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# Strategies of Successful Government IT Projects Based on Cost and Time

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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2018

Abstract

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MA, Webster University, 2006

BS, Campbell University, 2003

Doctoral Study Submitted in Partial Fulfillment

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Abstract

From 2001 through 2015, some information technology (IT) project managers failed to deliver U.S. Government IT projects on time and within budget. The failure of IT project managers to complete projects on time and within budget provoked the U.S. Government Accountability Office to classify IT projects as high risk. This multiple case study explored strategies government contracted IT project managers use to reduce cost overruns and improve on-time delivery. The participants in this study were government contracted IT project managers from organizations that provide IT project management in the Maryland area. Employing purposeful sampling of the explicit population, 5 selected participants from 5 firms provided data. The conceptual framework for this study was the actor-network theory. Data were collected and triangulated from 5 semistructured interviews and business documentation. Yin's 5-step data analysis process resulted in the emergence of multiple themes. The emergent themes included clearly defined requirements, monitor and control, and demonstrated leadership. As more government organizations realize the benefits of IT project success strategies, funding may become available for leaders to advance additional positive social change projects in various communities. IT project managers may implement the practical strategies found within this study to improve the outcome of their government contracted IT projects.

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Dedication

I dedicate this study to my family and friends that supported since the beginning stages of process. My mother, Harriet Captain-Brock transitioned before she could witness the culmination of the effort that she encouraged. Her words continue to inspire me to do better every day and at every opportunity. May she rest in peace. My father, Arden Pelican is the steadfast supporter that taught me to persevere especially when the goal is just. My siblings Lancer, O'beria, Pernell, Chandler, Wenona, and Angela provided the love and support that I needed to complete this journey. In addition, to my son John Lamar whose voice echoes in my mind almost daily that it is okay to have questions and that it is exciting to discover the answers.

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Many people encouraged me during this endeavor and I am forever appreciative. I would like to thank my committee chair, Dr. Irene Williams for her guidance in helping attain this goal. I would also like to thank Dr. Ify Diala, second committee member and Dr. James Savard, URR. I am sincerely grateful to you all for your counsel and support throughout my journey.

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Section 1: Foundation of the Study

Project managers traditionally base project success on the iron triangle of budget, scope, and schedule constraints, and some project managers recommended that stakeholder satisfaction should factor in measuring project success (Neverauskas, Bakinaite, & Meiliene, 2013). Representatives of the U.S. federal government overspent billions of dollars on information technology project overruns for projects that fail 94% of the time (Medina, 2014). Not all U.S. federal government projects fail, but U.S. Federal Government information technology (IT) projects that only succeeded to deliver within budget, scope, and schedule constraints 6% of the time (Medina, 2014). The overwhelming percentage of failures may indicate a lack of strategies to increase success.

A number of factors influence the likelihood IT project success. Neverauskas et al., (2013) suggested that competent planning by the project manager is a factor that increases the likelihood of project success. Critical success factors include an unambiguous project scope that is rooted in realism along with clearly defined goals and milestones (Neverauskas et al., 2013). Anthopoulos, Reddick, Giannakidou, and Mavridis (2016) cited the implementation of the Healthcare.gov website in 2013 as evidence that leaders should increase oversight of project management within the federal government. Integrating success factors into IT projects may increase the instances of project success.

## Background of the Problem

Representatives of the federal government spend an average of $80 billion annually on IT projects (U.S. Government Accountability Office, 2015 June). Representatives of the U.S. government have resisted increasing government IT

personnel in favor of using contractor personnel to perform IT project management (Mergel, 2016). The failure of IT project managers to complete projects on time and within budget prompted the U.S. Government Accountability Office (GAO) to categorize IT projects as high risk (U.S. Government Accountability Office, 2015, June). Project managers have diagnosed failures of government projects as stemming from a focus on managing contractors as opposed to emulating best practices (Cantwell, Sarkani, & Mazzuchi, 2013). Implementing successful strategies may reduce the instances of failed IT projects.

Numerous IT project management studies have highlighted IT project failure. Cantwell et al. (2013) studied government contracting along with project management, and lamented that further probing is required. Daley (2012) and Patanakul (2014) found that government contract execution and management would benefit from a longitudinal study. Both Cantwell et al. and Pantakul showed that there is no single solution to eliminate failed Department of Defense (DoD), and Daley reported that articles regarding contract execution from the government's point of view are common, but those from the contractor's point of view are rare.

Government contracted IT project managers follow a specific set of guidelines. To ensure that contracts adhere to government regulations and standards, budgeted monitoring costs can account for as much as 20% of the overall budget (Daley, 2012). Government personnel have expressed interest in more studies that illuminate avenues for solutions to reduce project failure (Cantwell et al., 2013).

## Problem Statement

From 2001 through 2015, some IT project managers failed to deliver U.S. Government IT projects on time and within budget (Patanakul, Kwak, Zwikael, & Liu, 2016; U.S. Government Accountability Office, 2015, June). In 2012, 24% of IT projects failed, and another 44% of ongoing IT projects were nearing failure (Stoica & Brouse, 2013). The general business problem is that some government contracted IT projects are negatively affected by cost overruns and missed schedule deliveries. The specific business problem is that some government contracted IT project managers lack strategies to reduce cost overruns and improve on-time delivery.

## Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies government contracted IT project managers use to reduce cost overruns and improve on-time delivery. The targeted population consisted of project managers from 60 firms located in the Maryland area with demonstrated experience supporting U.S. DoD IT projects between 2012 and 2017. The selected IT project managers have demonstrated experience with strategies that reduce cost overruns and improve on-time delivery. The implication for positive social change is that successful projects deliver feature benefits for all IT project stakeholders, and the cost savings associated with successful projects increase the amount of funds available for funding other social programs.

## Nature of the Study

I used a qualitative method because it enabled me to ask clarifying questions and facilitated a detailed exploration of the phenomenon (see Yin, 2014). I did not choose a

quantitative method because researchers use quantitative studies to test hypotheses and elicit feedback with tools such as Likert-type scales of predetermined questions. The quantitative method of inquiry in this instance would lack the depth of inquiry required in this study (see Mathur, Jugdev, & Fung, 2013). A mixed method study involves elements of both qualitative and quantitative methods (Chiang-Hanisko, Newman, Dyess, Piyakong, & Lieher, 2016; Yin, 2014). For instance, researchers may use a mixed method examine an organizational problem quantitatively and then explore solutions qualitatively (Chiang-Hanisko et al., 2016). A mixed method was not appropriate for this study because I only explored the strategies that the participants have mastered to reduce cost overruns and improve on-time delivery.

A researcher may use any number of study designs to elicit comment concerning lived experiences. Researchers use case study to explore a phenomenon within a real-world context and within the confines of the manifest phenomenon (Yin, 2014). Multiple case study design is well suited to exploring participant experiences from multiple firms within a like industry (Yin, 2014). This multiple case study design was appropriate in this study because participants shared the strategies that they used to reduce cost overruns and improve on-time delivery. Other qualitative designs include the phenomenological design. The phenomenological design is a method used to explore the unique lived experiences of individuals associated with the phenomenon (Yin, 2014). I did not select a phenomenological method for this study because of the ubiquity of project failure (see Hajiagha, Akrami, Hashemi, & Mahdiraji, 2015; Yin, 2014). Ethnographic design is best used to explore and observe the group behaviors of a subset of a population (Liberati,

Gorli, Moja, Galuppo, & Ripamonti, 2015; Yin, 2014). I did not conduct an ethnography because my goal was not to understand a group, but rather to explore the successful strategies that some project managers used to reduce cost overruns and improve on-time delivery.

## Research Question

The research question was: What strategies do government contracted IT project managers use to reduce cost overruns and improve on-time delivery?

To gather data to answer this question, I developed the following interview questions:

1. How did your firm reduce cost overruns?
2. How did your firm improve on-time delivery?
3. How did your firm implement the strategies to reduce cost overruns and improve on-time delivery?
4. What barriers did your firm have to address in implementing the strategies?
5. How did your firm measure the strategies' effectiveness?
6. What additional strategies can project managers use to improve project performance?

## Conceptual Framework

In the early 1980s, Callon, Law, and Latour developed what became the actor-network theory (ANT; Latour, 2005). I used ANT as the conceptual framework to explore the interaction among the elements of a software project. ANT provides a researcher a framework to explore the social and scientific connection among actors

engaged in IT projects (Latour, 2005). Cecez-Kecmanovic, Kautz, and Abrahall (2014) used ANT to ground their study concerning the success and failure of IT projects. Ahmedshereef, Hughes, and Petridis (2014) advanced Latour's theory and contributed to the irreversibility of the actor-network regarding the stability for exploring IT projects. Mathur, Jugdev, and Fung (2013) noted that project managers with guidance from the project management body of knowledge (PMBOK) practice workplace learning by sharing lessons learned. Mathur et al. reported organizations that contribute to communities of practice experience an increase in competitive advantage. ANT is a useful conceptual framework for identifying elements that may reduce cost overruns and improve on-time delivery (Ahmedshareef et al., 2014; Cecez-Kecmanovic et al., 2014; Latour, 2005).

## Operational Definitions

*Actor:* An actor is an element within the network of associations that has the ability to exert influence on the other elements in the network (Ahmedshareef, Hughes & Petridis, 2014).

*Actor-network:* The actor-network is a network consisting of both human and nonhuman entities connected through the social and technological means (Jieun, Seongcheol & Changi, 2015).

*Architecture:* Architecture is the fundamental organization of a system that involves its components, their relationships to each other and the environment, and the principles guiding its design and evolution (Aier, 2014).

*Business capability:* Business capability is a firm's ability to execute a defining

repeatable pattern of activities and produce a desired outcome by deploying specific resources and expertise and processing information in a defining organizational and cultural environment (Simon, Fischbach, & Schoder, 2014).

*Culture:* Culture is a pattern of shared basic assumptions that a group adopts as it solves its problems of external adaptation and internal integration. These have worked well enough to be considered valid, and therefore are taught to new members as the correct way to perceive, think, and feel in relation to those problems (Aier, 2014).

*Employee burnout:* Employee burnout is a prolonged response to stressors on the job. It involves feelings of being emotionally overextended and exhausted by one's work (Shepherd, Haynie, & Patzelt, 2013).

*Employee competence:* Employee competence is the knowledge and skills employees achieve and their ability to apply them. These capabilities that are critical to a business achieving competitive advantage (Medina & Medina, 2014).

*Future perfect strategizing:* Future perfect strategizing is the advocacy that drives strategic misrepresentation as project promoters seek scarce funds. It is characterized by budget and schedule escalation (Winch, 2013).

*Normalized deviance:* Normalized deviance is the gradual process through which unacceptable project management practices or standards have become acceptable (Pinto, 2013).

*Optimism bias:* Optimism bias is an enthusiastic future perfect misrepresentation and not a deception of project progress (Winch, 2013).

