouckaert et al., 2014). Lampka et al. (2013) insist that interfaces needed to be well-defined up front, because of development over multiple iterations. Formal reviews were more complicated with multiple iterations. Parente and Swint-Kruse (2013) explained that the disadvantage of cost overruns resulted in an incomplete system developed for the end user.

Multiple iteration events created excessive operational issues, compared to single-step development (Lampka et al., 2013). The iterative incremental software paradigm was not an entirely viable development strategy. Waterfall and incremental defined two types of single-step software development paradigms. Thus the evolutionary software development progressed from the iterative software development paradigms.

Evolutionary Software Development

The evolutionary software development paradigm adapted to changing environments by rapidly developing and sustaining a supportable core capability, and then inserting new technologies or additional communication over time (Bouckaert et al., 2014). An initial set of requirements included definition well enough to implement in one or more iterations, while remaining requirements and technologies further defined before development (Parente & Swint-Kruse, 2013). The evolutionary software development paradigm included usefulness for projects that required early delivery of essential functionality or only have partially explicit requirements up front (Lampka et al., 2013).

The Red Hat Company used evolutionary software development to implement ICONIX software to bridge the gap between analysis design and analysis process for the Department of Interior (Getz et al., 2015). ICONIX Software helped with four phases of initial concept, design and implement an initial prototype, refine prototype until acceptable, and complete and release prototype (Ko & Jeng, 2015). Red Hat Company used the Department of Interior's immediate feedback to refine the prototype software utilized in the project.

The technology project called for an initial funding estimate for inclusion in the next fiscal year's planning, even though accurate costing and scheduling could not be determined at the beginning, leading to medium levels of risk (Parente & Swint-Kruse, 2013). The evolutionary software development paradigm created rapid development and delivery of core available capabilities to users, and an infrastructure foundation on which to build later iterations (Bouckaert et al., 2014). The technology project requirements not predetermined as passive, nor do they not include predetermination (Bouckaert et al., 2014). At the project planning stage, the priorities of the IT project included (a) funding estimation, (b) time to refine the requirements, and (c) mature the technologies for development and release of later increments (Lampka et al., 2013).

Additional benefits of this paradigm included the spread of risk over multiple iterations and project management (Bouckaert et al., 2014). The evolutionary development paradigm has some disadvantages. Formal reviews included more sophistication for iterative releases, than for single development efforts (Ko & Jeng, 2015). Interfaces included management over time to ensure increments fit together.

Finally, cost and schedule overruns resulted as new requirements defined over time (AlFayoumi, Hegazy, & Belal, 2014). Therefore, the evolutionary development model was the most likely strategy for the software database on refined prototype projects. Perhaps this was especially true, as increased reusability and immediate feedback between developer and client were present (Koo, Kim, & Park, 2014). The evolutionary development model evolved further, as the spiral software development paradigm was more reliable at identifying risk.

Spiral Software Development

In the spiral software development paradigm, a project includes a divided increment into multiple sequential development cycles (Gupta & Rathi, 2013). Each cycle developed a prototype that addressed one or more significant project risks across software and hardware projects (Gupta & Rathi, 2013). Key decision points occurred at the end of each spiral, wherein the team decides what to send in the next spiral (Yao, Meng, & Kou, 2013). The development paradigm continued until demonstrating sufficient capability to move to integration, testing, and implementation, which concluded an increment (Mellis, Loebbecke, & Baskerville, 2013).

The Booz Allen Hamilton company used the spiral software development model to reduce the risk for failed sensor and transducers IT hardware for FoxCon company, saving the company $174 million in operational cost (Yao et al., 2013). Booz Allen Hamilton determined the objectives of the risk, identified and resolved risks, developed and tested, and planned the next iteration in the outcome process (Mishra & Dudey, 2013). The determined risk outcome example of risk reduction and functionality were

costly to FoxCon company and the end users (Yao et al., 2013).

The spiral software development paradigm included a useful application for unprecedented systems. High-risk systems required refinement, where key technologies may be immature, and user needs were important (Mishra & Dubey, 2013; Yao et al., 2013). Key advantages of the spiral software development paradigm suggested (a) conditions become better defined, after going through the spiral paradigm of addressing each risk; (b) risks, including critical technology risks, are better managed than with other methodologies; and (c) the system response aligned better with user needs (Nuwangi, Sedera, Srivastava, & Murphy, 2014). Compared to other methodologies, the key disadvantages of this paradigm were project complexity, management difficulty, increased development cost, and schedule length increased (Mishra & Dubey, 2013; Nuwangi et al., 2014).

Agile Software Development Method

The agile software development method was defined as a nonlinear approach to project management and enabling project leaders to accommodate for any changes in deliverables or expectations on the fly (ParGupta & Rathi, 2013). Drawing on the efficiencies and the best aspects of each paradigm, agile combined various aspects of the iterative, incremental, and evolutionary software development methodologies into a hybrid model (Kim et al., 2013). The incremental aspect broke down major milestones into small increments that required the least planning (Losada et al., 2013).

Iterations described as brief timeframes of 1 to 4 weeks that involved working teams contributing to all of the major functional groups: (a) requirements, (b) design, (c)

coding, (d) testing, and (e) quality assurance. Each iteration ended when a working product was demonstrated to management and other stakeholders (Kim et al., 2013). This short-term process minimized risk, facilitated developers, and enabled adaptation, as feedback from stakeholders required changes. The evolutionary aspects came in with the longer-term project planning for market release. A demonstrably new or revised product was the result of each iteration, while the evolutionary software may not necessarily be enough for a versioned release of software (Kupiainen, Mäntylä, & Itkonen, 2015).

The final project and planning phase decisions determined how to acquire, develop software solutions, and incorporate changes to the project management plan (AlFayoumi et al., 2014; Kim et al., 2013). Eight scholars explored the project management plan contained the overall business planning for operational procedures, as created in the concept planning phase of the project lifecycle during the from beginning to the end of the project (Zhang, Ye, & Lin, 2014). The planning phase decisions impacted my study and provided a means to examine gaps in scope, quality, schedule, budget, resources, risk, contracting approach, product support, logistics, system engineering, and technical plans for acquiring, developing, and sustaining elements of this overall project solution (AlFayoumi et al., 2014; Kim et al., 2013). As proposed, during this study, the focus on a development method definition of service as constantly changing, because of competitive shifts and costs of projects in the IT industry impact value to the client.

IT Project Issues and Cost

Baumann and Baumann (2014), and Colomo-Palacios, Casado-Lumbreras, Soto-

Acosta, García-Peñalvo, and Tovar (2014) suggested that problems are far wider and inevitable for IT project gaps. Arasteh, Miremadi, and Rahmani (2014) revealed IT professionals should specify the scope of the project cycle and differentiate between programming. Munteanu et al. (2014) conceptualized presented errors related to the technology most associated with program success. Glover (2013) found that most IT projects experience opportunity gaps instead of success, when they measured with the parameters of forecasted time, budget appropriation cycle, and the budget specifications of the strategy.

The Chaos Manifesto (2013) reported approximately 10% of large IT projects were a success in 2012 (Herteliu & Despa, 2014; Kemp, 2013). Table 1 shares the percentages of average IT project cost overruns are 400% for 4.4% of responses, 201-400% for 8.8% of responses, 101-200% for 10.2% of the replies, and 51-100% for 29.6% of the replies. The Chaos Manifesto (2013) reported excessive overruns in cost and budget within the IT industry, which appears to cause dissatisfaction to clients intermittently, even though the impact seemed to underrate in contemporary budgets and financial systems (Glover, 2013).

Table 1

Cost Overruns

Cost Overruns	Percentage of Responses
Under 20%	15.5%
21 to 50%	31.5%
51 to 100%	29.6%
101 to 200%	10.2%
201 to 400%	8.8%
Over 400%	4.4%

Note. From "The Chaos Report," by The Standish Group, 2013. Copyright 2013 by The Standish Research Group. Adapted with permission.

The Standish Group International's (2013) report indicated approximately 43% of projects met challenges because of unfulfilled requirements associated with time, costs, and end user features that are not fulfilled by requirements by the vendor. IT projects had unfulfilled challenges, while over 15% of projects never reached completion (Herteliu & Despa, 2014). The trends on why projects failed due to user involvement, executive management support, proper planning, and other success or opportunity gap profiles are an immediate concern to me, as proposed in my study (see Table 2).

Table 2

Success Failure Profiles

Project Success Factors	Percentage of Responses
1. User involvement	15.95%
2. Executive management support	13.9%
3. Clear statement of requirements	13.0%
4. Proper planning	9.6%
5. Realistic expectations	8.2%
6. Smaller project	7.7%
7. Competent staff	7.2%
8. Ownership	5.3%
9. Clear vision and objectives	2.9%
10. Hard working and focused staff	2.4%
11. Other	13.9%

Note. From "The Chaos Report," by The Standish Group, 2013. Copyrights 2013 by The Standish Research Group. Adapted with permission.

The Standish Group International's (2013) report indicated that a minuscule number of large projects successfully overcame the hurdles managing cost, time, and scope of the project (Herteliu & Despa, 2014; Zickert & Beck, 2013). Ross (2013) found the contribution of phases that aid in IT project opportunity gap, and reported the frequencies of phase opportunity deficiencies in an empirical study. Rothstein (2015) indicated that 98% of projects faced early opportunity gap at the preparing stage. Over 80% failed at the management level, whereas 75% failed in business development (White, 2013). White (2013) revealed 43% of projects failed because of information and knowledge management. Further investigation revealed 29% of projects failed in system building and introduction phases, during project team collaboration, respectively; the impact underrated to communication, transparency, and team building (White, 2013).

Jain and Khurana (2013) argued governmental departments are similar to huge corporate organizations in deciding when to outsource IT requirements for cost-

effectiveness and efficiency of operations via professional outsourcing. Marin, Marzucchi, and Zoboli (2015) suggested that multinational companies focused on being efficient technologically for sector transactions and across different cultural borders. Technological changes that required new IT strategies by governmental departments, did not have the adequate capabilities for developing effective IT solutions on their own (Jain & Khurana, 2013; White, 2013).

Gasca-Hurtado and Losada (2013) examined an empirical study and suggested risks associated with outsourcing IT projects. They elaborated that outsourcing partnerships achieved a mutual goal, where poor management of this relationship put the project at risk of opportunity gap (Jain & Khurana, 2013). Calaprice-Whitty (2013) suggested a contrasting view, where a prevailing myth existed, as project vendors were not strategic partners as much as they were profit seekers. Denning (2013) addressed the necessity of risk assessment associated with strategic IT outsourcing partnerships and reported that a company must assess the risk for management, while taking the decision of outsourcing IT projects. Denning suggested that understanding risk associated with the project was necessary to control accordingly and turn IT projects into a success.

Many researchers cite internal problems, poor management, miscommunication, and mishandling of the processes as primary causes of project opportunity gaps, specifically in outsourcing IT project opportunity gap (Haji-Kazemi & Andersen, 2013; Wallace & Norton, 2014). Xu and Yao (2013) elaborated on the errors of the vendor and client relationships that led toward opportunity gap, including over-dependency of customers on partners with different goals and lack of required level of sharing risks and

rewards. Lack of top management support was a contributing factor to project opportunity gap, when networking with project team members failed to create a favorable vendor and client relations in the building stage (Kutsch, Browning, & Hall, 2014).

Lack of proper planning, project team networking transparency, creeping scope, unrealistic resource estimation, miscommunication, gaps in communication, and lack of administrative support and involvement are other reported causes of project opportunity gaps (Karnani, 2013; Wei, 2013). Atlas and Sobotka (2013) elaborated on the matter, they suggested software opportunity gap attributed to faults incorporated into the procedure during many stages of development from beginning to final installation. These responsibilities required early support from key members of the enterprise but turned into problems mired in company politics (Haji-Kazemi & Andersen, 2013).

Kutsch et al. (2014) determined the management of both formal and informal aspects of a project needed to remain proactive to cope with the differences in clients and vendors. Brookes, Butler, Dey, and Clark (2014) argued individuals associated with the project should possess the qualities needed to make a project a success. Long, Cunningham, Carswell, and Braithwaite (2014) indicated the crucial influence of ambiguity in defining the responsibilities of stakeholders (vendors, clients, and consultants) in project opportunity gaps.

An association of this occasion gap with theoretical aspects is minimal (Haji-Kazemi, Andersen, & Klakegg, 2015; Brookes et al., 2014). Brookes et al.'s work indicated a lack of ownership and coordination between client and vendors in many cases. These aforementioned studies strongly advocated the reality that humans and their

transactional relationships participate in the opportunity gaps of IT projects (White, 2013). The networking strategies that emerge from this study may provide IT leaders a better understanding of techniques to manage assets and project teams traditionally used in the IT project.

Frequently reported causes for the client-vendor relationship and project opportunity gap in the IT field is a miscommunication from the vendor side through the request for proposals (RFPs), either intentionally or unintentionally regarding project specifications, benefits descriptions, budget estimations, and estimated times (Rönnberg-Sjödin, 2013). Miscommunication with the leading project team often occurred, and at times intentionally, when vendors overstated involvement with government clients and the absence of supporting and controlling activities (Junior, Lucato, Vanalle, & Jagoda, 2014). Nuwangi et al. (2014) suggested to gain broad and complex project contracts, organizations often exaggerated or guessed in regards to firm capabilities. Moreover, to win the contract, organizations might underestimate the cost and time requirements that lead projects towards opportunity gaps (Fang et al., 2016).

Considering the issues indicated in the matter of opportunity gap, Parsons (2013) recommended assessing the following elements of IT project problems. The first part of project opportunity gap was the potential disparity between specifications and outcomes in terms of performance, functionality, cost, and time (White, 2013, Zamani, 2013). That difference mostly occurred because of vague definitions of the project's scope (Parsons, 2013). The problem of ambiguous scope arose from the vendor and client side (Xu & Yao, 2013). Consumers' lack of technical knowledge may have contributed to the

ambiguous scope of such projects, but the vendor's opportunity gap could set the extent of the project on the asked specification (Xu & Yao, 2013).

Ambiguity, miscommunication, and transparency can lead to scope creeping, which in turn leads to increased time, cost, and risk in the project (Brookes et al., 2014). Briones and McFarlane (2013) stated that scope creeps needed to control as essential parts of IT project success. They emphasized the need to focus on the concision of the scope of the project instead of imagining a massive all-purpose project for the business and department. This recommendation remained an important early control for an IT project due to the high rate of projects over time, budget, and lack of team transparency (Rönnberg-Sjödin, 2013). Briones and McFarlane (2013) focused on scope creeping in the internal business departments, and found there is still need to study external and internal communication strategies for IT projects.

Dechesne, Warnier, and van den Hoven (2013) elaborated on the notion that the IT industry and vendors were the leading drivers of IT project success or opportunity gap. Reeves, Eveleigh, Holzer, and Sarkani (2013) stated that approximately 82% of the management phase accounts for the opportunity gap of projects. They discussed the problem of a change order or request for change order whereby a scope creep problem disguised the actual limitations of specifications. Reeves et al. (2013) discussed the factors of management that aided in the success and opportunity gap of an IT Project and found there is a need to study project team impact on IT project success. Complex conflicts in an outsourced project existed because of the involvement of different levels of people from various organizations in the process, in support of project team impact

(Fitzgerald et al., 2014; Panth & Acharya, 2015).