## Assumptions, Limitations, and Delimitations

### Assumptions

Assumptions are a researcher's notions that infer casual conclusions based upon variables that a researcher should not dismiss (Rottman & Hastie, 2014). In this study, I assumed that the project management professionals participating in this study used the PMBOK guide as the foundation for project execution. The PMBOK guide contains tools and techniques that project management professionals use to execute various IT projects (Project Management Institute, 2013). Another assumption was that the participants provided accurate information regarding their credentials and IT project management experience. Further, I assumed that the firms and project managers participating in this study had received at least a rating of *satisfactory* according to the Contractor Progress Assessment Report from their government customers (Contractor Performance Assessment Reporting System, 2016). Another assumption was that the firms participating in this multiple case study used strategic processes that are replicable throughout the IT project management industry.

### Limitations

Limitations represent overall scope deficiencies within a study that impact to the transferability of findings (Khan & Quaddus, 2015). One of the limitations of this multiple case study was that the findings are representative of a small sample size. The cases in this study represent the successful contributions of only five government contractors that provide IT project management for the DoD. Another limitation was the small size of the overall project costs and breadth of these cases when compared to larger

DoD projects. The average costs of the cases explored for this study average in the millions of dollars, while the overall cost of IT project expenditures in the DoD can is in the billions of dollars (Medina, 2014).

**Delimitations**

Delimitation is the designated parameters of the study (Yearworth & White, 2014). IT project management as whole is a growing field (Neverauskas et al., 2013). One of the delimitations was that I selected participants only within the Maryland area. The geographical context of the study provided for a focused exploration, although IT project management within the federal government is vast. In addition, I focused on IT project management that contractors provided only to U.S. Army entities within this area. These delimitations allowed me to gather data from participants relative to specific project requirements.

## Significance of the Study

This study is of value to business because managers may benefit from understanding strategies that reduce cost overruns and improve on-time delivery. Hamersly and Land (2015) reported that lack of project controls and business acumen contributed to nearly 80% of the project failure rates in their study. Project managers can use this study to assess strategies that lead to project success and reduce project failure rates. Ingason and Shepherd (2014) lamented that project managers require better strategies to implement project management lessons amassed from the past three decades of practitioner contributions.

**Contribution to Business Practice**

The data from this study may contribute to the effective practice of business by providing strategies IT project managers use to reduce cost overruns and improve on-time delivery. There are several elements necessary for project management success, and among those elements is project management competence (Mathur et al., (2013). Zuofa and Ochieng (2014) described a business' lack of project management maturity as a cause of project failure, while Mathur et al., (2013) found that project management maturity is a competitive advantage for business. Project managers and business leaders could benefit from understanding the strategies successful firms employ to reduce cost overruns and improve on-time delivery.

**Implications for Social Change**

The data from this study have implications for social change by providing new insights related to reducing IT project failure. The IT project failure of the initial implementation of the Healthcare.gov website in October 2013 negatively affected many U.S. citizens (Anthopoulos et al., 2016). Failed projects discourage public discourse and public trust wanes as leaders attempt to develop avenues that the less fortunate utilize to move beyond their current circumstance (Kazlauskiene, 2015). As more agencies reap the benefits of IT project success strategies, funding may become available for leaders to advance additional social change projects (Gobble, 2015).

## A Review of the Professional and Academic Literature

This review includes a thorough overview of the literature regarding IT project management. I reviewed the literature as a means of addressing the central research

question of exploring strategies that business leaders use to reduce cost overruns and improve on-time delivery. I consulted several sources including professional and academic literature that included peer-reviewed journal articles, books, and government websites. I used the Walden University Library to access the following databases: Academic Search Complete/Premier, EBSCO, ProQuest Central, SAGE Premier, ScienceDirect, and Thoreau Multi-Database Search. Multiple search criteria *included IT project management failure, actor-network theory, Government IT project failure, IT project success strategy,* and *IT project success criteria*. The search yielded 69 peer-reviewed sources published within the last five years between 2014 and 2018.

The literature review spans multiple subsections. Several authors in the peer-reviewed articles addressed project management credentials, project planning, and the importance of the project initiation stage to IT project success (Iyer & Banerjee, 2016; Löhe & Legner, 2014; Remer & Ross, 2014). Additionally, the literature review includes information on the characteristics of a successful IT project manager, along with success strategies for stakeholder management.

Table 1

*Literature Review Source Content*

| Reference type | Total | <5 years | >5 years | % Total <5 years old |
|---|---|---|---|---|
| Peer-reviewed journals | 75 | 69 | 6 | 92% |
| Books | 1 | 0 | 1 | 100% |
| Non-peer-reviewed journals | 0 | 0 | 0 | 0% |
| Total | 76 | 69 | 7 | 92% |

**Actor-Network Theory**

The conceptual framework for this study was ANT. Within ANT, technology is inclusive to the human experience and not separate. ANT helps theoretical researchers focus on the unity between the human and technology (Roy, 2015). Latour (2005) contended that ANT explains the social and scientific connection between human and nonhuman actors. An actor-network requires collaboration with the principal actor and the actor's acceptance of the conventions of the actor-network (Jieun, Seongcheol, & Changi, 2015). When connected socially and technologically, both humans and nonhumans become an actor-network. (Jieun, Seongcheol, & Changi, 2015). When scholars use ANT to explore a phenomenon, they bestow upon technology the independence of an entity (Roy, 2015; Sayes, 2014).

ANT has informed scholars' explorations of several aspects of project management. Ambrose, Eadson, and Pinder (2016) used it to contend that in project management, a stakeholder can be any party/agent, human or nonhuman with an interest in the project. Montenegro and Bulgacov (2014) advanced the notion of inclusiveness for

nonhuman actors. Siakwah (2017) used ANT to highlight the importance of focal actor or management competence regarding project management success. Effah (2014) used ANT to illuminate the connection between dot-com technology and human networks that failed. A macro market is a collection of actor-networks tethered by common concerns (Blanchet & Depeyre, 2016). Complex technological ecologies are in a constant state of fluctuation due in part to the evolution of actor-networks within the market (Blanchet & Depeyre, 2016; Jieun, Seongcheol & Changi, 2015). de Haan and Rotmans (2018) emphasized solutions that align with business dynamics and used ANT to explain how actors adapt to challenges.

Project managers conduct risk management and often conflict resolution while executing a project. Neisser (2014) has used ANT to understand the heterogeneous nature of networks as it relates to risk management. Vinnari and Skaerbaek (2014) used ANT to focus on the effects of risk management and the instability that followed the discovery of a risk (Vinnari & Skaerbaek, 2014). Rose, Hawryszkiewycz, and Kyeong (2014) found that ANT enabled them to visualize missing links within their case study of actor-networks that would have reduced the risk of failure upon implementation. Risk management encompasses evaluating both technology risks as well as human factor risks.

Both technology actors and human actors affect project performance. Luppicini (2014) focused on the fusion of the human and technical in executing the will of the actor. Georgiadis, Lippman, and Tang (2014) found that agents or actors on a project meter their level of commitment based upon the surety of project completion. As each actor or agent increases his or her contribution to the project, the team continues to

increase its level of commitment towards project success (Georgiadis et al., 2014). The level of commitment each actor wields is also contingent upon an equilibrium effect among all actors (Georgiadis et al., 2014). If a deviation in the level of effort by an actor is easily determined, then the actor will exhibit a high level of commitment towards project success (Georgiadis et al., 2014). If project managers have the power to extract full commitment from actors, then project managers can better control project outcomes (Georgiadis et al., 2014). If the project manager has no power to garner full commitment from actors, then the project manager should discount the project's completion outlook and label the project a troubled project (Georgiadis et al., 2014). In projects where an actor had reduced commitment level, the actor may develop strategies to exit a project as opposed to committing to it (Georgiadis et al., 2014). Actor commitment is a difficult parameter for project managers to evaluate.

The use of ANT to explore the convergence of the social and technological helps a researcher to parse the actor networks. The temporary nature of actor networks has led some to compare them to projects (Floricel, Bonneau, Aubry, & Sergi, 2014; Modell, Vinnari, & Lukka, 2017). Actor networks are temporary endeavors with ephemeral actor interests and associations (Floricel et al., 2014; Trkman & Trkman, 2014). Researchers such as Trkman and Trkman (2014) have used ANT in information systems success and failure analysis. Trkman and Trkman relied upon ANT to better divine business processes and technological advances. According to Trkman and Trkman (2014), ANT is a viable theory to examine the social and technical aspects of IT projects.

Various attributes are indicative of an actor including interest. According to ANT, actors exude motivation or interest and attempt to shape the interest of the technology based on the intended purpose of the technology (Trkman & Trkman, 2014). Weaver, Ellen, and Mathiassen (2015) argued that the social structure influences citizenship behavior. Waelbers and Dorstewitz (2013) argued that it is an actors' exact choice and determination which advances technology. It is the intersection of human interest and the technological purpose that ANT helps us to identify the concept of actor interest (Trkman & Trkman 2014). Actors enjoyed a stable network when each entity within the network commits to the common interest (Trkman & Trkman, 2014). Hussenot (2015) cautioned managers that controversy and conflict could arise when managerial structures are incongruent. Researchers may use ANT to link the participation of actors with a shared interest.

ANT is a unique approach to examining social phenomena, and it has unique terminology. For example, *actant* is a label for either a human or a non-human actor (Floricel et al., 2014). *Problematization* involves shaping a question in manner that will attract actors to form a network (Floricel et al., 2014). Assigning unique terms helps to examine the associations of actors that morph into a network (Floricel et al., 2014). Yet another term associated with ANT is *interessement*, a term used to explain the assessment that actor's make to determine their participation within the network (Floricel et al., 2014).

Researchers have used ANT to understand the manner that networks form. In ANT terminology, *translation* is the process of enrolling other actors into the network

(Lee, Harindranath, Oh, & Kim, 2014; Modell, Vinnari, & Lukka, 2017). Actors engage in negotiation that exposes the interests of the actor (Lee et al., 2014; Trkman & Trkman, 2014). The *focal actor* ascribes the technology with a particular interest and behavior (Lee et al., 2014; Trkman & Trkman, 2014). The moment when humanity accepts the technology's behavior is the point that the technology becomes an entity (Floricel et al., 2014; Lee et al., 2014). This event is evident when humans respond to technology in the same manner as they do to other humans. Lee, Harindranath, Oh, and Kim (2014) used the example of human behavior that complies with the commands of a traffic light in the same manner that humans comply with the commands of a traffic officer. Without ANT, it would be difficult to explain human compliance to commands from technology.

Various aspects of ANT help to define relationships among actors. Actants can morph into project artifacts as well as processes within ANT (Burga & Rezania, 2017; Lee et al., 2014). IT projects mirror features of ANT in that projects evolve through stages beginning with the initiation stage. The complimentary characteristics of ANT include problematization, interessement, enrolment, and mobilization (Burga & Rezania, 2017). A feature of ANT is actor accountability in the enrolment stage, which has comparisons to the monitor and control aspects of project management (Burga & Rezania, 2017; Floricel et al., 2014). The complimentary features of ANT with that of project management help Floricel et al. to explain the use of ANT when examining project management cases.

**Alternative Views**

Imparting agency to nonhumans is a controversial aspect of the actor-network theory. Sayes (2014) opined that because evidence exists of nonhumans' abilities to influence the actor-network, agency is present. In ANT, there is equality between humans and nonhumans without distinction. This equality continues to fuel controversy (Roy, 2015; Sayes, 2014). Nonhuman actors condition the networks in harmony with human actors; therefore, through the lens of ANT, both biological and synthetic actors have agency (Hansen & Flyverbom, 2015; Sayes, 2014). Another dissenting view is that nonhuman actors lack the purpose or the self-determination to participate in the network (Sayes, 2014). Accepting agency for non-humans requires a measure of thoughtful consideration.

Not all scholars accept the premise of agency for nonhumans. Roy (2015) compared the social construction of technology theory to ANT in that the social construction of technology theory does not bestow independence to technology. The social construction of technology theory does not support the notion of technological determinism, but asserts that technological advancement is a result of a social function (Roy, 2015). In a critical sense, Roy asserted a rebuke of the notion of nonhuman agency along with the equality of nonhuman actors within the network.

Some theories focus on the management of technology to explore a phenomenon. Löhe and Legner (2014) posited that enterprise architecture management is a failing theory because the theory lacks sufficient authority for enterprise architecture managers. Successful implementation of enterprise architecture requires that managers have

sufficient authority to implement changes (Löhe & Legner, 2014). Aligning enterprise architecture with a corporate strategy should be a priority for corporate information officers (Löhe & Legner, 2014). The use of enterprise architecture helps to spur organizational change and improve collaboration across business units (Löhe & Legner, 2014). Some business managers are reticent to embrace enterprise architecture management due to the appearance of a labor-intensive implementation and challenging metrics (Löhe & Legner, 2014). Enterprise architecture management would benefit from increased governance and increased personnel training.

The lack of resources and skill sets hamper the successful implementation of enterprise architecture management. Corporate managers should strive to incorporate enterprise architecture management into the overall strategy, not as a separate mechanism but rather fully integrated (Löhe & Legner, 2014). Enterprise architecture management is a method to assists corporations in developing mechanisms for incorporating stakeholder wishes into the enterprise architecture. A top-down approach to enterprise architecture development is common in federal systems. Federal enterprise architecture frameworks contain guidelines and baselines along with maintenance and control features (Löhe & Legner, 2014). Stakeholders may benefit from an enterprise wide solution to IT projects.

Several aspects of IT project management encompass the overall IT strategy. Enterprise architecture framework is essential for strategic alignment and IT implementation (Simon, Fischbach, & Schoder, 2014). Corporations that implement enterprise architecture management benefit from reduced operating expenses and better project performance. One of the reasons enterprise architecture management has failed in

the business community is because firms implement it at the operational level as opposed to the strategic level of the organization. Simon et al., suggested that corporations can benefit from introducing enterprise architecture management throughout a firm not just in the IT department.

Enterprise architecture is a foundational part of an IT network. Simon et al. insisted that enterprise architecture management extend beyond the day-to-day operations of the business but rather is a tool to assist in strategy formulation. Enterprise architecture management is a competitive strategy with several components that include a value chain strategy and a production or service strategy (Simon et al., 2014). Furthermore, Simon et al., advocated for the use of enterprise architecture management to develop a graphical representation of the strategic impact of business units. Enterprise architecture management could benefit from a formalized framework to implement enterprise architecture management (Simon et al., 2014). Overarching solutions may provide the framework reduce the instance of IT project failure.

Enterprise architecture management helps to align the strategic goals of an organization. Aier (2014) shared that the use of enterprise architecture management is increasing for firms that are seeking strategic alignment. Organizational culture has a significant impact on the implementation of enterprise architecture management. According to Aier, firms should extend enterprise architecture management beyond information systems.

An organization's culture experiences a certain inertia that presents a resistance to enterprise architectural principles. Also, Aier found that a firm's culture could influence

enterprise architectural principles. One reason for this influence is that enterprise architecture principles curtail the ability of members to act freely. Enterprise architecture principles have encountered resistance to its fundamental standards and procedures. Because of the variety and organizational cultures, implementing an enterprise architecture model requires a customized approach to achieve success (Aier, 2014). Firms have to contend with strategies of architecture management as well as developing strategies for project status reporting.

**Project Status Reporting**

Project status reporting is a fundamental requirement for project management. To help the U.S. Government representatives combat failed projects, some defense contractors report cost estimates and actual costs to comply with Department of Defense Instruction 5000.2 by submitting Cost Performance Reports and Cost/Schedule Status Reports when required (Christensen, 2015). Some defense contractors utilize these reports to document cost management mechanisms along with enabling Government monitoring of cost. Contractors often report their estimate at completion of the project for Government review based upon an analysis of the actual cost of work performed versus the budgeted cost of work performed (Christensen, 2015). Government and Contractor Program Managers use this analysis to evaluate if the project will experience a cost overrun or cost underrun. Despite the rebuke of Defense Department Leadership, that this type of problem remains pervasive among defense programs (Christensen, 2015). Program managers must resist the inclination to exclude unfavorable analysis when they are advocating on behalf of a particular project.

The subjective nature of some reporting elements contributes to accuracy concerns and misreporting. Project reports typically include information about cost, time, functionality, quality, and overall project status of planned versus actual performance (Keil, Smith, Iacovou, & Thompson, 2014). Status reports seldom include fault responsibility and failure impact. Keil et al. supposed that project managers misreport due to the project manager's reluctance to present bad news to executives. Both a perceived positive and negative organizational climate contributed to the manipulation of reports or misrepresentation of projects. A survey of some 56 project managers revealed that 60% of their reports were biased towards optimistic reporting (Keil et al., 2014). Project managers exhibiting high-risk taking behavior misreported more often than risk adverse project managers with a positive career trajectory (Fabricius & Buttgen, 2015; Keil et al., 2014). Organizations with stringent integrity rules experience less misreporting than organizations with less stringent rules (Keil et al., 2014). Accurate project status reporting may result in more precise leadership resolutions.

Some government project managers exhibited a reluctance to report unfavorable project information. Keil et al. utilized data from a study sponsored by an IT oversight board to study project status reporting on nine IT projects. At the onset of the study, eight of the projects preceded as planned and project managers considered only one of the nine projects a challenged project. Some project managers responsible for project reporting used to number of techniques to misreport or misrepresent project status (Keil et al., 2014). One technique used by some project managers was to only report scheduled slippages and omit what caused the schedule slip (Keil et al., 2014). Other evidence of

reluctance to report unfavorable information included creating additional phases of project work to disguise the unfinished elements of the project (Keil et al., 2014).

Some project managers avoid reporting unfavourable project status information, and others have found scapegoats for poor performance. Fulk, Kwun, and Alijani, (2013) analyzed the use of scapegoating by project managers to transfer blame for less than optimal project outcomes. Fulk et al. found that scapegoating as both a human element and a technological element for transferring blame for failed projects. Executive and project level personnel utilized a form scapegoating to assign blame for failed projects (Fulk et al., 2013). IT projects have several phases and the prelude to project failure often occurs during the planning phase.

Poor estimating contributes to poor project performance, and project estimating has evolved throughout the years. In a 1992 survey of 115 IT professionals, 84% responded that estimation of projects is moderate to very important and 20 years later 88% of respondents said proper estimation is very important (Nelson & Morris, 2014). Factors that hamper accurate estimation include product reliability, platform idiosyncrasies, and the level of competency of team members (Gourabi & Khalilpour, 2014; Narayanaswamy, Grover, & Henry, 2013). Also, Sample (2015) introduced the concept of planning fallacy, which is a tendency to underestimate the time required to complete a project as a contributing factor to failed projects. Biased decision-making and optimism contributed to planning fallacy (Christensen, 2015; Sample, 2015). Because of pressure for limited taxpayer dollars, it is common for project managers to submit a biased forecast in favor of the benefit and cost at completion (Christensen, 2015). Also,

Sample opined that there are occasions when estimators offer deceptive forecasts for a variety of reasons including competing for scarce funding. In addition to the planning fallacy, Sample shared what he called the *Concorde Fallacy* in that flawed projects continue based upon the vast amount of resources already exhausted. Subsequent re-forecasting may continue the flaw by anchoring on the original flawed forecast.

Project managers and projects would benefit from better estimating techniques. Nelson and Morris (2014) used the Standish Group's 2004 survey data that estimated that 59% of projects overrun costs estimates. Gourabi and Khalilpour (2014) a new hybrid software cost estimation model that relies on harmony search algorithm and the genetic algorithm. Test of their hybrid model on 60 NASA projects revealed a lower error rate than the historically used constructive cost model (COCOMO) (Gourabi & Khalilpour, 2014). Accurate cost estimation helps project managers prioritize critical task (Gourabi & Khalilpour, 2014; Nelson & Morris, 2014). The consultation technique of project estimation involves the software development team to derive an estimated completion date (Jahr, 2014). Additionally, Gourabi and Khalilpour lamented that cost estimation for software projects are disadvantaged because of sparse details concerning the project or even the product.

The U.S. Department of Defense's history is replete with cost overruns and suppressed engineering change proposals because program managers fail to report bad news to leadership (Christensen, 2015). In reviewing the files of 64 defense acquisitions both completed and canceled programs, Christensen (2015) discovered testimony that project managers withheld pessimistic projections from leadership. Advocates of several

programs maintained an optimistic sense even when faced with contrary evidence and challenged projects (Sample, 2015). Project managers have several reasons for their reticence to report pessimistic estimates including program advocacy, career self-interest, and that cost overruns are recoverable (Christensen, 2015; Sample, 2015). The success of a project depends upon the skill and competence of the project manager.

**Project Manager Competency**

Project manager competency involves a combination of soft skills and the ability to utilize project management tools and techniques. Remer and Ross (2014) posited that project management certification would help increase the success rate of project management. More government agencies require some form of project management or engineering certifications (Remer & Ross, 2014). Several organizations offer project management and engineering certifications. The Project Management Institute and the International Project Management Association are two certifying organizations in project management (Remer & Ross, 2014). The certifications include a certified associate in project management, project management professional, program management professional, portfolio management professional, agile certified practitioner, organizational project management maturity model professional certification, and risk management professional (Remer & Ross, 2014). The United States based Project Management Institute is the largest association of project management credentialing professionals. The International Organization for Standardization accredits the Project Management Institute (Remer & Ross, 2014). Practitioners refer to The Guide to the Project Management Body of Knowledge (PMBOK Guide) as the standard for project

management consensus (Brioso, 2015). Communities of practice can build influence over time and helped shape specialties through knowledge sharing (Lee, Reinicke, & Anderson, 2015). Along with adherence to standards and implementing best practices, project leadership is critical for project success.

Leadership styles that lead to project success within continuous operations present challenges for temporary undertakings (Joslin & Muller, 2015; Obeidat & North, 2014). Typical projects have a unique scope and finite duration. Also typical of projects is that project teams are temporary and consist of cross-functional experts (Zhou, Cheung, & Hsu, 2017). Partial causality of the high failure rate of IT projects is a lack of team cohesiveness among other factors including staffing shortages (Narayanaswamy, Grover, & Henry, 2013; Zhou et al., 2017). Some project managers utilize a high relationship approach to unique task and knowledge intensive IT projects. Project managers must ensure that team member effort aligns with the project goals and objectives by balancing leader and manager roles (Narayanaswamy et al., 2013; Obiajunwa, 2013). The temporary nature of projects may be a challenge some leadership styles.