IT Project Strategy Gaps

Between 2009 and 2013, IT project mismanagement and communication gaps created consequences that quickly lead to difficult challenges between stakeholders at different levels and phases of the project, costing the IT industry over $250 billion (Jain & Khurana, 2013). Time, cost overruns, and project creeps were the primary mismanagement problems (En-Jian, Jun-Jie, & Liang-Cheng, 2013; Herteliu & Despa, 2014). Contributing to the scenario, 94% of nontechnological problems included either miscommunication or scope creep from the side of the vendor, specification creeps regarding the request for changes, and enhancements from the client (Chang, Yen, Chang, & Chien, 2013; Aubert, Hooper, & Schnepel, 2013). Project creep remained a major challenge for management, insofar as negotiating time frames and relations with the client (En-Jian et al., 2013; Sommer, Dukovska-Popovska, & Steger-Jensen, 2014).

Identifying critical success factors and knowing the early warning signs of opportunity gaps helped eliminate the impact of measures on the IT project (En-Jian et al., 2013; Philbin & Kennedy, 2014). Kleist, Woszcynski, Zafar, and Dembla (2015) proposed tailoring the environment of outsourcing rather than relying upon past decisions. The critical success factors of the project provided a guide for outsourcing in a meaningful manner while understanding the context of environmental pressures.

Philbin and Kennedy (2014) listed critical success factors through empirical research on IT project risk. Philbin and Kennedy identified 19 key factors and the most important ones included (a) precise specifications, (b) realistic schedule and budgets, (c)

the importance of networking with excellent communication skills, and (d) management dexterity and support and keeping on specified requirements. These factors do not sum up every project situation, but they remain essential for consideration within this study.

Zabawski (2015) identified the early warning signs of the IT project opportunity gaps by miscommunications. The risk associated with the success of the IT project divided into three broad categories identified as (a) an overall procedure, the (b) involvement of a human base, and (c) the technological product (Zabawski, 2015). The categories were divided further regarding lack of management, weak commitment, and a lack of personnel and technical supporting staff (Zabawski, 2015).

Conversely, Croce, D'adda, and Ughetto (2015) explored that such opportunity gaps do not frequently occur with teams that communication well. Croce et at. (2015) recommended that ongoing processes should manage the early warning signs of opportunity gap, which would aid in saving time clients. A gap in trust, between client and provider, aggravated the situation further (Croce et al., 2015). Croce et al. included a lack of conjoint teams, inadequate understanding, miscommunication, and the absence of a cultural fit between parties.

The IT project showed strategy gaps in communication with the prominence of the opportunity gap attributed to vendor and client relationship (Martinez-Jerez, 2014). For instance, Xiao, Xie, and Hu (2013) presented a comprehensive guide to managing vendor relationships and suggested that company vision led the process. Martínez-Jerez (2014) posted the importance of building a vendor and client relationship on IT projects. Huscroft, Hazen, Hall, and Hanna (2013) indicated overrun factors that influenced the IT

project outsourcing. Suggested factors included the quality of services, cost-effectiveness, the capability of HR, and infrastructure, to include previous records of relationship management and the number of successful projects (Huscroft et al., 2013).

Abubakar and Ahmad (2013) discussed quality relationship determinants associated with related theories. Nguyen and Aoyama (2014) emphasized the importance of healthy relationships in outsourcing IT projects to the public sector. Proactive user participation and adequate planning could control the associated risk of project opportunity gap from the vendor's side (Ford, Willey, White, & Domagalski, 2015; Nguyen & Aoyama, 2014). Sinha, Roy, and Singh (2014) conceptualized e-government management the United States federal government should undertake to make a project successful. The governance, regarding decision-making controls, was found effective in the organization of IT procedures for government IT projects (Heyn & Kupiec, 2013; Singh, 2014). Chen, Ramamurthy, and Wen (2015) found the importance of a vendor relationship, in terms of organizational and regulatory arrangement affected the success of evaluating e-government projects and portals. Nguyen and Aoyama noted that IT governance and the right decision-making controls positively affect company operations for company expansions.

Assessment of IT Project Failure

The IT project assets included software and hardware, networked inter-organizationally or externally (Doherty & Terry, 2013). The IT assets impact the enterprise through data integrity, organizational goal effectiveness, and resource efficiencies of the project. IT capabilities can increase computer usage, new data

processing areas, data farms, enterprise-wide computing, virtualization, knowledge-based expert support systems, graphic user interface (GUI), and communication and networking technologies (Chen, Pan, Zhang, & Shen, 2013; González-Ferrer, Fernández-Olivares, & Castillo, 2013). Checks and verifications were necessary when converting information systems from manual to automated controls (Doherty & Terry, 2013). Computer software application controls anticipate exception reporting and processing that were normally done on an ad-hoc basis software like SAP SQL tools (Österman & Fundin, 2014).

Without software application computer controls, the routine controls or incomplete could cost a multinational company 18% to 35% of operational revenue (Österman & Fundin, 2014). In December 2010, the American Institute of Certified Public Accounting (AICPA) issued a statement of auditing standards (SAS-94) to examine and assess financial and technological auditing needs of IT development projects (Chen et al., 2013; Groenwold, Moons, & Vandenbroucke, 2014; Havelka & Merhout, 2013). Under SAS-94, completeness, integrity, and validity provided electronic evidence for transmitting, processing, accessing, and maintaining IT projects electronically (Chen et al., 2013). SAS-94 focused on the past, present, and future IT governance and found a need to study the transparency of risk for executed and planned IT projects.

The electronic data risk lowered substantive testing on more than the financial or non-financial system, but an auditing of the IT issue assisted in understanding the level of risk (Berg, 2015; Gura, 2014). The AICPA performed a study on technology auditing

processes, examining electronic evidence and evaluation issues associated with non-financial and financial reporting (Héroux & Fortin, 2013). The former SAS-78 and SAS-94 Issued by AICPA had gaps that the controls and assessment did not find (Chen et al., 2013).

The SAS-80 bridged the gap between concepts and expanded emphasis on auditing design and operations of IT projects (Didraga, 2013; Zamani, 2013). The SAS-80 affected internal controls, the understanding of internal controls, evidential matter of verifying, and measurement of control risk (Héroux & Fortin, 2013). The IT projects assessed for the risk associated with particular active, information, communications, and internal control during the closeout project meetings (Didraga, 2013; Héroux & Fortin, 2013).

Berg (2015) revealed that almost 90% of large-scale projects failed in 2012 because of cost, time, and feature disparity. Identification of the opportunity gap between the software and program did not always signify a larger project opportunity gap (Berg, 2015). The success of technology during the project, formerly associated with the opportunity gap, was included in the program (Chang et al., 2014). Nearly 94% of IT projects failed because of non-technical reasons, such as those with management or vendor relationships (Foster & Heeks, 2014).

Nontechnical grounds of opportunity gap increased when outsourcing initiated (Foster & Heeks, 2014; Sony & Mekoth, 2014). Outsourcing IT projects and asking for RFPs created a range of non-technical complexities for business and national projects alike (Dodge, 2013; Ravishankar, Pan, & Myers, 2013). The strategies that emerged may

provide technical and non-technical leaders to a better understanding of techniques and strategies used to successfully plan and execute projects when outsourcing IT projects.

Dodge (2013) highlighted the importance of responsibility and coordination in stakeholder relationships as critical success factor of an IT project. The absence of workable stakeholder relationships identified a lack of scope definition, knowledge sharing, and understanding, surrounding the project (Jones, 2014). The absence of workable stakeholders relations presented a problem of miscommunication and lack of ownership and control (Pezzey, 2014; Ravishankar et al., 2013). Errors associated with scope creeping and disparities in project specifications hampered authorities on both sides of the outsourcing relationship (De Waal et al., 2014; Pezzey, 2014).

The software project management team repeated issue related to the fact that vendors are usually profit makers in the hope to gain an advantage over 20% to 50% of margin (Chaves-González, Pérez-Toledano, & Navasa, 2015; Pezzey, 2014). The uneven relationship increased the burden of managing the overall process and developing strong customer communications (Kohler, 2014). Arguably, the client organization should reduce over-dependence on vendors, and instead develop proper arrangements through a networking workforce able to manage some of these difficulties (Faria, 2014). In contrast, a study from the vendor's perspective also addressed the importance of planning and control over the processes (Guzys, Dickson-Swift, Kenny, & Threlkeld, 2015). IT project gaps, opportunity gaps, and lack of knowledge sharing may benefit from findings of the study. The research may also apply to other parts of the midsize company.

Transition and Summary

Section 1 included the introduction of the background, historical, and current overviews of this study's focus on IT. In addition, the problem statement, purpose statement, and conceptual means of the study underwent a detailed explanation. The details related to the assumptions, limitations, delimitations, and significances were also included in the discussion. Within the literature review, I discussed the prevalence of communication and transparency differences, which challenged IT leaders in the business world, and can be detrimental to the organization and IT project success.

Section 2 included the purpose statement, the role of the researcher, participant assessment strategy, and ethical protocols proposed for the study. The research method, data collection, instruments, data analysis, reliability and validity, transition, and summary are parts of the next section as well. Details on each of these items have supported literature provided. Under Section 3, I presented study findings and included interview responses to the proposed semistructured interview. I provided recommendations discussing further areas of research in section 3.

Section 2: The Project

This section includes a description of the qualitative method I used to understand the strategies that IT leaders use to plan and execute projects under budget and on time. For many companies, project management supports economic and operational infrastructures (Shuchman, 2014). Understanding a project's planning and executing phases may lead to a more streamlined process that avoids high-risk opportunity gaps (Peters, 2014). In this section, I address the following: (a) the study's purpose statement, (b) the role of the researcher, (c) participants, (d) the research design, (e) population and sampling, (f) ethical research, (g) data collection instruments, (h) data collection, (i) data organization technique, (j) data analysis, (k) reliability and validity, and (l) transition summary.

Purpose Statement

The purpose of this qualitative single case study was to explore strategies that successful IT leaders utilize to plan and execute projects under budget and on time. The participants included experienced IT leaders with supervisory responsibilities for IT projects for a midsize company in the Washington, DC metropolitan area. Individuals were selected because they were most suited to identify the strategies leaders need to implement IT projects. The implication for positive social change includes the potential for IT leaders to reduce project production waste, thereby leading to economic expansion for those with limited technology resources (Schlabach, 2015).

Role of the Researcher

Unkovic, Sen, and Quinn (2016) noted the data collection process should start with the researcher as the primary data collection instrument. Following this, I conducted observations and compiled descriptions of perceived networks. I also gained insight into users' relationships to the network and how to link between the actors and their networks (see Peters, 2014). As an observer, a researcher gathers information about shared perspectives through interview questions to draw conclusions from themes and disseminate findings (Yin, 2011). I gathered information from participants through semistructured interview questions and analyzed the information to identify themes in the research findings.

McDermid, Peters, Jackson, and Daly (2012) suggested that researchers need to be familiar with the study topic or work in the field of study interest as well as possess IT experience to build mutual rapport with IT participants. I was familiar with the topic of this study due to my professional experience, including over 22 years of banking practice that involved 15 years in the IT industry. Having worked in both the public and private sectors as an IT financial executive, my exposure to telecom and IT projects spans over two decades of IT project experience. To mitigate researcher bias that may have occurred due to my prior experience, I excluded participants with whom I possessed a current or prior personal or professional relationship.

In this qualitative study, I followed the protocols established by the Belmont Report to ensure that data was collected and analyzed appropriately (see Appendix C). The Belmont Report underlined principles including justice, beneficence, and respect to

the participants of the study (Van Praag & Sanchez, 2015). The Belmont report also addressed a researcher's assessment of risk and benefits when his or her research involves human subjects, informed consent, and researcher-subject selection (Duric & Ivanovic, 2014). Unkovic et al. (2016) noted that the Belmont Report requires that all data gathered should be appropriate for the study. I adhered to the protocols of the Belmont Report and basic ethical principles throughout my study. Additionally, I followed Walden University's protocols and regulations for research involving human subjects. I consistently ensured that the participants' rights were understood as well as the potential risks and benefits of participating in the study (Peters, 2014). All participants were treated equally for the duration of their participation.

Qualitative researchers should maintain transparency in the research process regarding their personal lens, avoiding the use of personal or professional colleagues as participants (Judkins-Cohn, Kielwasser-Withrow, Owen, & Ward, 2014), so I did not use personal or professional colleagues as participants. Unkovic et al. (2016) explained that personal biases may influence the interview process of the study such as offering opinions to particpants, so I did not offer personal opinions or other biased statements during the interviews. Yin (2011) explained the need for the researcher to deliberately put aside personal biases, beliefs, and personal knowledge of the research procedure. I conducted the interviews, organized and analyzed the data, and identified themes while trying to set aside potential biases. Throughout data collection, my reflective journal mitigated bias by ensuring that I would not lean toward evidence that supported my personal views while ignoring opposing data in my study.

An interviewer should introduce the topic to the participants and then ask them critical follow-up questions to better understand the participants' perspectives (Judkin-Cohn et al., 2014). Yin (2014) believed that the interviewer should follow an interview protocol to ensure that the data collected answers the research questions. I used an interview protocol that included: (a) an opening statement, (b) semistructured interview questions, (c) probing questions, (d) an opportunity for participants to verify themes and codes noted during the interviews, (e) follow-up questions as needed for clarity, and (f) reflective notes take by the researcher (see Appendix C). Yin (2011) stated that an interview protocol provides a set of questions and procedures that guide the researcher through the interview process; therefore, I used an interview protocol that guided me through the process and provides my role in the study.

Participants

Establishing specific criteria for participation helps ensure that the data collected are adequate and appropriate (Yin, 2011). An IT project leader is a person with extensive IT experience who implements strategies and makes decisions associated with IT software and hardware projects while employed by a company (En-Jian et al., 2013; Philbin & Kennedy, 2014; Zabawski, 2015). IT leaders should have more than 2 years of experience to possess adequate IT forecasting and project strategy optimization experience (see Losada et al., 2013; see Nuwangi et al., 2014; see Xiao et al., 2013). Participants should be over the age of 18 and with experience in their field (see Bjørkløf, Kirkevold, Engedal, Selbæk, & Helvik, 2015; see Peters, 2014, see Wall, 2015). The participant inclusion criteria for this study included individuals who were: IT leaders

employed by one midsize company in the Washington, DC area who implemented strategies to plan and execute IT projects under budget and on time, who were over the age of 18, and who possessed at least 2 years of IT project leadership experience. A midsize company employs 100 to 9,999 employees (Wall, 2015).

One strategy for a researcher to gain access to participants is for the researcher to search publicly available trade directories, identify a company, visit the company headquarters in person, communicate with the owner of the company, obtain written permission from the owner to conduct the research study within the company, and contact employees who are potential participants (Losada et al., 2013; Peters, 2014; Philbin & Kennedy, 2014). After using a publicly available trade directory to identify the midsize IT company in Washington DC, I followed the recommended steps. Wall (2015) reported that contacting prospective organizations and individuals by phone and e-mail are effective strategies because the researcher can provide the institution with sufficient information about the researcher study to decide. After obtaining approval from the Walden University Institutional Review Board (IRB), the data collection process began. I met with the owner of the midsize IT company in Washington, DC and obtained written permission from the owner in the form of a letter of cooperation. A letter of cooperation serves as contract between the researcher and the institution (Unkovic et al., 2016).

Wall (2015) noted that the owner of the company can be an excellent source of potential participant recommendations as well as participant contact information. Braun et al. (2014) suggested that a human resource specialist can be a gateway to identifying a potential participant with a company. After obtaining IRB approval, I received the

participants' contact information from the owner of the company and sent a recruitment letter to the potential participants (see Braun, Schell, Siegfried, Müller, & Ried, 2014; see Van Praag & Sanchez, 2015; see Xiao et al., 2013). After obtaining approval from the university's IRB (Approval No. 09-13-17-0435006), I followed the IRB procedures and ethical protocols regarding the collection of data from the participants as suggested by Denzin and Lincoln (2011), Unkovic et al. (2016), and Xiao et al. (2013). I met with the owner of the midsize company to explain the inclusion criteria, and the owner recommended participants after understanding this criteria. The owner provided contact information for employed IT project leaders who had a record of completing IT projects under budget and on time.

I proceeded to identify and recruit eligible study participants. I established a working relationship with the participants through mailing recruitment letters followed by personal contact (see Denzin & Lincoln, 2011; see Van Praag & Sanchez, 2015; see Wall, 2015). I recruited in Washington, DC through a recruitment letter (see Appendix D), following up with each potential participant via e-mail, phone call, or face-to-face. Through personal contacts and purposeful selection methods, I identified IT leaders who provide the real-life context necessary to answer the research question.

Research Method and Design

Research Method

Three types of research methods exist: (a) quantitative, (b) qualitative, and (c) mixed methods (Stake, 1995; Wall, 2015; Yin, 2011). All three methods received consideration for this study. Yin (2014) explained that researchers can understand

participants' perceptions and decisions under qualitative inquiry using open-ended questions. Qualitative researchers gain multiple perspectives through varying experiences of their participants (Danielsson & Rosberg, 2015; Röing & Sanner, 2015; Yin, 2011). Rafique and Hunt (2015) agreed that qualitative research enables the inquirer to gain multiple and better perspectives through varying life experiences of others. Li et al. (2014) explained that qualitative inquiry in the IT industry should be based on the primary research question or questions as well as the nature of the phenomenon. I selected the qualitative method because of the nature of the phenomenon under study, and the primary research question required answers to open-ended questions and multiple perspectives to be appropriately addressed.

Yin (2011) noted that social phenomena are complex, interwoven, and cannot be deduced, segregated, or reduced by variables; therefore, social phenomena are best addressed using qualitative methodologies. Li et al. (2014) explained that the qualitative method is appropriate regarding researching complicated social phenomena. Qualitative researchers gain new insights into complex phenomena by discovering hidden themes and creating meaning from data collected through interviews, observations, or existing documents (Stake, 1995; Van Houdt, Heyrman, Venhaecht, Sermeus, & De Lepeleire, 2013; Xiao et al., 2013). Qualitative inquiry also facilitates the researcher's ability to discover themes and patterns (Fazli, Khalaf, Low, Ghorbani, & Merghati Khoei 2013). The qualitative approach is the appropriate method for this study because I researched a complex phenomenon and sought to discover hidden themes and patterns to create meaning from the data collected via semistructured interviews.

Röing and Sanner (2015) used the quantitative method to explore the social effects of IT projects on the community, statistically correlating income to the individual, group, and organizational levels. Michaelson, McKerron, and Davison (2015) noted that the quantitative method draws upon the strength of using variables and testing the viability of hypotheses using statistical analysis. A quantitative research outcome is based on interpreted data by existing theories and close affinity to mathematical models (Uttl, White, & Morin, 2013); quantitative researchers test correlations and existing theories (Stake 1995). I did not select the quantitative method because the research question did not necessitate the use of mathematical models, relying on the strength of variables, or testing correlations, hypotheses, or existing theories using statistical analysis.

Mixed method researchers combine quantitative and qualitative inquiries to explore and examine problems and solutions because the research questions cannot be appropriately answered using a single method (Li et al., 2014; Michaelson et al. 2015; Xiao et al., 2013). Röing and Sanner (2015) noted that mixed method researchers combine mathematical modeling and statistical testing of numerical data with further exploration to understand the phenomenon, root, or the cause of the problem. Mixed methods researchers show cause-and-effect relationships to predict a future outcome (Michaelson et al., 2015). I did not select a mixed method approach because answering the research question did not require a combination of methods.

Research Design

I considered four research designs: (a) phenomenology, (b) ethnography, (c)

narrative inquiry, and (d) case study. Inquirers use a case study regarding understanding the motivations and decisions based on exploring multiple sources in the context of a real-life setting (Braun et al., 2014). Case studies reflect the study of a bounded case with little to no control over events and contemporary phenomenon (Denzin & Lincoln, 2011). Case studies provide an appropriate study design for exploring the newer phenomenon (Yin, 2014); however, Danielsson and Rosberg (2015) noted the limited existence of existing research regarding IT innovation, IT project plans, and IT project execution under budget and on time. A case study design was most appropriate because in this study I was interested in exploring the strategies and decisions of multiple participants in their real-life setting within a bounded case and have no control over the contemporary phenomenon.

Yin (2011) explained that, through single case design, researchers explore the phenomenon in a natural setting, conducive to studying the participants to understand why the events occurs. Single case studies are an appropriate design that benefits the day-to-day interaction of the participants' events (George, Mehra, Scott, & Sriram, 2015). Researchers with fragmented or limited literature need to explore such a topic on a case-by-case basis (George et al., 2015). Specific case studies allow the researcher to acquire a more in-depth understanding of the unique characteristics of the case (Yin, 2014). A single case study is appropriate for investigating real-world events within a bounded context (Kantola & Saari, 2014; Uttl et al., 2013; Van Houdt et al. 2013; Wall, 2015; Xiao et al., 2013). A single case study design was appropriate to the present study

because I was interested in exploring strategies that leaders use in their contextual and bounded settings.

Phenomenological researchers focus on the individual and their lived experiences (Danielsson & Rossberg, 2015). Participants share their experience and perspectives for the researcher to identify trends as well as new and repeated themes (Braun et al., 2014). The phenomenological approach includes exploration of an individual's personal experience or reaction to an event or situation (Bjørkløf et al., 2015). Then, the researcher extracts what the person considers relevant, perspectives, and descriptions of the phenomenon, thus clustering the view statements into themes (Chaudhry et al., 2013). Denzin and Lincoln (2011) noted that a case study design is more appropriate than a phenomenology when dealing with one or more organizational populations for research. I did not use the phenomenological design because I did not collect data regarding the participants' lived experiences, nor did I seek to explore an individual's reaction to an event or situation or focus on individuals' perceptions of the phenomenon under study.

Ethnographic researchers include a description of the cultural or group systems based on observations, interviews, and document analysis (Wall, 2015). Yin (2011) stated that, in ethnographic research, the researcher becomes part of the group to understand the culture or the environment. Randall (2014) explained that the ethnographic researcher uses timelines and experiences to examine a person's routine and the collection of data. I did not use an ethnographic approach because I was not seeking to understand the culture of the IT firm.

A narrative design is a collection of individual stories and the participants' lives

form a single narrative about a phenomenon (Chaudhry et al., 2013). Yin (2011) explained that narrative design involves individuals or more which retelling the story of their lives in a narrative format. Wall (2015) explained that researchers who use narrative design make sense of the world by constructing narratives through the investigation of life events and stories. I did not use a narrative design because I was not seeking to explore the phenomenon under study using the life stories of participants.

To achieve data saturation, the qualitative researcher should strive for data saturation confirmation in data collection and analysis when information from data collection produces little or no new change in coding (Duric & Ivanovic, 2014). George et al. (2015) explained that data saturation is a primary factor when considering qualitative case studies, given the importance of understanding different themes in a study. When the data collected no longer offers new insights, data saturation occurs; however, the number of participants does not determine data saturation in any inquiry or design (Coleman, 2015). Wall (2015) concluded that data saturation occurs when data no longer provides no new themes or codes. Data saturation means giving full expression to the value indicated to show and communicate the research until analysis processes achieve saturation (Rafique & Hunt, 2015). Duric and Ivanovic (2014) explained that qualitative inquiry needs meaningful outcomes with themes; therefore, data saturation is critical to maintaining credibility, transferability, and confirmability. To ensure data saturation, I conducted initial interviews with participants and analyzed the data for themes and patterns. Next, I reengaged the participants in member checking for verification and gained additional insights. I continued this process until no new themes,

patterns, or codes emerged.

Population and Sampling

The population group targeted for this study was IT leaders in the Washington, DC metropolitan area. I used purposeful sampling to select the sample population of IT leaders. Researchers use a variety of methods to gain access to participants, such public directories, visiting a potential research site, or meeting an owner or manager to discuss the research purpose and possible benefits (Losada et al., 2013; Peters, 2014; Philbin & Kennedy, 2014). I identified a midsize IT company in Washington DC using a publicly available directory. I then met with the owner of the company to discuss the research study, and obtained written permission from the owner to conduct the study within the organization and to contact employees who are potential participants. The company owner provided names, initiated introductions, and provided contact information for potential participants.

A researcher can use purposeful sampling methods when narrowing targeted populations (Hillson et al., 2015; Palinkas et al., 2013). Purposeful sampling fits the objective of single case studies conducted within small to midsize companies and not for global multinational studies with multiple case studies (Tashakkori & Teddie, 2003). Braum et al. (2014) further explained that purposeful sampling means that the researcher purposefully selects people with the experience necessary knowledge for providing relevant information to gain an in-depth understanding of the research question.

For the subset of the population chosen through purposeful sampling, qualitative researchers are able to select participants with the necessary experience and knowledge to

provide relevant information to address the research problem (Coleman, 2015; Palinkas et al., 2013; Tashakkori & Teddlie, 2003). I used a purposeful selection method that fit the objective of this study by narrowing the size of the population and targeting appropriate individuals. The participants were purposefully selected because of their experience implementing IT projects strategies; all participants possessed an IT project success rate of over 40%. Further, the participants' eligibility criteria were based on their abilities to complete projects on time and under budget. The timeline indicated the time IT project completion data. The capital budget report determined the strategies and budget allocated to the IT project. All participants met the stated criteria and volunteered to be part of the study to share their knowledge of IT project success. A qualitative researcher can use case study units of analysis which may include individuals, organizations, and groups (Braum et al., 2014; Palinkas et al., 2013; Yin, 2014). The targeted population for this study consisted of at least 40 IT leaders employed in a midsize company in the Washington, DC area at the time of the study.

Qualitative researchers typically use a small sample of participants, whereas a quantitative researcher requires a larger sample size to produce statistically significant results (Stake, 1995). Palinkas et al. (2013) cautioned against using a large sample size in qualitative inquiry since the cost is triple then smaller sample size. Some qualitative researchers believe larger sample sizes produce reliable outcomes, yet larger samples sizes can increase the probability of significant errors (Palinkas et al., 2013). When using small to midsize companies in a study often, qualitative sample sizes lack an evidentiary basis and cannot determine in advance (Perez, Nie, Ardern, Radhu, & Ritvo .2013).

A case study sample size should range from one to eight participants, with a target of five (Palinkas et al., 2013). Tashakkori and Teddlie (2003) argued that a single case study sample population should remain under eight individuals. Bos et al. (2016) used five participants in a single case study in which they explored the causes of IT project success, which they defined as remaining under budget, in a multinational company owned by Russian politicians. Bos et al.'s study is similar to this proposed case study in that five participants were determined to be the appropriate sample size for this study as well. Similarly, Vega et al. (2013) used five participants for a single case study of an accounting cloud-based IT company in Brazil. Stake (1995) noted that sufficiency is not determined by prescribed number of individuals, since the data should be logical and constitute sufficient evidence for the study. The midsize company in this study employed 210 individuals, 40 of whom were IT leaders. I used purposeful sampling to narrow the sampled population to five.

In this study, I used qualitative inquiry to achieve meaningful outcome regarding themes, as data saturation is critical to maintaining credibility, transferability, and confirmability (Duric & Ivanovic, 2014). Qualitative researchers use data saturation in qualitative case studies, given the importance of understanding different themes in a study of real-world events (Palinkas et al., 2013; Perez et al., 2013; Stake, 1995). Data saturation in this study was achieved when sufficient information replicated in the study and participants existed. Qualitative researchers should also engage in member checking by sending paraphrased responses to confirm the accuracy of the interview (Perez et al., 201; Vega et al., 2013, Yin, 2014). In this study, I used member checking by providing

an opportunity for participants to review their words in an interpretive text reflective of their responses (Vega et al., 2013). As part of the research procedure for this study, I reviewed and interpreted the interview responses from each participant to ensure that I accurately captured their perspectives on each question. Each participant had the opportunity to consider his or her response and provide feedback and acceptance of their interpreted responses. As suggested by previous scholars, I aimed to avoid pitfalls that arise from premature interpretation of the data by promoting rigor, understanding adequate depth in participant responses, and addressing his or her individual researcher biases (Stake 1995; Vega et al., 2013).

Additionally, qualitative researchers should select participants with over two years of experience in project management knowledge (Rahimi, Hvam, & Moller, 2014; Shahi et al., 2015; Von Rosing et al., 2015). Participants should have sufficient insights related to the research, as well as the specific competencies required to improve performance in a workplace (Palinkas et al., 2013; Tashakkori & Teddlie, 2003; Stake, 1995). Again, the eligibility criteria for participants in this study were that each individual must: (a) be an IT project manager with two years' experience, (b) over 18 years of age, and (c) holds a proven record of implementing successful plans and executing projects under budget and on time. I ensured that participants had sufficient insights related to the strategies of project management and improving performance on IT projects. Participants shared their experiences of the project management performance regarding budgets, skills, abilities, and strategies of project management. All interviews took place in a quiet, comfortable setting, as recommended by Walker et al. (2006);

specifically, interviews took place in a public library.

Ethical Research

I asked all participants to provide their voluntary consent, to participate in this study (see Appendix E). Under the direction of the Walden University IRB, participants signed an informed consent statement for the study (see Appendix E). Researchers must respect any participant's decision to stop participation in the research at any time (Coleman, 2015). The informed consent statement included the overview of the research question, as well as possible risks and benefits of joining the research. Participants in this study understood that participation was voluntary with no compensation. Nichols (2015) stated that participants should always be aware of the consenting process, their rights of participants, the duration of their expected participation, and procedures to ensure confidentiality.

Participants also need to have the option to withdraw from the study at any time without penalty (Walker et al., 2016). Participants may withdraw before or during the study with no explanation required, via e-mail, in person, or by phone (Coleman, 2015). Harris (2016) suggested not offering incentives and stating explicitly the rights of withdrawal from a study; research protocols require clear communication from the researcher to the participants. The qualitative researcher needs to ensure that that the participants understand their role in a study with no incentives (Coleman, 2015; Harris, 2016; Walker et al., 2016). I provided verbal instructions to the participants to ensure a clear understanding of the study. Participants should, ideally, volunteer without payment

(Duric & Ivanovic, 2014); the participants in this study received no compensation or incentive.