Project managers would benefit from employing proven management techniques reduce project failure rates. The Standish Group (2013) shared that 43% of IT projects failed in areas of time, cost, and function. Obiajunwa (2013) studied 160 facilities through six case studies to ascertain the required skills to make failed projects successful (Obiajunwa, 2013). Of the required skills, Obiajunwa (2013) found that management skills, leadership skills, conflict resolution, planning, organizational skills, and time management skills are among the project management skills that correlate to successful

projects. The improvement of project management soft skills may reduce the rate of project failure (Burstrom, Jacobson, & Wilson, 2014; Medina & Francis, 2015; Trejo, 2014). A project manager's leadership acumen, problem-solving ability, and communication skills are more of a predictor of project success than project management knowledge alone (Zhang et al., 2018). Project managers may experience an increase in successful IT projects by practicing proven leadership techniques.

The project management processes undertaken to execute a project are basic and defined. Simply following project management processes has not produced overwhelming project success (Steinfort, 2017). Interpersonal skills and leadership acumen increase the likelihood of project success (Matthews & McLees, 2015). Project owners often call upon project managers to expertly lead, facilitate, and communicate project elements and as such, project managers must master each of those skills (Hornstein, 2015; Medina & Francis, 2015). Due to the temporary nature of projects, project managers seldom benefit from training and development programs within an organization (Ekrot, Kock, & Gemunden, 2016; Medina & Medina, 2014). Effective project managers display competency with soft skills that lead and motivate their project teams (Redick, Reyna, Schaffer, & Toomey, 2014). Project managers may find success practicing a variety of leadership techniques.

Project management often requires a unique project leadership. Project actors converge on a particular space in which project managers orchestrate a distinct project rhythm (Packendorff, Crevani, & Lindgren, 2014). The traditional leadership definition encompasses the act of influencing the activities of groups (Packendorff et al., 2014;

Redick et al., 2014). Leadership has a social component when viewed from a project management perspective of leading project teams (Narayanaswamy et al., 2013). Personal values, cognitive style, orientation towards change, and core self-evaluation are elements helps to predict the effectiveness of project leadership. A leader who exercises effective communication skills at all levels of stakeholder management enhances project leadership (Narayanaswamy et al., 2013; Ambrose, Eadson, & Pinder, 2016). Effective project managers ensure project teams evolve through all stages of team development, which include forming, norming, storming, and performing (Redick et al., 2014). Adept execution of soft skills may result in an increase in project performance.

Employee turnover has harmful effects on a project success. The retention of key personnel can foster increased competitiveness over time (Ekrot et al., 2016). The instance of project-oriented firms is growing, and project manager competency is necessary to achieve competitive advantage (Ekrot et al., 2016). Developmental programs help to aggregate experience in strengthen the firm's competency and retention of employee (Ekrot et al., 2016). Training and development programs within organizations help to reduce employee turnover.

Project members lend their talents and skills to the project team. Some project team members use the temporary nature of projects as an opportunity to hone new skill sets (Medina & Medina, 2014). The onus is upon the project leadership to utilize all skill sets to further the firm's competence advantage. Medina and Medina (2014) found that project-oriented firms are increasingly advocating career development as a component of competence management. A firm's competence and the ability of the firm to leverage its

competence is a component of competitive advantage. Corporations can benefit from developing mechanisms to identify competency, conduct competency assessment, actively seek competence acquisition, and effectively employ its hand competence (Medina & Medina, 2014). Along with developing skills pertinent for the project, ensuring the projects align with organization goals also instrumental to project success.

**Project Alignment**

Project alignment with organizational strategy is conducive to project success (de Souza Pinto, Novaski, Anholon, & Carpim Besteiro, 2014). Misalignment between corporate strategy and projects is a common pitfall threatening project success. Project managers view agility and flexibility within project management as critical to organizational performance (Iyer & Banerjee, 2016; Muller & Martinsuo, 2015). Some firms have organized into project-oriented organizations to accommodate agility and flexibility within project management (Medina & Medina, 2014). Some project-oriented organizations routinely fail to meet expectations because project oriented organizations rely solely on a customer focus as opposed to aligning projects based upon the organization's strategies (Medina & Medina, 2014). Project-oriented organizations have difficulty in developing key performance indicators that leverage organizational competencies to ensure success (Iyer & Banerjee, 2016). Cohesive project alignment helps to ensure project success.

Measuring project performance is central to project management. Project managers that select the proper key performance indicator to determine operational results for a key metric focused upon goal attainment (Isaac & Navon, 2014). Key

performance indicators typically indicate the results of the cost or time of variance (Isaac & Navon, 2014; Iyer & Banerjee, 2016). Key performance indicators also depict current project value to the stakeholders and clients. These performance indicators have characteristics that are traceable, verifiable and help to shape the measurement of a project's progress. Key performance indicators help to ensure accountability through measurement (Isaac & Navon, 2014). Project managers must ensure that the key performance indicators are relevant to the project and relevant for the stakeholders. Project managers and stakeholders alike should select key performance indicators during the initial stages of project and throughout the project lifecycle to monitor the health and progress of the project (Isaac & Navon, 2014; Iyer & Banerjee, 2016). Project managers monitor performance indicators and project alignment throughout the project execution phase of a project.

**Project Execution**

Schedule completion and adherence to budgets occur during the project execution phase. Wood (2013) analyzed the results of a survey of 73 Senior Defense Acquisition Program Managers to examine concerns about project schedules. Tradeoffs typically affect the overall balance of a project. Program managers often evaluate trade-offs while executing projects, and in some projects, deliver only two elements of the Iron Triangle per the requirements (Wood, 2013). The tradeoff is between scope, schedule, and budget; in tradeoffs, the project manager challenges or abandons one of these elements. Project managers may reduce features to reduce the challenge of a cost overrun; if the schedule slips then the cost may increase; if the scope changes, then both the cost and the schedule

may be negatively affected (Laslo & Gurevich, 2014). Some project managers exercise a variety of techniques to assure schedule completion.

Adjusting development cycles is one technique that reduces schedule completion time. Some IT project managers opt for shorter develop periods in combating inflating project costs (Aier, 2014). The shorter development periods allowed project managers to take advantage of technology improvements and provide less pressure for scope changes as technology improves (Aier, 2014; Wood, 2013). Project managers use shorter development cycles to insert mature technologies into programs thoughtfully as opposed to adding an ad-hoc feature during production. Shorter development cycles may provide an opportunity to stabilize project funding throughout the development cycle as well (Wood, 2013). Leaders in the U.S. Defense Department are making strides in combating schedule and project acquisition challenges by changing oversite methods, improving requirements gathering, and enhancing testing requirements (Wood, 2013). Requirements gathering, and realistic testing is part of the IT project management approach.

**IT Project Management Approach**

There are several methods use to manage IT projects. One of the most used methods for IT project management is the waterfall method; another is the agile method (Pass & Ronen, 2014). The waterfall method is a much more structured development method when compared to the agile development method (Cram & Brohman, 2013). The traditional waterfall development method is a sequential technique moving between phases of the development cycle (Cram & Brohman, 2013). The waterfall development technique encompasses a requirements analysis phase, design phase, testing and

implementation phase into completion and delivery (Cram & Brohman, 2013). Key stakeholders in the waterfall methods are typically involved in the preliminary steps of the requirements phase and rarely are customers involved during the development stage (Cram & Brohman, 2013). Another characteristic of the waterfall development method is the duties of project team members are more rigid than with the agile development method (Cram & Brohman, 2013). In the waterfall development method, the development teams are somewhat larger than the teams used in the agile development method (Matook & Maruping, 2014). Project Managers typically select the Waterfall development method when the project is more product oriented as opposed to process driven. IT project managers often utilize the waterfall development method when software requirements are stable (Cram & Brohman, 2013). IT project managers use both the agile and the waterfall method to execute IT projects.

IT project managers rely upon several methods to manage IT projects. Respondents to a survey that spanned several continents and many large corporations reported using different methods of development including waterfall, agile, and a hybrid approach (Cram & Brohman, 2013). The survey data revealed a link between the development approach and the control objectives of the project such as speed versus quality (Cram & Brohman, 2013). Matook and Maruping shared that one of the problems with the waterfall development method is the time lapse between development and testing. Additionally, Cram and Brohman concluded that organizations chose the highly structured waterfall method more often than the agile method when product and preventative control is the project emphasis. Some projects require shorter more agile

development cycles, which are not suited for the waterfall development method (Matook & Maruping, 2014). The agile development method includes unique development techniques.

The agile method of software development relies upon iterations periods called sprints, which project managers and software developers utilize to make corrections regarding customer requirements (Bhoola & Mallik, 2014; Alaa & Fitzgerald, 2013). Matook and Maruping (2014) lend support to using agile development models when requirements are fluctuating. The agile methodology has many attributes including speed, flexibility, and simplicity (Matook & Maruping, 2014). The agile method is a conglomerate of management devices including Scrum, which managers use to facilitate software development and collaboration (Bhoola & Mallik, 2014; Jahr, 2014). The use of agile project management allows for greater flexibility and adaptation of customer requirements. The agile method is coding centered as opposed to requirements development centered (Bhoola and Mallik, 2014). Four factors are critical in agile development, which include project uncertainty, completion urgency, team capabilities, and organizational control (Alaa & Fitzgerald, 2013). Agile project development has several benefits including stakeholder visibility, reduced time-to-market, and less cost than traditional software development methods (Alaa & Fitzgerald, 2013). Project managers utilize the agile method for software development in more than 14% of IT projects (Alaa & Fitzgerald, 2013). Some successful project managers utilize the agile development method.

The agile development method differs from the waterfall method in several aspects. Tanner and Mackinnon (2015) contrasted agile software development methods with the traditional waterfall approach in that traditional software development approaches were deficient in coping with changing stakeholder demands. One disadvantage of traditional software development approaches is that clients rarely engage the team during development and as a result projects fail to satisfy stakeholders (Rajablu, Marthdndan, & Yusoff, 2015; Tanner & Mackinnon, 2015). A mechanism within agile software development allows for regular client meetings that review both schedule and project requirements (Tanner & Mackinnon, 2015). Project managers and business analysts capture user stories help guide the development efforts of the IT team and the user stories depict the operational software needs of the users (Jahr, 2014). Also, within the agile methodology, clients could change requirements at the beginning of each sprint (Tanner & Mackinnon, 2015). Choosing the correct software development methodology can result in project development success (Alaa & Fitzgerald, 2013; Jahr, 2014). Project managers chose the development style that is suitable for their project.

Both the agile software development method and the waterfall development method have techniques that provide support for successful IT project management. Critical of project managers for overseeing failing IT projects, Keith, Kemirkan and Goul (2013) suggested a hybrid approach to increase project success rates. Teams that practice agile development, manage risk on a short-term basis whereas teams utilizing traditional software development approaches may not recognize project risk during in the short-term (Fabricius & Buttgen, 2015; Jahr, 2014; Keith et al., 2013). Agile methodology has the

advantage of least cost with combating risk within project requirements (Keith et al., 2013). Project managers achieve project success by utilizing both the waterfall and agile development method, but some project managers use a hybrid approach to cope with the serialized and reciprocal interdependence aspect of development (Bhoola & Mallik, 2014; Cram & Brohman, 2013; Keith et al., 2013). Project managers that employ the hybrid approach may realize the benefits of both methods.

**Scope Management**

Rigorous scope management is a prelude to successful IT project management. Hajiagha et al., (2015) uses the term *the Iron Triangle* to help describe the elements necessary for project success. A successful project is one that attains the requirements and meets cost constraints within the allotted timeframe (Hajiagha et al., 2015). Some project managers experience stakeholder influences that require them to reduce overall project completion time (Spalek, 2014; Sample, 2015). Project managers and project owners use the project scope to solidify expectations (Spalek, 2014; Sample, 2015. A granular work breakdown structure and an organizational breakdown structure help to eliminate ambiguous requirements (Allen, Alleyne, Farmer, McRae, & Turner, 2014; Xu, Ming, Song, He, & Li, 2014). Project managers often resist morphing project requirements during project execution (Xu et al., 2014). Project managers that practice scope management may avoid scope creep.

An agreed upon project scope is paramount to a successful project. Uncertainty contributes to scope creep and cost overruns during project execution (Georgiadis et al., 2014; Hassan, Ahmad, & Zuhaira, 2018). Project complexity, degree of complication,

product dynamics, team diversity, lack of focus, and cumbersome organizational structure contribute to project uncertainty (Browning & Ramasesh, 2015; de Souza Pinto et al., 2014). The project management plan is the most important tool to ensure project execution within scope (Allen et al., 2014). Project managers maintain scope discipline by insisting on a change control process. Scope management is delicate when organizations are customer focused (Hassan et al., 2018). Firm standards and process guidelines help foster project success (Allen et al., 2014; Browning & Ramasesh, 2015). Persistent scope management helps to a stabilize a project.

Project managers provide the stability by adhering to the project scope. Laslo and Gurevch (2014) posited that projects become challenged in unstable environments when dealing with change orders, and faulty work estimates. Successful project management incorporates stringent organic coordination along with exhaustive controls and monitoring (Laslo & Gurevch, 2014). A granular work breakdown structure and an organizational breakdown structure help to eliminate ambiguous requirements (Allen et al., 2014). Project managers often choose between time and cost with time being the predominant decision point (Wood, 2013; Sample, 2015). Project managers reduce and redistribute workloads, adjust activities, and realign budgets to meet time targets (Laslo & Gurevich, 2014). Project managers should anticipate and beware of the effects erroneous information if they choose to accelerate tasks that are along the critical path of a project. Spalek (2014) offered that project managers search for efficiency within the project triangle of time, budget, and scope. Project managers utilize nimble information systems and project controls in decision-making throughout the project lifecycle (Laslo &

Gurevich, 2014). Project managers must select suitable project controls to aid in project monitoring and controlling.

**Project Monitoring and Controlling**

Monitoring and controlling projects is essential to ensure that project teams complete schedule tasks on time and within budget. Hajiagha et al., (2015) considered any task throughout an organization a project that requires coordination and control. Project managers utilize both formal and informal monitoring and controlling techniques to execute projects (Xu et al., 2014). Many stakeholders rely on monitoring and controlling tools and techniques to assess project compliance (Isaac & Navon, 2014; Xu et al., 2014). Elements within a project have unique success criteria which may affect positively or negatively on the overall time cost and quality constraint for the project (Hjiagha et al., 2015). Some project managers utilize the Gantt chart to plan task needed to complete a scheduled project. Schedule deviations are sometimes difficult to capture during project execution. Repeatable tasks are easier to monitor and control when compared to task that are highly variable. Highly variable tasks required greater intensity for monitoring and controlling project execution (Isaac & Navon, 2014). Appropriate project monitoring and controlling helps to inform project stakeholders.

**IT Stakeholder Management**

Project stakeholders have varying degrees of influence on project execution. Project managers define a stakeholder as any entity that has an interest in the project (Rajablu et al., 2015). Many stakeholders measure project performance by evaluating if project team completed the project on time, within budget and scope. Stakeholders should

consider carefully the features required for any product or service as features directly correlate with cost, schedule, and quality (Georgiadis et al., 2014). Project managers could eliminate *Gold Plating* during requirements gathering which reduces budget and schedule pressures throughout the project (Narayanaswamy et al., 2013). Stakeholders often redesign project features before the project start and often project managers are less committed to executing projects when project features are not certain (Georgiadis et al., 2014). The decision maker's involvement is critical to project success when determining project features (Georgiadis et al., 2014; Xu et al., 2014). Project managers have better control over schedule completion when a high commitment power is present (Georgiadis et al., 2014). Some project managers demonstrate project commitment by developing an understanding of the client's needs.

Adroit stakeholder management incorporates relationship building. An intimate understanding of a client's business needs requires a measure of trust within the relationship (Rajablu, Marthdndan, & Yusoff, 2015). Muller and Martinsuo (2015) advanced the idea that it is critical to IT project success that the vendor has a thorough understanding of the client's needs as well as the client's operations. The psychological expectations between vendors and clients include values such as trust, reliability, and openness (Muller & Martinsuo, 2015). Vendors help to create value by cultivating working relationships with clients. Project teams develop relationships norms that are at times informal and feature information sharing as the quality of the relationship endures (Muller & Martinsuo, 2015; Rajablu et al., 2015). Firms can achieve long-term business success from the project level by developing an understanding of client needs and their

business objectives (Muller & Martinsuo, 2015). Trust is a building block for customer satisfaction and project success. Rigid adherence to organizational policies and procedures can have a negative impact on building trust between vendor and client (Muller & Martinsuo, 2015). Relationship management may help to increase levels of trust among stakeholders.

Project managers the world over experience the influence of stakeholders on project execution. Rajablu et al., (2015) issued a survey to members of the Project Management Institute, the United Kingdom Association for Project Management, and the Australian Institute of Project Management. After analyzing 258 results Rajablu et al., (2015) concluded that stakeholder management has a positive effect on project outcomes. Project managers execute projects to create value and bring ideas to fruition, and stakeholders have a substantial influence on those project outcomes (Tanner & Mackinnon, 2015). Many stakeholders are entities outside of the project manager's authority and control (Fulk et al., 2013). Frequent and purposeful communication facilitates information sharing, requirements analysis, and provides an opportunity for the project manager to set stakeholder expectations (Browning & Ramasesh, 2015). An effective working relationship between the project manager and stakeholders can lead to project success and is a critical success factor in IT project management (Allen et al., 2014). Identifying all stakeholders in the planning phase of the project helps to ensure project success (Allen et al., 2014; Tanner & Mackinnon, 2015). Properly identifying all project stakeholders helps to reduce project risks.

**Risks Taking**

Project risks can take many forms. Project managers reduce unknown unknowns through active research (Browning & Ramasesh, 2015). In addition, Browning and Ramasesh advocated dissecting projects into sub systems or project domains to recognize each unique risk characteristic as well as their relationships. Project uncertainty contributes to the high rate of project failure (de Souza Pinto et al., 2014; Fabricius & Buttgen, 2015). The complicated nature of many projects along with the uncertainty of requirements causes scholars to question the effectiveness of the traditional project management approach (de Souza Pinto et al., 2014; Georgiadis et al., 2014). Project managers often encounter difficulty in identifying project complexity. For IT projects, project managers are encouraged to review the project scope, deliverables, and other influences on project to determine the project complexity (de Souza Pinto et al., 2014). Robust risks assessment may contribute to project success.

Scope changes to complex projects add to project risks. The frequency and scope of changes add to the complexity and uncertainty of a project, and some project failures are associated with project complexity and uncertainty (de Souza Pinto et al., 2014; Alami, 2016). In addition to the changes, project size, project framework, and the technology employed can contribute to project uncertainty (de Souza Pinto et al., 2014; Fabricius & Buttgen, 2015). After analyzing survey results from 38 firms, de Souza Pinto et al., (2014) concluded that the number of organizations involved in the project contributed to project complexity, and the lack of clarity with cost or budget contributed to project uncertainty.

Project managers perform risk assessment with varying degrees of success. Fabricius and Büttgen (2015) observed the behavior of 204 project managers to analyze use of risk assessment. Overconfidence often manifests in unwarranted risk-taking and inadequate risk avoidance (Fabricius & Buttgen, 2015). Overconfidence by the project manager leads to a more optimistic project schedule, and that overconfidence reduces risk awareness (Keil et al., 2014). Both public and private sector project managers tend to have overly optimistic views during project planning (Fulk et al., 2013). Poor risk assessment contributes to the high failure rate of projects (Fabricius & Buttgen, 2015; Fulk et al., 2013). While lack of risk planning contributes to project failure, researchers have found that proper risk management procedures lead to more successful project outcomes (Fabricius & Buttgen, 2015). Utilizing risk management processes may increase project success.

**Success Factors**

For decades, the project management community relied upon the achievement of time constraints, cost constraints, and the agreed upon scope as the basis for project success. Critical success factors encompass efforts required to accomplish the goals of the project (Allen et al., 2014). Muller and Martinsuo (2015) uncovered several definitions of project success but rely on time, cost, quality, and in user satisfaction as a guide that for project success. Muller and Martinsuo advanced the emerging thought to include long-term project viability and user satisfaction into the discussion on project success criteria. There are five areas concerning customer satisfaction, which are reliability, responsiveness, assurance, empathy, and tangibles (Burstrom, Jacobsson, &

Wilson, 2014). There appears to be a correlation between customer satisfaction and effective project management.

## Rationale and Potential Impact of This Study

### Project Outcomes.

Successful IT project management requires the development of tools and techniques to meet stakeholder expectations. Browning and Ramasesh (2015) acknowledged that the planning stages are where project managers learn of the outcome requirements for a successful project. For nearly three decades, project managers utilized prognostication tools to help assure successful projects. Yet, in a 2012 study of 5,400 IT projects, more than 2,430 of these projects were over budget (Costantino, Di Gravio, & Nonino, 2015). The pace at which technology develops contributes to the IT project challenge. Project success is contingent upon technical and organizational factors. An increase in standards along with product features and evolving customer requirements continue to challenge project success (Gingnell, Franke, Lagerstrom, Ericsson, & Lillieskold, 2014). The rationale of this study is to contribute to the successful completion of IT projects.

Additional factors that contribute to project success include experienced team members, adequate provisioning, establish procedures and expectations, adherence to monitor and control protocols, and applying lessons learned throughout project execution (Gingnell et al., 2014). Improper project alignment within the corporate portfolio contributes to IT project failure (Costantino et al., 2015). The insufficient implementation of project management concepts such as planning, organizing, controlling, and leading

contributed to project failure. Poor project controls also contributed to project failure. Ineffective project monitoring too contributed to project failure. Lack of a thorough understanding of new and emerging technology contributed to project failure (Gingnell et al., 2014). The potential impact of this study is to contribute to an increased awareness and exercise of critical success factors.