NIH provides research training and ethical codes procedures for a researcher's inquiry (HHS, 1979; Nichols, 2015). For the ethical protection of the participants, Walker et al. (2016) recommended procedures for obtaining permission from the university and conducting ethical research in compliance with Belmont Report protocols. In compliance with Walden IRB and Belmont Report protocols, ethical guidelines served to protect the privacy of the participants. Harris (2016) suggested that data collection should begin only after the researcher has been certified by the National Institutes of Health (NIH)'s Office of Extramural Research through training at the researcher's institution like CITI training. Nicolas (2015) defined the university IRB as ethical behavior for research and upheld signed consent forms as a correct procedure. Researchers should do everything possible to ensure that no harm comes to a study's participants, while also maintaining confidentiality of the participants (Coleman, 2015). I followed all NIH Extramural Research training and complied with ethical behavior rules to protect participants' information as described in the Belmont Report.

Further, qualitative researcher should keep research data safe in a locked cabinet for significant short-term benefits to current researchers and long-term benefits to future studies (Harris, 2016; Nichols, 2015; Stake, 1995). Therefore, I will store data notes, interviews, and related study documents for 5 years in my home in a locked cabinet. After the 5-year period, I will destroy all transcribed data notes, interviews, and any secondary documents from this study, which includes a password-protected flash drive.

Nichols (2015) recommended using an anonymous company name, and labeling volunteer participants as *Participant 1* and *Participant 2*, etc. Researchers should use coded names to ensure anonymity, protect names of participants and organizations, keep materials confidential for a predetermined period, and store materials on a password-protected device (Ekekwe, 2013; Nichols, 2015; Yin, 2011). Protecting the confidentiality of participants in this study occurred in compliance with Belmont Report protocols. I used confidential participant labels (e.g., *Participant 1*, *Participant 2*, *Participant 3*, etc.), while using the pseudonym of ABC, Inc. for the midsize IT company. No disclosure of the participants' names or any other identifiable information occurred.

Data Collection Instruments

In this study, I, as the researcher, served as the primary collection instrument. I interviewed participants to generate the primary data; secondary data was obtained from the midsize technology via archived sources. Document sources provided valuable qualitative data as secondary data sources and included published books, journals, and websites (Nichols, 2015). Data from secondary sources is important for substantiating the interview data and validating the dependability and credibility of the findings. Yin (2011) noted that documentation, interviews, direct observations, archival records, and physical artifacts are all appropriate data sources for case study evidence. Case study researchers collect data in real time and in real-world contexts, with the researcher serving as the primary collection instrument (Duric & Ivanovic, 2014). The researcher must always obtain IRB approval before data collection (Coleman, 2015).

Interviewing

The interview is the most critical method of data collection in a case study (Walker et al., 2016). Nichols (2015) noted that qualitative interviews comprised open-ended questions may also add probes for additional evidence. For this study, the interviews occurred with IT leaders who participated in face-to-face semistructured interviews (see Appendix F). Yin (2014) explained that semistructured interviews combine the flexibility to open-ended and unstructured questions to set the agenda for the participant and guide the researcher in a planned collection of specific data.

I was the primary research collection instrument during the interview process and recorded substantial field notes in a reflective journal. Data collection instruments can measure perceptions, methods, and ideas (Duric & Ivanovic, 2014; Stake, 1995); in the present study, the instruments collected information about IT leaders' successful project strategies. Respondents answered the open-ended questions that addressed the central research question; their answers provided information about their perceptions, work experiences, and ideas that led to their IT project success (see Appendix F).

Written signature informed consent forms were e-mailed to prospective participants to encourage participation in this study (see Appendix E). Within two days, the participants returned their written signed consent forms to me via e-mail or in person. Von Lüpke and Saborowski (2014) suggested that researchers use a semistructured interview lasting approximately 30 to 45 minutes or for the duration scheduled. Nichols (2015) explained that 30 to 45 minute semistructured interviews are useful for researchers who are beginning to inquire about a phenomenon. Von Lüpke and Saborowski (2014)

revealed that participants use the written signature to sign informed consent forms before the face-to-face interview in a study. I obtained informed consent from each participant prior to commencing the interviews.

I chose a selection of questions from other studies that had IT executives and project leaders with experience in IT projects. Imamura et al. (2014) explained that interview questions are essential to the central research question for qualitative inquiry. Prior studies provided expert questions that ensure reliability and credibility of the open-ended instruments (Von Lüpke & Saborowski, 2014). The secondary data information promoted the increase validity and improves data saturation in the study.

Determining the interview setting was a necessary step in the research planning process because the selection of a site may have influenced the comfort level of the participants and influencef how the participants respond to the open-ended questions (Duric & Ivanovic, 2014; Nichols, 2015; Von Lüpke & Saborowski, 2014). A private meeting room in a public library can be an excellent place to conduct face-to-face interviews (Chan et al., 2013; Ekekwe, 2013). Therefore, I selected a private meeting room in a public library near the midsize company as the primary interview setting to conduct the interviews.

I used an iPhone 7's recording features as the primary digital audio-recorder during the interviews. An Olympus digital recorder device was available in the event of the need for a backup recording device. The iPhone 7 was a means to obtain a high quality audio recording of the participants' responses during the interviews. I recommend the use of iPhone 7 for recording interviews to future researcher use because

of the portability and quality of the audio recording. I did not have any issues with the iPhone 7 during the face-to-face interview; therefore, had no need to use the Olympus digital recorder. During the interviews, I recorded written notes as further documentation of any relevant observations of language, distractions, or events not captured in the audio recording to help demonstrate the emotional state of the participants during the interviews as recommended by Ekekwe (2013), Karlsen (2014), and Singh and Mcneil (2014).

Documentation Review

Yin (2014) noted that documentation is a common source of standard evidence in case studies and may be central to themes and outcomes. Yin (2011) also claimed that secondary document types could include e-mails, agendas, meetings minutes, formal plans, and more. The midsize company's owner provided written permission to access to the company's documents. The midsize company owner allowed access to current and archival records on successful IT project performance. The additional data sources were the midsize company's IT documentation via shared Google documents share drive, Internet websites, peer-reviewed articles, and private and public-sector magazines about IT projects. These secondary data sources contained relevant, in-depth information on IT projects that were significant to this study. The midsize company owner provided me access to a Google document shared folder. The Google document shared folder had budget cost, budget forecast reports, IT project performance documents, and IT project score card reports. The documents in the Google document shared folder provided insight on IT project performance. The collection of data evidence complements the semistructured interview (Karlsen, 2014; Yin, 2014). The company documentation helps

with data collection during the qualitative inquiry (Von Lüpke & Saborowski, 2014). Von Lüpke and Saborowski (2014) noted that peer-reviewed articles and journals give creditability to the researcher when speaking with interview participants. I reviewed six peer-reviewed articles and journals recommended by midsize company owner. Mahizadeh (2012) expanded this notion to include current and archival records to facilitate speaking with a purpose and to provide credibility for the participants.

The semistructured interview included six questions, which were primarily *why, what,* and *how* questions to help the participants provide thorough responses that generated knowledge regarding opportunity gaps to IT software projects (Karlsen, 2014; Singh & Mcneil, 2014). The validation strategy employs previously used strategies (Ekekwe, 2013; Pitchammal & Sarala, 2013). The goal of this expert validation strategy is to address the reliability of the instrument (Bos et al., 2016). Participants ask questions or address concerns during the interview, which facilitates an open dialogue (Baer, Zarger, Ruiz, Noble, & Weller, 2014). I asked participants questions for further clarification during the interview process to gain richer responses.

Some IT project practitioners noted that semistructured interviews were the primary source for data collection (Baer et al., 2014; Ekekwe, 2013; Ekselius, Lindström, von Knorring, Bodlund, & Kullgren, 1994). The six open-ended questions covered the participant's perceptions of successful IT projects and their experiences in the field. Open-ended questions allowed participants to expand on their opinions and explanations (Chan et al., 2013). Chan et al. (2013) determined that *how* and *what* questions are used largely used by researchers using a case study approach. The instrument allowed me to

understand and measure participants' ideas and perceptions about the midsize enterprise's failed projects.

Project management communication and relationship networking are an interest of mine; a researcher's experiences can add to the body of knowledge for project management strategies (Von Lüpke & Saborowski, 2014). Nichols (2015) explained that no personal and professional relationships mitigate researcher bias. The reflective journaling process ensures the mitigation of biases in qualitative research designs (Walker et al., 2016).

Qualitative design reflective journal processes lower the risks of professional bias, personal bias, morals, and beliefs interfering with the study's outcomes (Nichols, 2015). Because the researcher is an intangible part of the research, the reflective journal mitigates bias, assumptions, and viewpoints that can influence the context of the participant's experiences (Imamura et al., 2014; Stake, 1995). Chan et al. (2013) concluded the reflective journal is another form of bracketing, which conceptualizes the first idea of exploring a case study and increases the reflective stance toward the case exploration under study. The midsize IT company documents included policies, records, and reports. Analyzing consistencies of the concepts uncovered in the interviews and documentation provided insight of the most effective strategies for improving IT project engagements to IT project team and IT project strategies. Advantages of using a reflective journal during document review analysis was increased efficiency and less time-consuming than other methods. Another advantage was increased documentation of my reflective interpretation and analysis during the review.

Protocol

Yin's (2011) Five-Step Interview Protocol (see Appendix C) outlines steps before, during, and after the interview takes place. The researcher permits the participants to ask clarification questions and the depth of the interview data increases (Nichols 2015). Participants need to clarify the researcher's interview questions for more in-depth data points to a study (Coleman, 2015; Harris, 2016). During data collection, standardization of the interview processes establishes consistency (Duric & Ivanovic, 2014).

An interviewer uses open-ended semistructured interview questions to increase credibility and prolonged engagement with the participants (Ekekwe, 2013). Von Lüpke and Saborowski (2014) suggested that semistructured interviews probe the experience of the participants to enhance transferability, creditability, dependability, and confirmability of the participant's transcribed responses. A participant's willingness to provide documents and records also expands data collection for a case study (Tideman & Svensson, 2015). Member checking takes places before coding and analyzing each participant's interview responses, documentation, and records (Mahizadeh, 2012). Mason (2010) indicated that data saturation occurrs when researchers synthesize critical literature characteristics with participants' interviewed data.

The face-to-face interviews were recorded with the permission from each participant. I took interview notes to ensure potential themes were identified, follow-up questions were recorded, and that the participant's concerns were addressed (Tideman & Svensson, 2015). After each participant signed the consent form, the participant was

reminded of privacy protocols and rights of confidentiality before the interview began. I conveyed to the participants that withdrawal from participation can occur at any time before, during, or after the interview.

Data Collection Technique

Qualitative researchers can use interviewing and obtaining archival records as a data collection technique (Imamura, 2014). Egbe (2015) explained that semistructured interviews occur through the researcher obtaining access, consent, asking open-ended questions, recording, and transcribing the participants' responses. The interview protocol includes a process to transcribe the semistructured interview answers (Tideman & Svensson, 2015). I abided by Yin's Five-Step Interview Protocol (see Appendix C). The primary role of the researcher during an interview is to keep the participant focused on the phenomenon and engaged in an open dialog while encouraging interaction (Stake, 1995; Tideman & Svensson, 2015). I achieved this by asking open-ended questions, providing clarifications as needed, and encouraging rich interaction. Researchers also need to maintain neutrality during face-to-face interviews (Egbe, 2015; Yin, 2014). Peredaryenko and Krauss (2013) explained that a researcher conducting face-to-face interviews should avoid using facial expressions, which I avoided to ensure I did not inject my personal opinions.

Qualitative case study researchers require multiple sources of data to facilitate data triangulation (Imamura et al., 2014; Yin, 2014). Qualitative researchers cab obtain and review relevant company documentation and archived records as secondary data sources (Peredaryenko & Krauss, 2913). Obtaining company records for documentation

review and analysis should occur by obtaining permission and the use of a protocol (Stake, 1995). The research process included the solicitation of various business documents, included but not limited to exits notes, company website, and archival materials. After obtaining permission from the company owner, I obtained current and archived records as well as supporting documentation regarding the development and implementation of successful IT project strategies, knowledge and skills audit reports, IT project management policies, and budget competency matrices. I reviewed the company's archived data and current documentation, verified accuracy, and sought convergence with the interview data. The archived data and current documents were accessed through a Google shared drive folder provided by the midsize IT company owner. I verified the accuracy of the documents by comparing the IT project documents, signed completed IT projects by other IT project vendors, and financial IT project reporting.

One advantage of conducting face-to-face interviews is that the researcher engages in personal interaction with the participants, allowing for the building of strong relationships and increasing awareness and interest regarding the phenomenon (Brown, Thomas, & Bosselman, 2015; Egbe, 2015; Yin, 2011). Utilizing face-to-face interviews provides a venue for the researcher to give participants additional clarity without delay in an inexpensive manner (Brown et al., 2015; Egbe, 2015; Yin, 2011). I conducted face-to-face interviews to personally engage the participants, increase awareness and interest of the phenomenon under study, strengthen my relationship with each participant, provide additional clarity if needed, and do so in an inexpensively.

Disadvantages of face-to-face interviews include: scheduling difficulties, added costs if using geographically-dispersed participants, and loss of time and resources if participants do not meet the inclusion criteria (Brown et al., 2015; Egbe, 2015; Wall, 2015). Other disadvantages of face-to-face interviews include additional costs due to an excessive number of interviews and the loss of participant interest if the researcher requires an excessive amount of time to conduct the interview (Brown et al., 2015; Egbe, 2015; Wall, 2015). Controlling the focus of the participants in semistructured interviews can be a challenge as well (Baer et al., 2014). The midsize company owner provided me the names, e-mail, and phone numbers of participants that are eligible for this study. I mitigated the disadvantages by interviewing participants from one organization in one public library location. I ensured that the participants met the eligibility criteria prior to scheduling the interviews, limited the number of interviews to five participants, limited the interview length to 30-45 minutes, and aimed to keep the participants focused on answering the interview questions.

An advantage of engaged document review and collection of data from secondary archived sources is that the researcher avoids reliance on a single source of data (Imamura et al., 2014). Further, the use of multiple data sources improves the rigor of the study and enables triangulation of the data gathered through interviews and secondary data (Yin, 2014). Egbe (2015) noted several disadvantages of engaging in documentation data collection: subjectivity increases and information may be out of date, incomplete, or inaccurate. The out-of-date and incorrect documentation is a key disadvantage for case study data (Imamura et al., 2014; Stake, 1995). Once the midsize IT company owner

provided documents, I did not use IT projects documents over 5 years or incomplete IT project reports. The company documents supported the implementation of successful IT project strategies. I sorted the content for currency, analyzed the accuracy of the information, and relied on the stated facts within the company records. I carried out a detailed analysis the company documents with the collected interview data for consistency by using the midsize IT company internal score cards. The midsize IT company internal score card provided detailed cost data, mandatory documents, success rate of the IT project, and IT project diagrams of the IT projects.