Project owners of IT projects in recent history have scuttled projects wasting billions of dollars in the process due to failed projects. In 2011, leaders in the US Defense Department oversaw IT projects that were $7 billion over budget (Keil et al., 2014). Moreover, Keil et al., (2014) discovered that many IT projects finished over budget 45% of the time and deliver only 44% of their projected value (Keil et al., 2014). Project failure is manifest in issues such as schedule slip, scope creep, and exceeding budgets (Alami, 2016). Given the history of failed IT projects, project managers should master tools and techniques that predict troubled projects to prevent project fail (Klakegg & Lichtenberg, 2016). Delays in recognizing and processing risk information to project execution has led to eliminating schedule slack and even schedule slip resulting in a failed project (Chen, 2015). Recognizing project failure in real time is a difficult realization for many project teams.

Some project management missteps contribute to IT project failure. Inaccurate status reporting contributed to cost overruns in IT projects (Keil et al., 2014). Scheduling is critical for on-time project completion as well as project control (Wood, 2013). Seventy-Three Senior Defense Acquisition Program Managers responded to a survey indicating that 96% of managers strongly agreed that an integrated master scheduled is

critical to project execution. Only 56% of the respondents believed that their integrated master schedule was realistic and achievable (Wood, 2013). A pitfall of project management is over-optimism with the initial project schedule. Flawed initial schedules spawn project challenges due to and the lack of project resources to compensate for overly aggressive project schedules (Wood, 2013). Another order of effect for a flawed initial schedule is that the project team then shapes their efforts to execute this flawed notion. A lack of realism within the initial project schedule contributed broadly to cost overruns (Wood, 2013). Avoiding scheduling pitfalls may help to increase project success.

## Transition

Section 1 contains the problem and purpose statement, and the nature of the study that aligns with a multiple case study design. Section 1 also includes (a) a research question and interview questions, (b) a conceptual framework, (c) operational definitions, (d) assumptions, limitations, and delimitations, and (e) the significance of this study. Section 1 concluded with a comprehensive review of professional and academic literature regarding the topic of IT project management. The literature review included scholarly research from peer-reviewed sources highlighting IT project failure and the success features for IT project management.

Section 2 will include: (a) a restatement of the study purpose, (b) the role of the researcher, (c) a section on the participants in the study, (d) a description of the research method and design, (e) the population sampling, (f) ethical research, (g) data collection, and analysis, and (h) reliability and validity. Section 3 will include: (a) the findings of

this study, (b) a discussion of the application to professional practice, (c) the implication for social change, (d) recommendation for action and further research, and (e) a reflection of my experience with the research process.

Section 3 will include an exhaustive analysis of the study findings associated with thematic analysis that supports the outcome. Section 3 also includes a recommendation for business leaders to improve the practice of business along with a recommendation for social change. Additionally, section 3 includes recommendations for further research.

## Section 2: The Project

### Purpose Statement

The purpose of this qualitative case study was to explore strategies IT project managers use to reduce cost overruns and improve on-time delivery. The targeted population consisted of project managers from 60 firms located in the Maryland area with demonstrated experience supporting U.S. DoD IT projects between 2012 and 2017. The IT project managers I selected to participate have demonstrated experience with strategies that reduce cost overruns and improve on-time delivery. The implication for positive social change is that successful projects deliver feature benefits for all IT project stakeholders, and the cost savings associated with successful projects increase the amount of funds available for social programs.

### Role of the Researcher

Researchers rely on significant input from multiple sources to develop and collect data. In case study research, the researcher is the primary data collection instrument (Pezalla, Pettigrew, & Miller-Day, 2012). I performed the data collection and analysis for this study. I have had the privilege of executing IT project management in the Maryland area. I am familiar with some of the U.S. Army customers and some of the firms that execute IT project management. I am also familiar with the pitfalls highlighted in the literature review, and it is possible that the participants had encountered some of those pitfalls as well. The participants in this study were a mixture of IT project managers introduced to me through business acquaintances and volunteers from organizations that provide IT project management in the Maryland area. The region of the country where

the study took place is home to one of the largest U.S. Army software engineering centers. I provided each participant an informed consent form, which they read and signed before participating in this study. Informed consent and participant anonymity are pillars of human subject inquiry (Nijhawan et al., 2013). The protocols and ethical standards outlined in the Belmont Report (1979) are the foundation of this study. The human subject research guidelines provided by the Belmont Report outlined respect for persons, beneficence, and justice (Fiske & Hauser, 2014). The consent form aligned with the disclosure guidelines of the Belmont Report (U.S. Department of Health and Human Services, 1979).

According to Yin (2014), preconceived notions are difficult for researchers to avoid. Simundic (2013) suggested that researchers design studies with an honest approach to inquiry that is transparent and forthcoming to avoid researcher bias. In addition, Berger (2015) cautioned that a researcher's prior knowledge may influence data collection, coding, and overall analysis. Scholars such as Yin (2014) and Berger (2015) urged researchers to minimize bias. To help reduce bias in data collection, I relied on observations from the literature review to develop the initial interview questions and on member checking.

Yin (2014) advised that researchers should develop interview protocols to maintain uniformity during interviews and to mitigate biases. I used the interview protocol in Appendix B to maintain consistent delivery of the initial interview questions. I used findings from the literature review on IT project management to develop the interview questions. The participants reviewed the research questions prior to the

interview so that each understood the nature of the inquiry. An important aspect of this study was to ensure the consistency of experience. Participants shared a measure of IT project management experience in the Maryland area (Platt & Skowron, 2013).

## Participants

With the low success rate of IT project managers, locating viable participants required multiple search efforts. Palinkas et al. (2013) advised researchers to use purposive sampling to select participants who have experience with the research question. I selected participants with a proven IT project management strategy to reduce cost overruns and improve on-time delivery. The population for this study was IT project managers who practice IT project management in the Maryland area. I selected participants from five IT related firms that met the eligibility criteria to participate in this study. To ensure that the participants shared relevant information, the selected participants possessed the requisite knowledge to effectively communicate the idiosyncrasies of the strategies they used (Faseleh-Jahromi, Moattari, & Peyrovi, 2014; Hayes, Bonner, & Douglas, 2013; Marshall & Rossman, 2016). Each individual that I selected had experience with IT project management and was able to demonstrate through their documentation the successful implementation of strategies to reduce cost overruns and improve on-time delivery.

To expedite the search for participants, scholars (Plummer & Simpson, 2014; Truong et al., 2013) have suggested that researchers find clubs and associations that the target participants regularly support. Additionally, online sources such as LinkedIn may help to develop a thorough business intelligence database of IT development firms within

an area (Close, Smaldone, Fennoy, Reame, & Grey, 2013). My strategy for soliciting participants was three-pronged in that I solicited participants from clubs and associations through their versions of community outreach services. I also searched online databases for IT firms within this area, and I asked business acquaintances for their personal knowledge of IT firms that may be willing to participate in this study.

Soliciting in-person interviews from strangers can be difficult. To establish a relationship with the participants, I planned face-to-face meetings to introduce myself and my intentions for this study. I sent an email with the consent forms, and I offered to comply with any of the firm's nondisclosure agreements and conduct the interviews at their chosen location. Establishing a measure of confidence and trust with the participant is vital in qualitative research (Byrne, Brugha, Clarke, Lavelle, & McGarvey, 2015; Gibson, Benson, & Brand, 2013; Halse & Honey, 2014). Along with developing a level comfort and trust with participants to facilitate interviews, helping them understand the research method and the design instilled confidence in the study.

## Research Method and Design

### Research Method

I explored three research methods—qualitative, quantitative, and mixed-methods—before deciding to use a qualitative method. The qualitative method of inquiry has tools and techniques to facilitate a detailed exploration of a phenomenon (Yin, 2014). Quantitative researchers analyze instances of data and present their analyses in statistical format (Yin, 2014). The quantitative method was not appropriate for this study because it is a method researchers use to test a hypothesis. The quantitative method of inquiry, in

this instance, lacked the required depth of inquiry that researchers achieve through clarifying questions (Mathur et al., 2013). A mixed method study incorporates elements of both qualitative and quantitative methods (Chiang-Hanisko, Newman, Dyess, Piyakong, & Lieher, 2016; Yin, 2014). A mixed method is an instrument to assist with examining an organizational problem quantitatively and exploring solutions qualitatively (Chiang-Hanisko et al., 2016). A mixed method was not appropriate for this inquiry because I sought only to explore the strategies that the participants have mastered to reduce cost overruns and improve on-time delivery. The qualitative method was the best choice to foster a deeper exploration of a phenomenon (see Yin, 2014).

**Research Design**

Several research designs enable sufficient inquiry. A case study design of has tools and techniques to explore a phenomenon within a real-world context and the confines of the manifest phenomenon (Yin, 2014). Researchers use case study design to gain an understanding of the nuances of a phenomenon (Yin, 2014). The multiple case study design has embedded inquiry techniques used to explore participant experiences from multiple firms within a like industry (Yin, 2014). The multiple case study design was appropriate in this study because participants shared the strategies that they used to reduce cost overruns and improve on-time delivery.

Before deciding to use the multiple case study, I considered other designs. The phenomenological design has tools and techniques to explore the lived experiences of individuals associated with the phenomenon. The tools and techniques associated with the phenomenological design are appropriate to explore the unique lived experiences of

individuals, but project failure has become ubiquitous, so I did not select a phenomenological design for this study (Hajiagha et al., 2015; Yin, 2014). The ethnographical design has tools and techniques to explore and observe the group behaviors of a subset of a population (Liberati et al., 2015; Yin, 2014). An examination of the group behaviors of project managers would not suffice in a study to explore the successful strategies that some project managers use to reduce cost overruns and improve on-time delivery. A multiple case study design was the best choice for this inquiry because the structure is suited to explore participant experiences (Marshall & Rossman, 2016; Yin, 2014), and scholars such as Wynn and Williams (2012) supported the use of multiple case study design for technology research. Another element of qualitative research is data saturation.

I performed a thorough analysis of interview responses to determine data saturation. Data saturation occurred when participants shared no new information and no new themes emerged during follow-up interviews (see Fusch & Ness, 2015). I used follow-up interviews consistent with member checking to ensure that the data collected accurately reflected the participant's experience. Sousa (2014) noted that member checking helps to provide clarity for participant responses.

## Population and Sampling

I canvased a population of 60 IT related firms that execute DoD IT projects. The firms ranged in size from small companies of less than 500 personnel to large businesses with several thousand personnel. The target population consisted of various IT related providers executing IT project management within the Maryland area. The sample size

consisted of directors, project managers, software engineers, systems engineers, managers, and supervisors. I reduce the population into a smaller sample size of five firms from which to elicit information.

There is a variety of methods to conduct population sampling to facilitate research. Yin (2014) supported the use of purposeful sampling for specific participants who share relevant experiences about the research topic. I solicited participants by using criterion sampling. Criterion sampling is the deliberate dissecting of the population and selection of the specific participant attributes necessary to participate in the study (Palinkas et al., 2013). Criterion sampling involves selecting participants that possess a requisite expertise significant for contribution to a study (Palinkas et al., 2013). The predetermined criterion for this study only included firms that have successfully executed strategies IT project managers use to reduce cost overruns and improve on-time delivery.