Member checks take place when the researcher paraphrases the participant's response to the open-ended interview questions (Nichols, 2015). Once the participants have ensured the accuracy of the paraphrased responses to each question, the reliability and validity are strengthened (Wall, 2015). Member checking also helps gauge qualitative inquiry for qualitative, quantitative, and mixed method inquiries (Von Lüpke & Saborowski, 2014). Additionally, member checks allow participants to verify the accuracy of the interpretation their experiences and facilitates attaining data saturation. Data saturation is assisted by member checking to support an interpretation to confirm the accuracy of the data from the interview (Coleman, 2015). After an initial analysis of the interview transcript, I summarized the data collected and engaged in member checking to allow the participants to affirm or refute my interpretations and offer additional information within 5 days. Within two days after the interview, I e-mailed the participants a paraphrased response to each interview question. The participants did not correct any portions of the paraphrased summary of the their responses. Participants also

had the opportunity to review the entire interview transcript if they so desired within 5 days.

Data Organization Technique

Data organizational techniques begin with the understanding of data instrument administration, including researcher notes, assigned generic codes for participants, audio recordings, and journals (Vega et al., 2013; Wu et al., 2013; Yin, 2011). Assigned generic alphanumeric codes hide participants' identities and protect their confidentiality (Chan et al., 2013; Egbe, 2015; Yin, 2014). I used written notes, participant coding, audio recordings, and a reflective journal to begin to organize the data. I used alphanumeric coding with numbers one to five with the word participants facilitates maintained confidentiality. Microsoft Word and Notepad are standard import data tools into NVivo software (Imamura, 2914). I used NVivo 10 to load transcriptions, code data, identify themes, and organize essential functions of the raw data. ATLAS.ti software was not chosen because the query tool lacks the ability to integrate search inquires for coding data. MAXQDA was eliminated because its higher cost and limited multiple user access.

Researchers may use documents, company records, data labeling, master files for journals and notes, and written transcripts when coding and organizing data (Nielsen & Hjørland, 2014). Data organization requires assembling, labeling, categorizing, and storing it (Chan et al., 2013; Imamura, 2014; Wu et al., 2013), which I used in this process. Master files for journal and notes included labeling records for the study. Imamura et al. (2014) recommended that each study should maintain a labeled master file with notes and journals.

By using the interview protocol located in Appendix C, I organized data by recording the participant's name, organization, time, date, and location, and by an assigned pseudonym. Qualitative researchers can also use audio recordings to verify the participants' responses from and should store the audio recordings in a locked cabinet to protect the confidentiality of the participants (Brown et al., 2015; Imamura et al., 2014; Nielsen & Hjørland, 2014). I used an iPhone 7 as a digital audio-recorder and Yin's (2011) five-step method to decode and categorize themes to track the data collection and organization.

File naming, reflective journaling, indexing, and research logs are important data organization techniques (Balogh & Cseres, 2013; Imamura et al., 2014; Stake, 1995). I created folders using unique filenames (e.g., IT_project1, IT project_102820015, and IT_project_cost) on the password protected flash drive and used the Zotero web-based virtual library to keep track of references. I collected data via iPhone 7 digital audio-recorder, and kept interviewed transcripts and other documentation on a password-protected flash drive, password protected Zotero library, and password protected Dropbox server folders; the external hard drive will be kept for 5 years. It is important to withhold demographic details of the participants and descriptions of the research site to prevent readers from deducing participants' identities from the final published study.

Data Analysis

Thorough data analysis can provide an accurate interpretation of the participants' experiences and opinions (van den Berg & Ma, 2014). Yin (2011) noted that multiple sources of data, the conceptual framework, triangulation, and researcher analysis of data

all represent critical elements of case study research. Denzin and Lincoln (2011) and other scholars identified four possible means of triangulating data that include the following methods: (a) theoretical triangulation to use more than one theoretical position in data interpretation (Yin, 2011); (b) data triangulation as a way of collecting data through different avenues of sampling strategies; (c) methodological triangulation, which involves more than one avenue for gathering data (Balogh & Cseres, 2013); and (d) the investigator triangulation requires more than one researcher that collected and interpreted the data. Triangulation involves using more than one method to collect information (Stake, 1995). I collected data from two different sources: (a) face-to-face interviews with IT leaders and (b) company documentation associated with the commercialization process of project management. Researchers should use data analysis that links literature and core themes to support, confirm, and give insight into the conceptual framework (Braum et al., 2014; Palinkas et al., 2013; Perez et al., 2013). I conducted data analyses that linked the literature review, core themes from the interview data, data drawn from company documentation through the lens of the actor-network theory to demonstrate methodological triangulation.

Under Yin's (2011) five-step interview protocol, I analyzed data to identify and highlight strategies IT leaders used to successfully plan and execute projects under budget and on time. Imamura et al.'s (2014) data analysis approach involved a researcher working with the research data to discover meaningful themes and descriptions that answer the central research question. Yin (2014) explained that researchers describe the participants' experiences to explore the phenomenon in a real-life setting. Nielsen and

Hjørland (2014) suggested that audio and videotaping can be appropriate methods for recording data in a case studies to help with data analysis. Yin (2014) explained that transcribed interviews facilitate theme identification and categorization for an inquiry. I reviewed and analyzed the transcribed recordings of the interviews, reflective journal notes, and company documentation to identify and categorize patterns and themes regarding IT leader's strategies for successfully planning and executing projects under budget and on time to engage in methodological triangulation. Following Yin's (2011) five-step interview protocol, I observed the following structure and order: (1) compiling, (2) disassembling, (3) reassembling, (4) interpreting, and (5) drawing conclusions from the data. I used NVivo to upload iPhone 7 audio recording, pdf files, OneNote, and Microsoft excel documents.

Compiling

Compilation of data takes place prior to analysis and occurs by collecting data from face-to-face interviews using an interview protocol, transcribing each interview, reviewing company documents, and coding the interview transcripts (Yin, 2011). A qualitative researcher needs to search for promising patterns and concepts in the raw data as well as write notes of data observation (Nielsen & Hjørland, 2014; Sarros, Luca, Densten, & Santora, 2014; Yin, 2011). During the face-to-face interview, I took notes regarding participants' nonverbal reactions to questions, hesitancy in responding, demeanor, and completeness of their answers. I compiled data from the face-to-face interviews conducted using Yin's (2011) protocol (see Appendix C), transcribed each interview, reviewed and compiled company documents, coded the transcripts, and

searched for patterns in observed data.

Disassembling

Qualitative researchers also disassemble data into fragments, followed by labeling and coding the data (Yin, 2011). Next, researchers reorganize the fragment data into subscores and core themes, move codes to create interpretations among codes or the combination of codes, and identify conceptual patterns (Denzin & Lincoln, 2011; Unkovic et al., 2016; Xiao et al., 2013). I alphanumerically coded participants using number one through five with the word *participant* preceding it. I separated the fragment data into subscore and core themes, moved codes to create relationships among codes or combination of codes, and identified conceptual patterns in the data.

Reassembling

Reassembling data involves clustering and categorizing data into groups, typically using computer assisted qualitative data analysis (CAQDAS) software such as NVivo (Palinkas et al., 2013). Researchers can use software code data, apply matrix functionality, categorize themes, display categorizations, compare patterns in the data, and organize the data using colors or symbols to assist with interpretation (Denzin & Lincoln, 2011; Sarros et al., 2014; Xiao et al., 2013). I used NVivo software to follow the aforementioned processes and used Microsoft Excel's pivot table functionality to identify insignificant and significant levels of codes to reference material by interview questions responses, conceptual framework, and participant number during the final reassemble step.

Interpreting

Qualitative researchers interpret data by capturing and organizing themes associated with the purpose of the study; they also review the analyses of primary and secondary data for comparative and contrast patterns and themes, and seek to provide a descriptive interpretation (Nielsen & Hjørland, 2014; Sarros et al., 2014; Yin, 2014). After capturing and organizing themes within the data, I provided a descriptive interpretation of comparative and contrasted patterns and themes drawn from the interview data and the secondary company documentation data. I identified and interpreted the connections between the primary and secondary data, the literature within the existed body of topical knowledge, and the actor-network theory. I used the narrative information within analyzed interview transcripts, company documents, and scholarly studies to interpret subcore, core, and main themes through the lens of the actor-network theory.

Drawing Conclusions

Finally, qualitative researchers conclude data analysis through a series of steps that describe the outcome of the study and report its findings (Palinkas et al., 2013; Perez et al., 2013). The concluding steps of data analysis include: linking the interpretation of core themes and patterns from primary and secondary data to the research question for reporting the findings, linking interpreted data to the literature, reflective notes, and the conceptual framework to ensure methodological triangulation occurs (Denzin & Lincoln, 2011; Nielsen & Hjørland, 2014; Sarros et al., 2014). I linked the interpreted interview and company documentation data to the research

question, scholarly literature, reflective notes, and to the actor-network theory. I described the outcome of the study and reported the findings to give insights and to further confirm the actor-network theory.

Key Themes

A qualitative researcher links key themes from the data to support, confirm, and provide insight into a conceptual framework and relevant scholarly literature (Sarros et al., 2014; Unkovic et al., 2016; Xiao et al., 2013). I used the key themes drawn from interpreted interview and company documentation data to support, confirm, and provide insight into actor-network theory. Comparing the frequency of themes found in previous research can: enhance validity in the findings, determine key themes, and correlate themes to the literature review and conceptual framework (Pringle, Collins, & Santry, 2013). I compared the frequency of the themes found in my study, linked sub-core and core themes from the interpreted data drawn company documents and participants' interviews to support, confirm, and add insight to existing and future studies. I also used the sub-core, core, and main themes to answer the research question and report the findings of the study of the IT leaders' strategies for IT projects through the lens of the actor-network theory.

Software Plan

NVivo software is an excellent tool for qualitative researchers to code, map, and identify key themes (Palinkas et al., 2013). This software facilitates alignment and association of the data (Palinkas et al., 2013) and facilitates organizing, coding, and categorizing data for theme and pattern identification in primary and secondary data

sources (Denzin & Lincoln, 2011; Sarros et al., 2014; Xiao et al., 2013). Balogh and Cseres (2013) suggested removing all personal identifiers and organizing the data by assigned pseudonyms prior to uploading it into software. Kovrigin (2014) noted that by loading all interview transcripts into NVivo 10, the researcher is able to develop a list of codes for data that signals an occurrence. An important step in the software plan was to transfer the documents into NVivo 10 to develop codes. I started by using nodes to identify similar words and key phrases located throughout the transcripts and labeled them accordingly. I found that a link existed between the conceptual framework, the data, and contrasted signals. The use of NVivo 10 software helped facilitate the objective interpretation of the data and helped me to identify and analyze key themes. The software also aided in the outcomes of the study since it provides a higher degree of dependability and credibility.

Reliability and Validity

Qualitative researchers refer to reliability as the dependability of the research findings (McNeil et al., 2015). Researchers refer to validity as the credibility, transferability, and confirmability of the research findings (Hill & Bundy, 2014). A research can establish consistency, accuracy, and neutrality within a study to increase the trustworthiness and integrity of the findings (Van den Berg & Ma, 2014).

Dependability

Dependability refers to the potential to be repeated consistently over time under different conditions (Kelley et al., 2016). Dependability increases when the researcher provides a thick description, wealth of experience, and in-depth detailed articulation of

the meaning of data to understand the phenomenon under investigation (Hill & Bundy, 2014). Hill and Bundy (2014) also suggested that demonstrating dependability confirms the study has suitable rigor. Essentially, dependability means conducting measurements by consistent applications and reaching the same outcome (Stake, 1995). Also, Stake (1995) explained that dependability is the ability and assurance for researchers to replicate a previous study and get similar results. Kelly et al. (2016) explained that objectivity can enhance uniformity throughout the entire research process.

Reading company documents, sequencing the documents collected, analyzing the documents and data, and providing interpretation of the data enables a researcher to develop familiarity with the participants' culture and improve the dependability of the findings (Hill & Bundy, 2014). A thoughtful assessment of the research increases dependability and assesses the effectiveness of the research process (Hill & Bundy, 2014; Stake, 1995). Purposeful sampling procedures enhance the study's dependability and credibility, as potential participants have an equal chance to be chosen for the study (Stake, 1995). I used purposeful sampling to enhance dependability and creditability of this study's findings. I combined different research methodologies, and data collection tools as a method of triangulation to boost dependability, as usggested by Kelly et al., 2016. The dependability of the data collection and analysis ensures another researcher can replicate the study and achieve the same results (van den Berg & Ma, 2014).

Credibility

Qualitative researchers increase validity by producing credible findings (Crowe, 2013). The participants' understanding of the study and the credibility of their responses

to the validity of the study findings (Crowe, 2013). Ross and Morrison (2014) stated that validity can stem from the development of interview questions that support the overarching research question. I ensured the interview questions directly align with the research question and asked probing questions to follow-up on certain points during the interviews to strive for credible responses from the participants. However, a researcher can threaten the validity of a study when his or her subjectivity is not under control (Hill & Bundy, 2014).

Researchers use credibility to enhance the findings or outcomes of a study (Van den Berg & Ma, 2014). For triangulation, I used semistructured interviews with open-ended questions as well as supporting documentation from the midsize company. Crowe (2013) described credibility as transcribing, interpreting, and conducting member checks with each participant to analyze the accuracy of the response. Kelly et al. (2016) noted that researchers can maximize the creditability of the data by applying member checking. Member checking is the process of conducting follow-up interviews so that participants can verify the accuracy of the data collected by the researcher and to ensure it was interpreted correctly (Crowe, 2013). I carried out the interviews and shared the interpreted data with the participants to confirm the analysis of the data. Alterations and updates to the interpreted data occurs based on the participant's feedback during the member checking process. The member checking process maximizes credibility of a study (Crowe, 2013).

Evidence supporting themes, observations, member checks, and follow-up debriefings are ways to ensure the credibility of the data collected (McNeil et al., 2015).

Experienced researchers who are familiar with settings and participants are likely to achieve credibility and validity faster (Hill & Bundy, 2014). On-the-job training and project management experience provide an understanding of the work climate and culture, as well as provides an in-depth understanding of the industry (Nielsen & Hjørland, 2014). The fact that I worked as a project manager in the banking and public sectors helped to provide trustworthiness to the study's recommendations and conclusions.

Transferability

Transferability takes place when the findings are transferable to another study (Hill & Bundy, 2014). Ross and Morrison (2014) explained the actions necessary for transferability to other target populations. Transferability remains up to the future researcher to decide whether the findings may lend to the future inquiry (McNeil et al., 2015). While conducting this study, I meticulously documented each step to provide transparency; I described the entire research process by documenting the process throughout the stages of data collection and analysis; however, transferability remains up to discretion of future researchers.

Confirmability

A qualitative researcher uses confirmability as a degree of neutrality in the outcome of a study; it is shaped by the research participants and not by the researcher's motivations, biases, and self-interests (McNeil et al., 2015). Stake (1995) explained that addressing confirmability through the use of a reflective journal can help the researcher to avoid bias. Hill and Bundy (2014) framed creditability as probing during the

interview, engaging in member checks, and using triangulation to enhance confirmability. Participants confirm or verify the data and researcher interpretation of the interview (Hill & Bundy, 2014). Confirming the accuracy of the transcript information affirms the researcher achieved accuracy (McNeil et al., 2015). Member checks facilitate accuracy, credibility, and validity of the interview data (Robles-Rubio et al., 2015). I attempted to assure the confirmability of my study methods through careful documentation during data collection, analysis, and member checks.

Data Saturation

Stake (1995) defined data saturation as the point at which continued data collection no longer offers any new themes or information. Robles-Rubio, Fertilizin, Brown, and Kearney (2015) noted that purposeful sampling used to narrow the size of the population can help reach data saturation. Kelly et al. (2016) explained that data analysis continues until no new data, themes, or codes emerge. I engaged in data collection through interviews and reviewing secondary data, followed by member checking; I continued this process until no new data, themes, or codes emerged in the research data, ensuring I had reached saturation.

Transition and Summary

Section two provided an overview of the role of the researcher, participants, methods, design, population sampling, ethical research, data collection instruments, data collection technique, data organization technique, data analysis, and reliability and validity. Reliability and validity occurred throughout the study using the techniques previously described.

In Section 3, I present the findings of this study. The results include a detailed description of the analysis of the interview responses of the IT leaders and the themes that emerged to answer the research question for this study. I offer recommendations for business practitioners to improve practices in the field. In section three, I also include a discussion, presentation, and application of the recommendations for future scholars. I conclude section three with a final summary.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative case study was to explore strategies IT leaders use to plan and execute projects under budget and on time. Section 3 contains the findings of the study and includes (a) an introduction, (b) presentation of the findings, (c) applications of professional practice, (d) implications of social change, (e) recommendations for action, (f) recommendations for further study, (g) reflections, and (h) a conclusion. From September 15, 2017 to September 24, 2017, I collected data from five IT leaders using the face-to-face interviews. I conducted methodological triangulation, re-engaged the participants in member checking for verification, gained additional insight from member checking, then continued this process until no new themes, patterns, or codes emerged after the fifth interview. The three emergent themes were (a) IT leader communication, (b) IT leader knowledge implementation, and (c) implementation of cost savings. The four subthemes were (a) actor visibility of others in the network, (b) communication skills, (c) business context diagram, and (d) technical expertise. The findings indicated that project management strategies are necessary to IT leaders and the development of effective strategies stem from the influences of the project management team. The IT leaders used efficient and effective communication skills, experience with knowledge implementation, and arranged for the budget analyst to be present to provide more cost saving with the IT project.

Presentation of the Findings

The overarching research question was: What strategies do IT leaders use to successfully plan and execute projects under budget and on time? In the literature review, I addressed different strategies on planning IT projects as well as actor-network theory, which provided the basis for developing the interview questions. Three major themes and four subthemes emerged during data analysis. The three major themes were (a) IT leader communication, (b) IT leader knowledge implementation, and (c) implementation of cost savings. The four subthemes were (a) actor visibility of others in the network, (b) communication skills, (c) business context diagrams, and (d) technical knowledge expertise.

Each IT leader had a different and unique IT project, but three themes emerged from the strategies participants utilized for planning and executing their projects under budget and on time. The first theme, IT leader communication, reflects the importance of communicating throughout the IT project lifecycle regarding the project. The second theme, IT leader knowledge implementation, highlights the need to understand the context for effective planning and execution of IT projects. The third theme, implementation of cost savings, reveals the need to promote and the implementation of cost savings. The IT leaders also identified barriers to implementing IT strategies and how each IT leader measured the effectiveness of successful IT project strategies. Table 3 displays the themes identified during interviews with IT leaders.

Table 3

Themes Representing IT Management Strategies

Major Themes	Percentage of Participants Perspectives
1. IT leader-related communication	100%
2. IT leader knowledge implementation	100%
3. Implementation cost savings	100%

Theme 1: IT Leader Related Communication

Communication within an IT project network or group is critical, as IT project network facilitates the exchange of ideas, information, and planned execution between the actors in the network (Grabowski & Mathiassen, 2013). IT leader-related communication strategies were used to plan and execute projects under budget and on time. Participant 4 described communication as a "problem in the visible results" and outcome of an IT project. Participant 5 asserted that the "visible network interface is a risk of space and time regarding the whole IT project being under budget." According to Participant 1, "The largest risk to [an] IT project or yourself as an IT leader is strate[gic] communication . . . early on the first day, throughout the IT project, and [at] various times, increasing forecasting meetings about budgets." Participant 2 summed up the planning and execution of IT projects for all actors by stating, "Every person reacts based on their thoughts and fear[s of] unexpected failures, but communicating with all individuals on your team is important to obtain goals."

Herteliu and Despa (2014) supported the outcome of IT projects failures are a result of poor communication between actors in a network. All five participants

recognized the need for some form of communication within the IT project network. Additionally, all five participants explained the outcome of poor communication within the IT project network can result in IT project failure. The two subthemes shown in Table 4 represent communication tactics in the reflected interview with the participants.

Table 4

Subthemes IT Leaders Related Communication

Subthemes	Percentage of participants perspectives
1. Actor visibility of others in network	100%
2. Communications skills	100%

Actor visibility of others in network. The two subthemes reflect how participants fostered the appropriate IT project culture. The subthemes also indicate that the participants collected and shared information related to the other IT leaders' knowledge implementation. The actor visibillity of others in the network strategy was used to plan and execute projects under budget and on time. Participant 2 expressed, "visibility of others in the network is essential to the IT project budget success, thus improving the outcome."

The integral role of IT leaders' communication, visibility to others in the network, and communication skills aligned with the concept of translation, which is associated with the actor-network theory. Kemp (2013) justified the business context of IT managers in the building and rebuilding of the actor-network theory throughout the IT project lifecycle and its alignment with IT project capital budgets. Latour (2005) noted that communication among the actors can further align the focus of the actors over time.

When IT managers provide visibility network risks to the entire IT project team, it enhances the planned budget process and ensures that the IT project demonstrates a positive performance outcome (Chen, 2014). All five participants indicated that they provided visibility to different levels of the project network and other interested stakeholders associated with their IT projects. Regarding an IT communication management strategy, Participant 1 stated, "I know blunders is the right word, causes visibility issues to IT projects."

Participant 1 also emphasized that project visibility and ownership entails having "more visibility of the whole IT project[']s] execution and stakeholder actors [have] more to lose in the game." As Participant 3 explained, "Ownership is important and helps structure the planned and executed IT project activities." Participant 2 concluded that "high project visibility risks in planned IT project strategic process" among the actor-network members and "the understanding when the IT project not executed properly without project visibility." Participant 2 also summed up the role of an IT leader regarding the maintenance of a project's visibility, describing the IT leader as the "key communicator" who must "make other projects team members comfortable." The visibility finding is consistent with the research of Hopcroft et al. (2013), who concluded that project management visibility is a good strategy for successful IT projects associated with the best outcomes. Kemp (2013) indicated that project actors must execute project visibility, along with planning project forecast budgets. Liu (2015) concluded that the network is just as important as the project actors and visibility for the development of better project strategies within the network.

Communication skills. Participant 4 explained that actions and decisions related to the communication of IT projects "have a substantial impact on project performance" as well as "the ultimate success of [the] project." The five participants revealed that they had determined their strategies before IT project planning, using various project stakeholders, end users, and technical experts. Participant 5 described communication with "the technical expert partner [or] technical lead," resulting in successful IT project execution. Participant 2 stated, "I always want vendor partnerships and to review the vendor reports on a daily basis." Participant 1 emphasized the importance of communication skills with other team members, which are "executed on a weekly basis with client's senior executives helped keeping the IT project under budget and on time."

Participant 2 also reported that actors with communication skills who practiced role planning needed to implement IT project strategies and "organizational change related successful IT project deliverables." Various modes of communication are related to the expectations associated with IT projects, including videos, planned conference calls, focus groups, and pilot programs (Rafique et al., 2014). Participant 5 stated, "Our teams additionally meet on a monthly basis with the owner [and critical IT project experts] to enhance or change IT project strategies, as needed." Rasoolzadegan and Barforsh (2015) indicated that one of the reasons project management communications skill are so important is that they ensure the project team receives feedback in time to perform an IT project function. Participant 1 reported that it is helpful to make calls in advance, "to avoid last minute issues or foresee problems with the IT projects." Participant 3 summarized the scope of communication skills, noting that they included

"different level project team members [who] are always in direct contact with the IT leader [with] an open-door policy."

The data analysis yielded two subthemes about strategies that help IT leaders plan and execute IT projects budget and on time. Participants 2, 3, and 5 believed that communication strategies are always a part of the total IT project management process from planning to execution. This finding is consistent with that of Verna and Sandhar (2013), who indicated that successful project managers who are on time for an end-user client have great communication skills. Zamani (2013) explained that lack of communication barriers is helpful to IT project outcomes. Participant 1 examined over 749 previous projects centered on "communication strategies outlined in planned project networks" and found that problematic issues are reduced by these communication strategies. Table 5 contains the fundamental elements of communication skills based on the data analysis and included (a) IT project characteristics, (b) shared IT project team information, and (c) communication assumptions.

Table 5

Fundamental Elements of Communication Skills

IT project communication skills	Elements of a communication skills
IT project characteristics	The IT project members hold accountability is structured.
	Waterfall diagram project management is always used for each IT project.
	Monthly meetings are with client management if using agile diagram project management.
	Best practices are added in with weekly risk management meetings.
	All IT project member discuss risk and budget reports.
	IT cost gaps discussed during weekly IT project update.
	Weekly structured meetings concerning budget and IT updates, includes the review of IT team IT matrix scorecards
Shared IT project team communications	All IT project is share in Microsoft project repository.
	All IT project budget forecast updated in the continuous activity database repository, reviewed by all budget IT team members.
	No personal backlash for identifying risk to the IT project team.
Communicated assumptions	Every IT leader uses same budget forecast reports that align with risk assessment.
	Best practice IT diagrams are used over and over, shared with the IT project team.
	Best practices and risk management reports distributed to all key project team members.

Theme 2: IT Leader Knowledge Implementation

Yin's (2011) five-step data analysis helped me uncover the theme of IT leader's knowledge implementation. Participant 4 stated, "my best skills is knowledge implementation increased my year over year IT budget report forecast and 63% of my IT project are always on time." The actor knowledge implementation shares an

understanding of the experience and knowledge of the technical solution, along with knowledge concerning the expected IT project outcome (Zickert & Beck, 2013). The actor-network theory requires the sharing of ideas and knowledge among actors to align with the focus of the network (Latour, 1986; Law, 1986, 1992). The IT managing actor knowledge implementation illustrates power dynamics within the network (Lee, 2015). IT leader knowledge implementation is the strength of the key actor and influences the exchange of ideas with other actors, which should result in the positive outcome to the end user. The IT leader's knowledge, experiences, and exchange of ideas with other actors are the key factors in maintaining, building, and rebuilding an actor-network focusing on an IT project. Li-Hua and Lu (2013) explained that knowledge is required to grow a network or team and helps prevent the actors from losing their focus. Researchers revealed positive knowledge corroboration between project team members increase the outcome of a successful IT project (Filho et al., 2015; Francis & Komar, 2015; Hetrick, 2013; Hillson et al., 2015; Xu & Yao, 2013). IT leaders' knowledge implementation, such as a shared understanding among team members, technical experts, and vendors, improves a project's performance (Spitsberg et al., 2013). Salman (2014) explained that knowledge implementation is a major contributing factor in IT project success.

All five participants expressed that knowledge implementation strategies are related to stakeholders' expectation of a positive outcome. All five IT leader participants recognized that they organized the information for use by all project actors. The IT leaders reviewed the documentation on shared Microsoft data repositories and shared outcomes of each project phase to key project actors. Supporting documentation in this

study revealed that old IT projects were shared among technical expert actors and primary actors to help with current IT project strategies. Participant 4 revealed that "looking over the IT company documents help[s] with IT project steps; team members update [it] as steps are complete[d], and manage project related documents within the shared library." Participants 1 and 5 both explained that the scope of the IT project and document control help correlate with "IT budget forecasts" and "IT project scheduler reports."

Participant 3 indicated that "IT project scheduler reports and ad-hoc built SharePoint software utility are posted every four hours outside my office for visual review and are then sent out to the company community [via] electronic repository at the end of every day by a scheduler software utility." Participant 1 noted that their IT midsize company community electronic repository is shared among IT leaders in training, as well as with the owner. The midsize IT company community's electronic repository includes IT reports, form knowledge, and budget forecast reports that help align a positive effect on performance and successful IT completion of IT projects. The participants used repository software and data utilities as lessors learned to enforce lower risk and increase success outcome to IT project. All five participants stated that successful IT projects come from lessons learned from other IT projects strategies. Experience, informal or formal, is important in figuring out IT project risk management (Kovgrin, 2014). Participant 5 concluded that an informal morning coffee or breakfast is a good time to figure out what went well as a form of lessons learned. All participants used some form of IT leader knowledge implementation; two subthemes reflected IT

leader knowledge implementation that the participants utilized to perform IT project strategies. Table 6 shows the two subthemes the participants incorporated in IT leader knowledge implementation.

Table 6

Subthemes IT Leaders Knowledge Implementation

Subthemes	Percentage of Participants Perspectives
1. Business context diagram	100%
2. Technical knowledge expertise	80%

Business context diagram. The business context diagram subtheme of IT leader knowledge implementation is the use of knowledge correlated to business context and the purpose of IT project. Numerous researchers have investigated the relationship between the IT project business context diagram and what influenced project actors to complete their IT projects under budget (Al Ghazali, 2014; Glover, 2013; Zhang et al., 2014). The business context diagram influenced the IT project managers' strategies and roles. An IT leader is the primary actor, and other team project actors use the business context diagram to identify risks, communicate the influence of decision makers of the project, and mitigate related decisions. Participant 2 shared, "About six years ago, I was new to IT project management," having come from a construction management firm. Participant 2 revealed that "the IT project diagram was helpful to impacting the success of every IT project its budget, IT functions, and political climate." Participant 4 pointed out that "organizational goals, political climate, and management buy-in" set the tone within the

IT project network. Participant 1 recognized that "the lay of the land and impact of the operational functionality [helps me understand] how and why the IT project will succeed."

Participant 1 also noted that "upper client management buy-in and expected deliverables from the IT project" need to always be aligned with the goals of the IT project. Lampka et al. (2013) revealed common themes related to IT project success which included: IT project decision-making diagrams and executive management support of the IT project. Kohler (2014) reported that over 60% of all successful IT projects are executed under IT project and organizational context diagrams. Participant 4 noted that broad organizational goals in the business context diagram and project management goals necessitate support from upper management's expectations of IT project deliverables. Based on the information collected by the IT project teams, Participant 1 noted "the IT leader acquires organizational risk or business cultural risk, but the success of the IT project is diagrammed out on the business context diagrams, and folks aligned to the success of the project."

Technical knowledge expertise. Technical knowledge expertise is important to an IT leader's experience, as well as operational business deliverables resources, technology resources, and anyone else related to the project team or who are on the IT project. Pitchammal and Sarala (2013) noted the project team leader or project manager is the technical knowledge expert or subject matter expert. An IT leader's successful delivery of an IT project requires both a relevant domain knowledge and business experience, as well as the ability to convert IT project deliverables to business technology

requirements. Van Praag and Sanchez (2015) concluded that subject matter experts are priceless to an organization and are critical to both the business needs of an IT project and business capabilities to assess an organizational IT system's capabilities. The five participants' assessment of technical knowledge expertise within a team or extensive human capital resources were part of their strategies to keep IT projects under budget and on time.