The effective sample size varies for multiple case studies. Agarwal and Strubler (2013) reported that the sample size for a multiple case study should be sufficient to obtain data saturation. Marshall et al. (2013) suggested that five entities interviewed were sufficient for case study inquiry. This multiple case study encompassed the experiences of five firms with proven strategies to reduce cost overruns and improve on-time delivery. I selected five as the minimum sample size to gain data saturation (Agarwal & Strubler, 2013; Elo et al., 2014; Marshall et al., 2013).

Recognizing data saturation was a challenge. Liu et al. (2014) noted that data saturation occures when interviews and analysis were void of new information or themes. Additionally, Marshall et al., (2013) shared that data saturation occurs when findings

become redundant and when the findings are no longer statistically significant. To help ensure data saturation, Sousa (2014) advised that researchers use member checking until no new themes emerge. Data saturation, along with participant expertise, can enhance a study's findings. To achieve data saturation, I conducted interviews and follow-up member checking until no new information or themes emerged.

Participant interviews presented an opportunity for sharing experiences relative to the phenomenon under study. It was imperative that the participants attained a level of expertise with the topic of the study and a level of comfort with the setting for the interview (Byrne et al., 2015). The participants demonstrated their organization's strategies to execute IT project management to reduce cost overruns and improve on-time delivery. The interview locations were conducive to participant privacy and anonymity. The initial interviews took place primarily at the participant's workplace and similar venues to help foster a level of comfort. Follow-up phone calls were necessary to clarify ideas and themes with the participants.

## Ethical Research

Ethical research encompasses informed consent. The notion of informed consent helps to ensure that participants understand the nature of the study and the extent of their participation within the study (Akhavan et al., 2013). The informed consent document outlined the participant's ability to withdraw from the study at any time without any retribution. The consent form also outlined the purpose of the study, which helped to shape the participant's thoughts concerning their voluntary participation in the study (Doody & Noonan, 2013). Participants in this study signed the consent form prior to the

interview. I started conducting the interviews after receiving the Walden University Institutional Review Board (IRB) approval. The Walden University IRB approval number for this study is 12-11-17-0539229.

Participation in the study was voluntary, and no participant received a monetary incentive for his or her contribution to study. Participants were free to withdraw from the study at any point without fear of retribution. The participants were able to communicate their intent to withdraw in any manner they choose including in person, email, formal letter, or phone call. I am the only person to know the participants' full names and firm affiliation. Yin (2014) cautioned that participant anonymity is vital to case study research. Protecting the identity of participants is vital to research as well as the requirement to safeguard the research (Marshall & Rossman, 2016). To organize the in-person interviews I assigned each participant a random number and used P1, P2, P3, P4, and P5 as labels.

Naini et al. (2013) advised researchers to inform each participant of the need to safeguard the research. For no less than five years, I will safeguard the research data of this study on an electronic drive and keep it locked in a safe in my home. After five years, I will shred all documents that contain the identity of the participants along with deleting the recorded interviews stored on an external drive.

## Data Collection Instruments

Data collection during research hinges upon the methods and the instrument of data collection. The researcher conducting qualitative research is the primary research instrument (Fowler, 2013; Marshall & Rossman, 2016, Yin, 2014). I was the primary data

collection instrument for this study. The two primary methods for data collection used for this study were semistructured interviews to collect data, and member checking of participant responses. The semistructured interview technique helped to foster a dynamic response from the participants (Doody & Noonan, 2013; Elo et al., 2014; Marshall & Rossman, 2016). I inserted an abridged interview protocol in Appendix A of this study.

Concepts from the literature review guided the formulation of the questions that made up the semistructured interview. The participant interviews began with opened-ended questions, which allowed participants to offer comments beyond yes or no responses. Except for the initial open-ended questions, I solicited additional insight from the participants through probing questions. The semistructured interview technique helps to foster dynamic inquiry (Peredaryenko & Krauss, 2013). After an interview, draft notes and the transcript summary required clarification, and the member checking technique helped to facilitate gaining clarity. I conducted member checking with each participant after summarizing the recorded interview.

**Member Checking**

It is important in the data collection phase that the interviewer accurately captures participant input. I used the member checking technique to help ensure the accuracy of my understanding of the participant answers to interview questions. Member checking is an opportunity for the participant to verify that the written summary of the interview accurately portrays the participant's contribution. Perkins, Columna, Lieberman, and Bailey (2013) advocated using member checking as a research technique to ensure the reliability and validity of the participant's responses. Galletta (2013) encouraged the use

of member checking to ensure the accuracy of the transcription and the interpretation of the data. The member checking technique can support dependability because this method helps to ensure the credibility, accuracy, and quality of an interpretation of the participant interview (Fuller et al., 2013; Galletta, 2013; Perkins, Columna, Lieberman, & Bailey, 2013).

**Documentation Review**

Yin (2014) suggested that a firm's documentation might be a basis to help confirm participant contributions from the in-person interviews. Several documents may help to triangulate and verify a firm's tools and techniques used to execute IT projects. To facilitate data triangulation, I reviewed the firms' past performance, customer feedback, and certifications. Company archives are a source for secondary data. Archival data may contain internal project management plans, policies and procedures, and external customer feedback such as a contractor performance assessment review. Yin (2014) encouraged the use of archival documents in case study research. The archival documents may contain evidence of strategies that participants used to reduce cost overruns and improve on-time delivery.

## Data Collection Technique

The data collection technique for this study consisted of semistructured interviews, document review, and member checking. In semistructured interviews, it is paramount to accurately document participant responses and contributions (Campbell et al., 2013; Irvine, Drew, & Sainsbury, 2013; Peredaryenko & Krauss, 2013). Each participant responded to the initial six questions, which I designed to elicit strategies that

IT project managers use to reduce cost overruns and improve on-time delivery. I inserted an abridged interview protocol in the Appendix A of this study. The interview method consisted of both in-person interviewing as well as teleconferencing with participants (Irvine et al., 2013). The use of the member checking technique will help to ensure the accuracy of the participant's responses (Fuller et al., 2013; Galletta, 2013; Marshall & Rossman, 2016). I used the member checking technique to ensure that I accurately captured the participant's responses during the in-person interview. The semistructured interview technique helped to guide the latitude for exploration along with a guiding foundation for inquiry (Irvine et al., 2013).

There are both advantages and disadvantages to utilizing a semistructured interviewing technique. An advantage of the semistructured interview technique is that the researcher may ask clarifying or probing questions (Doody, & Noonan, 2013; Irvine et al., 2013). Additionally, the researcher has flexibility and may choose to alternate the questions if the researcher finds a more accommodating pattern. Along with the advantages of the semistructured interview, there are also disadvantages. One such disadvantage is that semistructured interviews may veer into other areas of a participant concern or agenda if not properly controlled. The onus is on the researcher to ensure adherence to the study protocol (Doody & Noonan, 2013; Irvine et al., 2013).

**Archival Document Review**

Archival data helped to verify participant responses to strategy questions. Archival data contained project management plans, policies and procedures, and customer feedback such as the contractor performance assessment review. Archival data

contained stakeholder feedback that verified successful strategies the firm's project managers used to reduce cost overruns and improve on-time delivery. Yin (2014) noted the importance of collecting archival documents while conducting case study research.

A review of archival documents may produce advantages and disadvantages for a research study. An advantage is that historical documentation may provide evidence of the experiences shared by the participants (Carter et al., 2014). Another advantage is that archival documents may contain stakeholder feedback that verifies participant interview responses. An archival document review may have advantages and disadvantages for conducting the research. One of the disadvantages is that these documents may simply represent a historical snapshot of past action and the current operations. Yet another disadvantage of archival documents for research is that document management techniques and file structures may not be conducive to research (Malagon-Maldonado, 2014).

**Member Checking**

Yet another data collection technique to enhance the reliability and validity of the in person interview, a researcher may conduct member checking to confirm the participant's input (Fuller et al., 2013). I used member checking to ensure that participants review the summarized interview transcript to ascertain that the summary was accurate. Member checking follows techniques performed by Perkins, Columna, Lieberman, and Bailey (2013) as a research practice to confirm the participant's responses. Member checking is also in keeping with the research techniques of Galletta (2013) who encouraged member checking to ensure the accuracy of the summarized

transcript. Member checking is a technique to engage participants to verify the accuracy of the transcripts to convey both the participant's meaning and their intent (Fuller et al., 2013; Galletta, 2013; Perkins, Columna, Lieberman, & Bailey, 2013).

## Data Organization Technique

It is imperative that researchers structure their data organization to capture the findings of the semistructured interview (Doody & Noonan, 2013). Reflective journaling helped to capture the context of the participant's interview. During reflective journaling, I noted participant expressions and my general observations during each interview. Contemporaneous notes capture observations that can become integral to data collection (Doody & Noonan, 2013; Houghton et al., 2013; Lin, Pang, & Chen 2013). I used the participant alphanumeric coding to organize participant responses and catalog the research. Accurate assignment of participant responses is critical to case study research (Marshall & Rossman, 2016; Sandelowski, 2014; Yin, 2014). I used NVivo software to organize the interview data. I stored my field notes and hard copies of documents associated with this study in a locked safe. I keep the electronic data or soft copy data of the interviews and electronic notes on an external hard drive. I will destroy both the physical and electronic data after 5 years.

## Data Analysis

Data analysis is integral to the research process. After collecting data, it is incumbent upon the researcher to synthesize the data into an explanatory product (Yin, 2014). There are several data analysis processes or methods available to researchers including methodological triangulation. Methodological triangulation is a technique that

incorporates multiple sources of corroborating documentation that supports the contributions and strategies of the participants (Sousa, 2014). In addition to the in-person interviews, I reviewed the firms' past performance to verify that the firm documents the repeatable strategies. I also reviewed the customer feedback that corroborated the participant's claim that theirs is a successful strategy to reduce cost overruns and improve on-time delivery. I chose the methodological triangulation technique to perform data analysis. The methodological triangulation technique is a process to substantiate participant strategies (Houghton et al., 2013; Sousa, 2014; Yin, 2014). There are five aspects of data analysis, which include compiling, disassembling, reassembling, interpreting, and concluding (Yin, 2016).

**Compiling**

The in-person interview is integral to the compiling portion of the analysis. I conducted the participant interviews in accordance with the interview protocol (Appendix A). Along with the in-person interview is the audio recording of each participant interview and the transcription of that recording. The document review is the third aspect of compiling. Field notes and reflexive journal entries make up a vital portion of compiling. In keeping with Yin (2014), I created a database for the data analysis that encompasses the coding of participant responses and the findings from the document review. Disassembling of the data follows the compiling component of data analysis.

**Disassembling**

The disassembly component of data analysis encompasses fragmenting the data, labeling, and coding of all the data including the in-person interview. The coding process

includes assigning pseudonyms for participants, grouping data into a mind map, and discovering themes. Aliases help to safeguard participant anonymity. The naming convention for participants is P1 and P2. Themes consist of recurring concepts originating in evident patterns found in participant responses (Flick, 2014). I used computer-aided qualitative data analysis software (CAQDAS), NVivo10, to assist with coding data from the in-person interviews as well as information found in the document reviews. This coding technique is in keeping with researchers such as Margarian (2014), Paulus et al. (2015), and Sotiriadou, Brouwers, and Le (2014) who utilized a CAQDAS type program to assist in their data analysis.