The IT leader participants in this study assessed technical knowledge during initial planning meetings and continuously assessed technical expertise throughout the IT project lifecycle. Liu (2015) stated that project management leaders should continuously look for talent and knowledge throughout the lifecycle of an IT project and understand the aspect of the experience on the project team. Participant 2 reported that most initial meeting strategies included "ask[ing about] team member job function from a regulatory governance technical person, procurement person, technical expert, subject matter core person, process owner, [or] other individuals needed on the project." Understanding the team's expertise helps the project team member understand resource planning element of the knowledge base, and people not able to commit to the whole lifecycle of the IT project (Long, 2014). Kemp (2013) concluded that most IT project managers need to assess individual actors within the project network, as well as any vendors associated with the IT project. Participant 3 stated that vendor knowledge assessment needs to "respond to reports, IT project proposal, and produce a statement of works" for the IT project.

Also, during the initial planning meeting for the IT project, Kupiainen et al. (2015) explained that the vendors on the IT project proposal produce the statement of works to the IT project owner, but not to project team members due to confidentiality agreements. Participant 3 shared that s/he "does not see the statement of works and project proposal between the client and vendor" and "neither does the IT company owner." The finding of this study aligns with previous research of Bos et al. (2016), who concluded that accessing, acquiring, and identifying knowledge and technical subject expertise are critical components needed to respond to planned and executed projects under budget and on time. Although the findings indicate that IT leaders incorporated assessment of technical knowledge expertise, the use of technical knowledge expertise, sharpening of knowledge expertise, and sharing of knowledge by the project team members are evident within the themes concerning IT project culture and communication strategies. Table 7 displays key tactics to technical knowledge expertise to facilitate all actors associated with the IT project and IT project team.

Table 7

Key Tactics to Technical Knowledge Expertise

Tactics	Participants
Technical performance of weekly team meetings.	P1, P3, P4, P5
Technical cost and daily technical meetings	P1, P2, P5
Perform monthly technical meetings with senior stakeholders	P1, P3, P4, P5
Provide best practice related reports and documents to relevant team member	P2, P3, P5
Engagement meetings with stakeholder, IT vendor support, and IT member through lifecycle	P2, P3, P4, P5
Give access to IT related documentation	P1, P3, P5

Theme 3: Implementing Cost Savings

Albrecht and Spang (2014) revealed that budget analysts helped implementation cost savings through discussions in the initial meeting. Participant 2 revealed, "budget analyst and implementing cost saving strategy are key to his success in keeping IT project on time." As part of some existing IT project diagram management strategies, IT leaders have been using two cost budget analysts: pre-award and post-award, to lower marginal fixed costs since 2010. The cost budget analysts are part of the extended IT project team or are IT budget actors. The IT project team can control marginal fixed costs during the capital budget meetings for IT projects, but it is difficult to identify marginal variable costs over the lifecycle of the IT project (Long, 2014). Bos et al. (2016) noted that cost savings discussions need to made during initial IT project meetings or before the full IT scope has been identified by budget actors. Participant 2 commented that the challenges encountered during the implementation cost savings of IT projects include cost management, a cost savings integration with existing IT infrastructure, and the use of new technologies. Kupiainen et al. (2015) explained the key project actor needs to identify new ways to save variable cost gap savings; thus, the network needs to support the key project actor. Participant 1 indicated, "IT projects face value difficulties, technical cost gap challenges, client operational cost issues, and stay within IT budget forecast." Also, Participant 1 suggested that technical experts in the area of cost savings should be added to the IT project team to "reduce system integration, increase operational awareness among the clients by adding new technology, and help increase insufficient resources needed for training on the new technology." Rönnberg-Sjödin (2013) found

that budget experts are key players in an IT project. Wall (2015) suggested that new technologies can reduce operational costs, but that end users are reluctant to change. At the beginning of new technology implementation, Participant 5 stated,

> My experience with various levels of the IT project team always leads downstream to the almighty dollar. IT budget analysis and IT budget cost is always measured by my team from the initial meeting to the IT project closeout meeting. The IT projects cost big money for IT software and hardware and need management support to be successful. IT integration with old legacy systems, not just software and hardware, can have a higher cost over the long run, since existing hardware or software do not integrate properly with the needs of the end user. I have always use the long-term approach and ask the end user to have the old data migrated to the new hardware or software since it yields more return on investment. The biggest thing is underestimating resources to get this done, then cost going up on.

The more budget analysts, which support the findings from the interview data that positively affect the IT project's success, are needed to lower the cost IT project. Figure 2 displays a steady reduction in IT project marginal fixed costs from 2012 to 2016. With two budget analysts on the IT project team, IT budget decreased from 38% in 2012 to 11% in 2016. The findings, as displayed in in Figure 2, indicate a steady yearly decline in IT project fix cost gaps and in marginal fixed costs.

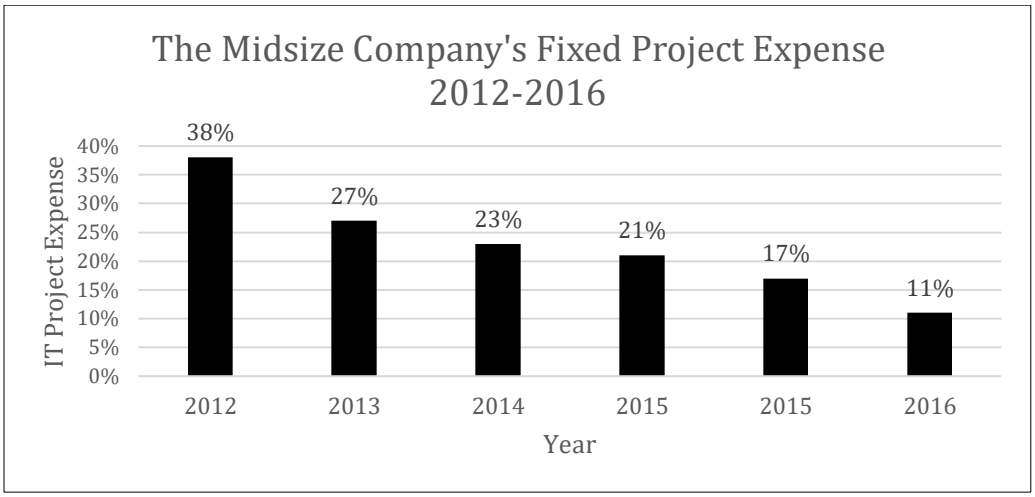

Figure 2. Implementation cost savings

Confirmation of Existing Knowledge

The findings confirmed the results of Bos et al. (2016) in that fostering of IT leader related communication help early risk related mitigation actions before risk impact IT project successful outcome. The findings of this study confirmed and aligned with Guru (2014) and Meng and Boyd (2017) in that efficient project team communication positively affects project performance. Also, these findings confirmed the research of Kohler (2014) and Fayad (2017). Fayad noted best practice knowledge implementation shows patterns of cost saving to the IT project outcome with the help of communication strategies. Kohler revealed that successful project knowledge implementation and budget cost savings strategies positively affect project execution and strategies. During member checking, participant 1, 3, and 4 confirmed that the purpose of the midsize IT company strategies is to embrace cost savings and communication meetings before the initial project meeting. The findings confirm the research of Law (1992), who noted the key

actor role and responsibility is to strategize order within the network and clarify communication network order for a successful outcome.

Participant 1, 2, 4 and 5 indicated that barrier to implementing an IT leader strategy is the project team's lack of time to focus on communication, cost savings ideas, and risk implementation network management. Callon (1986) revealed actor-network theory included the reasons for why there are barriers for business leaders to identify actor responsibilities of each actor and clarify the actor's role within the network. The findings of this study aligned with Meng and Boyd (2017) in that cost saving ideas align with the IT project risk implementation network management. The findings confirmed that effective business practices include the concept that that key actor communication focus is the priority with the IT project team to clarify responsibilities and roles within the network.

When asked about the barriers to and challenges to plan and execute IT projects, participant 1 and 4 appropriately summed up the issues by stating "most teams or everyone team can manage risk of the project; it's just having the time to manage cost appropriately" and "it's about team trust and communication doesn't just happen overnight." Kohler (2014), in examination of barriers to project success, noted that project leaders for 276 IT projects found that the lack of time was a barrier to communication and positive project outcome. The findings indicated that communications within the project network could overcome IT barriers such as cost overruns and lack of time; therefore leading to more effective business practices. The findings of this study confirmed and aligned with Aragonés-Beltrán, García-Melón, and

Montesinos-Valera (2017) in that project team communication skills relate to IT project performance.

Summary of the Actor-Network and Study Findings

Bos et al. (2016) described two strategies that helped the IT project management industry overcome the barriers that inhibit the discovery of new outcomes and innovative ways to do IT projects, which is effective communication and knowledge implementation. As in the second actor-network tenet, the IT leader incorporates communication between nonhuman (e.g., communication strategies) and human (e.g., project team) to overcome IT project issues. In all cases, communication and knowledge implementation are either at the core of the solution or the key enabler to the IT project strategy (Burlton, 2015), which reflects similar findings to other industries such as cloud computing and telecommunication projects (Constantinescu et al., 2014). The findings of the study indicate that communication within the actor network and IT project leader knowledge remains essential to IT project completion on time and under budget.

A review of the literature concerning actor-network theory and IT projects performances revealed that practical communication skills are adequate for IT project management strategies, thus a successful IT project outcome (Callon, 1986; Kim et al., 2013; White, 2013). The IT success rate between the IT project and effective communication practice identified by Filho et al. (2014) and the historically high IT project performance rate identified by Kleist et al. (2015) highlighted the effectiveness of communication by the key actor. As associated in the third actor-network tenet, the IT leader exercised IT project verbal fluency to increase free association within the IT

project network. The findings of this study indicate that actor visibility within the network along with superior technical expertise of the IT project leader results in effective communication flow, cost savings, and improved project success.

Applications to Professional Practice

In this study, I researched strategies that IT leaders used to successfully plan and execute projects under budget and on time. The research findings should benefit IT leaders of midsize IT companies, owners of midsize IT companies, and other IT project team members, since IT leaders affect project performance and the likelihood of project success. Findings may also benefit IT leaders who seek successful strategies for planning and executing IT project under budget and on time, but will ultimately help midsize IT companies with goals that rely on IT project strategies. In the following section, I describe the application of performing knowledge management and performing best practice communications intended to add value, proposed approach, and practical application. Each IT leader strategies provided unique benefits to IT practitioner of project management and the IT goals. Also, the extended benefit is to assist midsize IT companies to increase their expected benefits on IT projects before, during, and after project lifecycle.

Application of Performing Knowledge Management

The application of performing knowledge management is a reflection of the IT leader; it helps project management practitioners use the IT teams' ability to collect and share information about the IT project's business, goals, processes, and culture. Also, the application of performing knowledge management shows that stakeholders have

expectations, influence, and interest in the IT project. The application of implementing knowledge management helps the IT leader take inventory of the experience knowledge and resources available to the IT project to engage all IT project team actors. This approach entails increasing knowledge and the value of sharing information, knowledge, and outside-the-box ideas for key project team members.

Akhavan and Pezeshkan (2014) noted that IT project management practitioners who perform knowledge management are critical to identifying risks, conducting risk assessment, and developing effective risk mitigation to help for the IT project success. The project manager is key to understanding the project environment, and is a common reason that an IT project succeeds (Junior, 2014). The project manager needs to understand the stakeholders' expectations and positively influence the project's outcome and return on investment (Imamura et al., 2014; Iyer, 2014; Vega et al., 2013). Von Rosing (2015) noted that an essential practical tool is managing project risk knowledge and sharing ideas among IT project team.

Performing Best Practice Communication

Effective communication facilitates the exchange of information between involved stakeholders, project team members, project vendors, and the project manager. Achieving best practices in communication approaches relies on both direct and indirect strategies. Tyworth (2017) stated that useful lessons learned and best practice ideas contribute to IT project success. Providing visibility through effective communication is one beneficial aspect of this strategy, since the visibility of the IT project's success to all team members is associated with the project and can improve the IT project's processes

and performance (Van Houdt et al., 2013). Also, Singh (2014) suggested that increased visibility of best practices promotes project ownership, developing best practices responses, and mitigation plans that are essential fort increasing IT project performance.

The IT project manager should engage in IT leader related communication to promote early best practices ideas (Shahi et al., 2015). Ultimately, the value of effective communication is both the IT leader and project team that achieves the goals of the IT project, which reduces and impacts project performance. The IT leader can reach the full benefit of this strategy; therefore, the IT leader should encourage and facilitate best practices to the team, end users, vendors, and project team. The application of this strategy requires that best practices review section that included periodic project status meetings, reporting to decision makers, and stakeholder meetings. The IT leader and relevant actors (e.g., the portfolio manager or line manager) should invest in the use of collaborative software or electronic document sharing software to make the registers, project status reports, budget reports, forecasting reports, and other visible documents accessible to all parties. The IT leader should also consider focus groups to identify preferred practices and expected deliverables. Midsize IT company owners and organizational leaders should champion the use of town hall meetings, newsletters, and videos, as well as engage the broader project audiences that are affected by the IT project deliverables. The IT leader and IT project will benefit when the IT leader and other project team members become receptive to commutation concerning possible feedback, best practices, and comments from different levels and organizations that may hold stake in the IT project's deliverables.

Implications for Social Change

The implication for social change included empowered those people who have no apparent resources or expanded opportunities, created jobs, and provided sustainable living within the IT market beyond Washington, DC, into the southern Maryland and northern Virginia area. Additionally, increases in development and research capabilities of IT companies and projects may be beneficial to broader strategic goals such as: (a) increasing competitive advantage, (b) outperforming innovation, and (c) and increasing market shares (Reynolds & Yetton, 2015; Roseth et al., 2013; Ross, 2013). A company's long-term sustainability is a strategic goal of IT project strategies (Ross & Morrison, 2014). The long-term viability of an organization leads to positive social changes as organizations maintain long-term sustainability may increase stability socioeconomic stability of the surrounding communities.

The company described in this study was an IT midsize company and for-profit organization. The possible findings can lead to additional positive social change if the IT leaders are part of a charity. Sanderson (2015) noted specialized employment nonprofit organizations need to embrace new technologies for fundraising. Ruiz et al. (2015) added that specialized employment nonprofits have limited resources, but that they need to increase the mobility of their IT performance, which may be more important for a charitable organization's success than for profit-driven organizations. The strategies of delivering IT projects under budget and on time has several positive social implications to specialized employment nonprofits organizations. The positive implication of social change includes (a) using IT mobilization to increase the fundraising via mobile apps, (b)

social media projects grow nonprofit membership, (c) increase employment opportunity service to unreached individual or communities in need through IT project solutions.

Recommendations for Action

The purpose of this study was to explore the strategies IT leaders used to successfully plan and execute projects under budget and on time. The key themes that emerged included: (a) IT leader related communication, (b) IT leader knowledge implementation, and (c) implementation cost savings. The strategies that the IT leaders execute identified three IT project strategies additionally emerged from the subthemes. The purpose of the study was not to explore IT leader's soft skills. Pollack et al. (2013) illuminated that actor-network theory is a soft skill of communication and negotiation related to how the IT leader describes the IT project strategies. Figure 3 illustrates how each IT project individual and team commutation and negotiation strategies fit into the context of the overall recommendations and continued applications of guidance within and throughout the lifecycle of the IT project. In the figure, the communication wheel gears represent the numerous actors' communications and other elements related to the IT project that include: (a) client upper management, (b) IT leaders, and (c) IT project teams for IT project deliverables. The IT leader needs to implement the overall recommendation strategies. All five IT leaders incorporated the three strategies in some way throughout the lifecycle of the IT project.

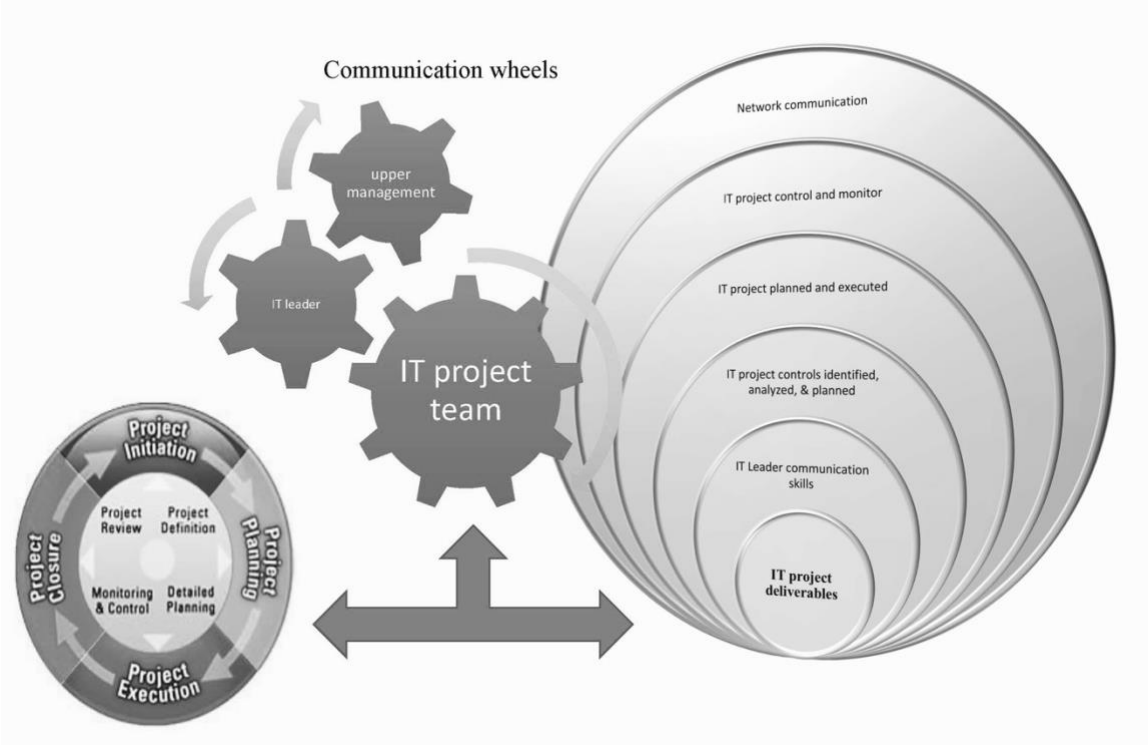

Figure 2. IT implementation context

The first recommendation is IT leaders collect and share knowledge and related information to the IT project network. Sharing knowledge and associated information to the IT project is the understanding of the (a) stakeholder's expectations and budget, (b) influence over the IT project, (c) organizational business context, and (d) IT project technical expertise available to the IT project team. IT project leaders should have sufficient information for the entire implementation IT project lifecycle, thereby utilizing the primary tactics associated with the three identified strategies.

The second recommendation is that IT project leaders select the appropriate strategies to lower costs. Knowledge gained from the first recommendation can aid the project team's communication with each project actor. The existing IT project framework requires that the IT leader balance the appropriate levels of information and

effort of the project's scope, duration, budget, performance, and scope of the IT project's activities. Song et al. (2014) indicated that IT project actors need to be familiar and comfortable with the old existing project frameworks that help influence the outcome how projects ran in the past.

The third recommendation is to use best communication practices to facilitate a broader project communication plan and to ensure clear communication at all levels of the IT project and with all stakeholders. Best communication practices should incorporate data collection, scope of meetings, budget meetings, IT performance meetings, duration of the lifecycle period, and the IT closeout meeting. Stoica et al. (2013) noted that IT project characteristics warrant a formal communication plan and periodic check-in meetings. Baumann and Baumann (2014) explained that IT project managers should manage the channels, frequency, and content of communications about IT project team member and stakeholders associated with the IT project. Based on the results of this study, IT leaders should integrate best practices for communication into planning controls, analysis of data, identification of best practices, and in monitoring team member meetings. Finally, the IT leader needs to ensure best practices related to project communication is consistent across different levels of the team.

The fourth recommendation is that IT leaders monitor and control communication within the project, as well as the effectiveness and efficiency of the three IT project processes. This recommendation includes monitoring the team's attitudes to gauge the alignment and cohesiveness of the IT project team or actor-network. Berg (2015) explained that the actor-network could be made to fit all IT project activities; if IT project

activities or adjustments are needed, it is helpful to reinforce best practices and communicate clearly so that each actor is responsible for the IT project. Figure 3 showed the degree of monitoring and control across all other recommendations. Figure 3 also illustrated that best practices happen within the project team and that IT leaders manage the IT project and emphasize the importance of gaining knowledge.

The fifth recommendation is that the IT leaders have some form of assessment throughout the lifecycle of the IT project. The evaluation may include peer feedback, team member feedback, or self-assessment. Berna et al. (2014) suggested that assessments can provide useful information to the IT project manager or project team for improving the effectiveness of the communication within the network.

The results of the study may also benefit other project office managers, project business stakeholders, project portfolio managers, and other business sponsors who manage IT projects. The IT leaders from this case study will receive a synopsis and full copy of the report to use as a reference for IT project management strategies that have been effective. I plan to disseminate the findings through presentations at U.S. government IT conferences as well as through publication in the Project Management Journal.

Recommendations for Further Research

The findings from this study indicate the need for additional exploration of strategies and effective business practices leaders use to successfully plan and execute projects under budget and on time. I recommend that researchers conduct further studies to address the assumptions, limitations, and delimitations outlined in this study. Future

researchers could conduct a mixed-method research study to explore IT project success through open discourse with participants and quantitative analysis of budget and schedule data to confirm the credibility of participants' responses. Future researchers could use a qualitative, multiple case study design to expand the scope of this study and gain additional insight on IT leaders' knowledge of the IT project management cost and risk to the organization through a more diverse sample population. Researchers collecting data from leaders of multiple companies might reveal additional strategies for IT project success, leading to the implementation of more effective business practices in the IT industry.

I recommend further research on IT project success in a different geographic location to overcome a limitation of this study. A researcher in a different geographic location might reveal strategies undiscovered by my research; therefore, potentially allowing IT leaders who lack effective strategies the added insight needed to complete IT projects under budget and on time. Researchers in different locations or industries could investigate the applicability of the conclusions of this study to other business contexts. For example, Gasca-Hurtado and Losada (2013) noted that actor-network theory could be used in combination with other social theories may provide new insight into complex IT project strategies. Other social theories, such as leadership theory and actor-network theory, could be used to explore decision-making and project actors, which could prove to be beneficial to IT project managers and IT project practitioners. Further, research utilizing actor-network theory in conjunction with rational choice theory may provide additional information about decisions and success for an IT project team's performance

and project outcomes. The actor-network theory, in combination with rational choice theory, may provide a unique lens to view situations in which actors normalize the IT project process within the actor-network project team, thereby creating a successful IT project outcome. The impacts of the IT project strategies may assist IT project managers to identify the right size or adjust the IT project process throughout the project lifecycle.

Reflections

With over 20 years IT project management and operational experience, my prior acting experience was in the role of (a) end user, (b) project team member, (c) stakeholder, and (d) lead project manager. Based on my project management experience, I tried to limit my bias exploring a small or midsize company versus the large multinational corporation. I limited my bias through performed member checking, triangulation, used precious quotes for confirmability, and reflection of participants' responses, thus not my point of view. Member checking was extremely valuable since participants agreed with the reflection of the content in their response. Also, if a participant found an error in the use of their response, then the participant would correct the response for the final version.

IT project strategies are valuable to maintaining successful IT project performance, my perspectives have been changed on the role of IT knowledge and not all stakeholders end with IT department, IT division, or the IT company. With limited exposure to acquiring and maintaining large-scale IT projects, the IT leaders ensured that mentoring is critical to experienced leading IT project teams internally and externally. I

realize the need to implement effective IT project management knowledge strategies as I manage future IT projects.

My experience conducting this study was exploring new ideas in project management and contribute to my self-growth, and enlightening on how to organize on a large scale. My challenges include (a) changing from narrative to case study design, (b) changing of three different first chairs, (c) evolution of the business problem, and (d) rework of literature review. These challenges resulted in a better study design that contributed to my ability to solicit participants and transform lead relevant findings to address a business problem.

Conclusion

IT leader budgeting and IT projects enable operational success. Thus, IT projects increase competitive advantage. The midsize company IT project leaders utilized agile diagram project management techniques to improve operational readiness and maintain sustainability through IT projects. The IT leader always needs to add successful IT product knowledge to existing shared knowledge and strategies to lowing IT project cost management.

The purpose of the qualitative case study was to explore strategies IT leaders used to successfully plan and execute projects under budget and on time. The case study is an in-depth exploration of IT leaders who successfully managed and completed IT projects under budget and on time, with more than two years of IT project management experience. I incorporated the actor-network theory as a lens of inquiry. Using the actor-network theory provided an investigative social theory and framework to help explain

why operational project management investments are successful for the IT midsize company.

The five IT leader participants were asked six semistructured interview questions about successful IT project strategies used. The study included the use of Nvivo 10 to identify different themes, code, and analyze data collected that was unstructured. Yin's five-step data analysis, member checking, and semistructured interview questions yielded three themes and four subthemes about used tactics by IT leaders in the IT project management application. The three IT project management strategies included (a) IT leader related communication, (b) IT leader knowledge implementation, and (c) implementation cost savings. The identified IT project management strategies might be beneficial for other project managers in the effort to successfully deliver IT project deliverables under budget and on time for long-term operational sustainability.

Improving IT projects improves profitability and productivity, the implementation of IT project strategies is critical to the survival of the organization in today's globally competitive markets. The other IT project management companies may benefit by delivering new IT project development capabilities. The operational benefit for other IT project management companies may have positive social implication given the role of successful IT project deliverables. I recommend the midsize company owners, practitioners, and scholars use the findings and recommendations of this study to gain new insight of successful IT project management strategies and improve business practices.

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Appendix A: Summary of Sources

Summary of Sources	
Type of Source (Current = 2014 or later; noncurrent = 2013 or earlier)	Number
Current peer-reviewed journal articles	223
Current non peer-reviewed journal articles	14
Noncurrent peer-reviewed journal articles	6
Noncurrent non peer-reviewed journal articles	2
Current dissertations	6
Noncurrent dissertations	0
Current textbooks	4
Noncurrent textbooks	3
Noncurrent survey manual	1
Noncurrent U.S. Government database	1
Current trade association publication	0
Total current sources	245
Total noncurrent sources	15
Total peer-reviewed sources	233
Total Doctoral Study Sources	260
Percentage Current	
Total current sources / Total sources: 245/260 = .942	94%
Percentage Peer-Reviewed	
Total peer-reviewed sources / Total sources: 233/260=.896	90%
Literature Review Only	
Sources unique to the literature review	134
Total current peer-reviewed journal articles	171
Other sources	26
Total literature review sources	197

Appendix B: Permission to Use Why Software Projects Fail as Figure 1

From ***Mario, West***
Date ***Tue, Aug 18, 2015 at 6:47 PM***
To ***Mr. Stepanek***
Subject ***Request to use***

Dear Mr. Stepanek,

I am a doctoral student of Business Administration (D.B.A) at Walden University. My study is a qualitative single case inquiry into the impact technology projects have on a midsize technology company in Washington, DC My work banking experience is in merger/acquisitions (international accounting and account libraries) and public-sector technology project budgets for the United States government. With purposeful sampling, I will strengthen my research with your diagram about why software projects fail (page 8 figure 2-1).

I looked up your scholarly article regarding why project fail and the visual diagram. I would like your permission to use this image in my doctoral dissertation (example attached Figure 1). I have referred to the software fail in my dissertation proposal and your figure would visual enhance my presentation of ideas.

Would you be willing to provide me this permission? Here is the APA reference I plan to use underneath the figure, assuming it meets your approval.

I hope this meets your approval,

Figure 1. Technology Software failure from "Software Programming Secrets: Why Projects Fail" by G. Stepanek in 2012, p. 8. Reprinted with permission (Appendix F).

The APA Reference I am using is:

Stepanek, G. (2012). *Software project secrets: Why software projects fail* (2012 ed.). New York: Apress.

Warmly,

Mario West MBA, MAFM, PMP, CGB
DBA Candidate, Accounting Specialization
Walden University

From ***Jeffrey Pepper []***
Date ***Tue, Aug 18, 2015 at 6:51 PM***
To ***Mario West []***

Subject ***Request to use***

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Appendix C: Yin's Five-Step Interview Protocol

The interview protocol would consist of the following six steps:

1. opening statement;
2. semistructured in instructed interview questioning;
3. probing questions;
4. participants verifying themes and codes noted during the interviews;
5. follow-up questions as needed for clarity; and
6. recording of reflective notes.

Appendix D: Recruitment Letter for Study Participants via E-mail

[Date]

Re: A Doctoral Study of Potential Interest

Dear [Name]:

My name is Mario West and I am currently a Doctoral candidate at Walden University pursuing my Doctorate in Business Administration (DBA) with an Accounting specialization. I am conducting research on the current IT leader workforces. My study is entitled: "*Strategies for Managing Enterprise Information Technology Projects*." I am interested in conducting the study to explore how differences among IT leader cohorts require leaders to consider new approaches to effectively manage IT projects.

I am seeking to interview leaders who fit the following criteria:

1. Working in a Washington, DC metropolitan in the project management facility.
2. Employed in a full-time, manager position for a minimum of 2-years, who supervise 2 subordinates, and work 40 hours or more per week.
3. Working directly with an IT workforce.

The participant study criteria would provide the researcher with unique perspectives. Participants who choose to participate in the study would be asked to do so in a face-to-face interview. The results and findings would be shared with participants, and other scholars. All responses would be categorized and no names would be attached in any form to the results. Confidentiality is assured through protocol established by the Walden University Internal Review Board (IRB).

Individuals who meet the above criteria and are interested in participating in the study, are asked to contact me a XXX-XXX-XXXX or via e-mail at XXX@WaldenU.edu. Participation in this study is voluntary.

Payment:

No compensation would be provided for your participation in this study.

Thank you for your time and consideration.

Sincerely,

Mario West

Appendix E: Semistructured Interview Questions

Interview Questions

1. What are the internal and external resources that are required for an IT project to be successful, with executing under budget and on time?
2. What strategies did you use that are most effective in executing IT projects under budget and on time?
3. What strategies did you use that are least effective in executing IT projects under budget and on time?
4. In your IT experience, what are some of the barriers and challenges in planning and executing projects IT project?
5. What are the strategies to successfully overcome barriers and challenges in planning and executing IT projects?
6. What else would you like to add regarding the strategies used in IT projects?