**Reassembling**

The third component of data analysis is reassembly. Grouping and categorizing are indicative of this phase of the analysis (Yin, 2014). For data analysis, it is necessary to categorize participant input to better synthesize research findings. Reassembling involves the act of recurring pattern matching in search of commonality among themes gathered from in-person interviews and document reviews (Yin, 2014). During the reassembling phase researchers compare data and contrast data along with pursuing an antagonist view of the emerging themes (Yin, 2016). In keeping with the research and analysis patterns of Mathu and Chinomona (2013), I compiled the themes and subthemes for analysis, translation, and correlation. Kornhaber, de Jung, and McLean (2015) suggested that coding would help to dampened instances of bias along with adding to the credibility of the research. Thematic analysis and coding to categorize common concepts that participants share is a common technique while performing research (Campbell et al.,

2013; Vaismoradi, Turunen, & Bondas, 2013). Additionally, Houghton et al., (2013) advocated the use of coding to discover patterns that identify the shared experiences of disparate participants. After reassembling, researchers must interpret the data.

**Interpreting**

The fourth phase of data analysis is interpreting. The interpreting phase involves summarizing the thematic expression of the data shared through in-person interviews and document reviews (Yin, 2014). The analysis of data sets occurred after a data structure revealed emergent themes (Vaismoradi, Turunen, & Bondas, 2013). Descriptive interpretation was best for discussing emergent themes that evolved from in-person interviews, document reviews and thematic analysis (Yin, 2016). I used descriptive interpretation to compare and contrast the themes uncovered during the analysis. Additionally, I analyzed the findings of the primary research question compared to the available literature including new studies published before and after the proposal and the conceptual framework. The phase of data analysis after interpreting is concluding.

**Concluding**

The concluding phase of data analysis is the culmination of compiling, disassembling, reassembling, and interpreting (Yin, 2014). I assembled the study results in the concluding phase as a discussion along with the findings based upon the emergent themes. The thematic presentation included a relational comparison to the literature review as well as the conceptual framework. The conclusion, based in part on methodological triangulation, includes a rationale for how the study may contribute to business practices and to social change.

## Reliability and Validity

### Reliability

The reliability of the findings adds credence to the overarching research. Morse (2015) equated the reliability of research with the necessity for accuracy and appropriateness of the data collected. Campbell et al., (2013) viewed the reliability of a study in terms of the study's stability and replication. Both Morse (2015) and Campbell et al., (2013) supported the rigor of coding, and the contribution of valid coding to replication. Member checking is a technique that researchers used to ensure the reliability of the collected data (Marshall & Rossman, 2016). The member checking technique helped to ensure the accuracy and dependability of the collected data (Fuller et al., 2013; Galletta, 2013; Marshall & Rossman, 2016).

Dependability is vital to qualitative case study research. Research dependability referred to the repeatability of the study during various periods and conditions (Anney, 2014; Galleta, 2013; Grossoehome, 2014). The ability for other researchers to replicate the tools and techniques of the study helped to ensure dependability (Elo et. al., 2014). I provided the interview protocol and the thematic analysis to help support the dependability of the study. In addition, the member checking technique helped to ensure dependability by verifying the participant experiences and the accuracy of the written interpretation (Marshal & Rossman, 2016). Furthermore, data saturation helped to ensure the dependability of the collected data (Elo et al., 2014). Researchers seek data saturation through the rigorous interviewing of participants until participants revealed no new information (O'Reilly & Parker, 2013). I pursued the interview process using various

techniques until the participants provided no new information. Along with pursuing exhaustive interviews, cross check responses between participants to help ensure a comprehensive depiction (Elo et al., 2014; Morse, Lowery, & Steury, 2014; O'Reilly & Parker, 2013).

**Validity**

Validity of a qualitative study referenced the appropriateness of the techniques that contribute to the credibility, transferability, and the confirmability of the study (Cope, 2014; Marshall & Rossman, 2016). Research credibility and confirmability through methodological triangulation persisted because triangulation corroborated participant contributions (Houghton et al., 2013; Sousa, 2014; Yin, 2014). Additionally, I supported the transferability of the findings by adhering to the research protocols that I have highlighted throughout this study.

Marshall and Rossman (2016) suggested that a separate researcher utilizing the findings of a qualitative researcher was best equipped to confirm the transferability of the findings. Yin (2014) suggested that alignment with the conceptual framework contributed to the transferability of the research. Anney (2014) shared that repeatability was indicative of transferability. I included the coding along with the thematic analyses that researchers may use to attempt transferability of the findings. I adhered to interview protocols and shared my research design as well as my data collection and analysis techniques. Along with credibility, confirmability is intricate to research validity.

Some research aspects relate to the confirmability of a study. Paramount to confirmability is the ability to audit the research methods associated with a study

(Houghton et al., 2013). Methodological triangulation supported the effort to help ensure confirmability (Marshall & Rossman, 2016). I used methodological triangulation by reviewing the firm's relevant documents to corroborate experiences shared during the in-person interviews. Marshal and Rossman (2016) indicated that rigorous research methods, including methodological triangulation, supported replication. Yet another aspect of research validity is data saturation.

Several research techniques converge to accomplish data saturation. O'Reilly and Parker (2013) suggested that the appropriate sample size factor into the determination of data saturation. Fusch and Ness (2015) described data saturation as a point during the research process when no new information materialized. Exhaustive thematic creation and exhaustive coding ceases when no new themes emerged from the collected data (Houghton et al., 2013). In keeping with research techniques from Marshal et. al., (2013) I stopped inviting new participants when no new data emerged.

## Transition and Summary

Section 2 of this study encompassed a restatement of the purpose of this study and a review of the research method and design. Section 2 included information concerning the selection criteria for the participants and the general size of the study. The interview protocol focused on six open-ended questions to facilitate inquiry of the central research question. Section 2 incorporated documenting the importance of member checking as it is related to the data collection technique. Along with that information, Section 2 comprised the data collection processes, analysis, instruments, techniques, and reliability and

validation assurance practices. In Section 3 I present the findings of the study along with the recommendations for future research and the implications for social change.

## Section 3: Application to Professional Practice and Implications for Change

### Introduction

The purpose of this qualitative multiple case study was to explore the strategies that government contracted IT project managers use to reduce cost overruns and improve on-time delivery. The data came from manager interviews and company documentation from five firms that perform IT project management in the Maryland area. The themes from this study showed the variety of methods that some IT project managers used to reduce cost overruns and improve on-time delivery.

### Presentation of the Findings

The research question I developed to guide this study was: What strategies do government contracted IT project managers use to reduce cost overruns and improve on-time delivery? Throughout this section, I reveal the five themes disclosed by the participants that I used to answer the research question. Following the participant interviews, I analyzed the documentation and summarized the information. I then compared the emergent themes with the documentation in an effort to triangulate the findings.

While each participant executed IT projects within the Aberdeen Maryland area, each IT project varied slightly based upon a multitude of factors associated with serving unique customers. Each participant sited similar strategies that contributed to their project success correlating to five major themes. The five major themes were (a) clearly defined

requirements, (b) monitor and control, (c) personnel training, (d) communication, and (e) demonstrate leadership. The first theme demonstrates the importance of realism in IT projects. The second theme focuses on the importance of the managerial component of project management. The third theme highlights the need to have skillful associates who execute the many facets of IT projects. The fourth theme indicates the level of effort that successful IT project managers give to communication. The fifth theme shows that this critical element was required to inspire IT project teams to deliver projects on time and with budget. Table 2 displays the themes identified during interviews with IT project managers.

Table 2

*Successful IT project themes*

| Major themes | Percentage of Participants |
|---|---|
| Clearly defined requirements | 100% |
| Monitor and control | 100% |
| Personnel training | 100% |
| Communication | 100% |
| Demonstrate leadership | 100% |

**Theme 1: Clearly Defined Requirements**

IT project teams develop products according to customer requirements. All five of the participants identified the importance of clearly defined requirements to the success of IT projects. In a network, actors often are dependent upon the decisions of the focal

actor (Lee et al., 2015; Latour, 2005). In keeping with ANT, the government project lead is typically the focal actor among these IT project stakeholders. Gellweiler (2017) encouraged project managers to grasp the necessity of restructuring project requirements to help ensure project success. Aparicio and Mohagheghi (2017) opined that the project team must proactively seek quality requirements from the customer to reduce the instances of misunderstanding of stakeholder needs. I reviewed documented assessments from participants that demonstrated that they delivered products as required by their customers. Gathering clearly defined requirements required multiple customer meetings.

Some of the project managers exercised assertiveness to gather customer requirements. Participant 1 insisted on scheduling a customer meeting to review the team's understanding of the requirements to ensure consensus between all stakeholders. Four of the five participants experienced instances in which the customer reduced various requirements commensurate with feedback from all stakeholders. I was able to triangulate the realignment of customer requirements with documentation from participants. Carrillo de Gea et al. (2016) found that successful project managers exhausted greater than 25% of planning resources towards ascertaining customer requirements. Unambiguous requirements contain specific parameters that frame a successful project outcome (Naumchev & Meyer, 2017). The two subthemes related to clearly defined requirements included (a) advocate for realistic requirements, and (b) requirements impact cost estimate (see Table 3). Timely stakeholder feedback has influenced IT project requirements gathering.

Table 3

*Clearly define requirements*

| Subthemes | Participants |
|---|---|
| 1. Advocate for realistic requirements | P1, P2, P3, P4, P5 |
| 2. Requirements impact cost estimate | P1, P2, P3, P4, P5 |

**Advocate for realistic requirements.** Clearly defined requirements contribute to a team's ability to achieve project cost goals as well as project schedule goals. Nold (2015) used ANT to highlight the need for actors to modify requirements to satisfy the needs of all entities. Participant 3 shared that their strategy for IT project success included managing client expectations to coincide with the reality of the requirements. Some customers may not fully understand the project or may not be able to articulate the project intricacies well enough to execute specific tasks. Fully ascertaining requirements necessitates multiple meetings and exhaustive documentation to develop traceability (Carrillo de Gea et al., 2016). Participant 3 also noted that some stakeholders find that problems with the project are not articulated in the initial version of the requirements document. Project managers should investigate to determine the absolute needs of the project. Stakeholders often make tradeoffs between quality requirements, schedule, and costs (Aparicio & Mohaghegi, 2017). Successful project teams invest time in gathering quality requirements from stakeholders by influencing stakeholder expectations (Aparicio & Mohaghegi, 2017). All five of the participants recommended that the customer reduce or adjust project requirements and even funding ceilings to ensure that the team delivers all the project requirements on time and within budget.

**Requirements impact cost estimate.** Inadequate IT project requirements can affect contractor cost estimates. I reviewed performance documents from Participant 1 that demonstrated the correlation between clearly defined requirements and cost avoidance. Participant 5 shared that clearly define requirements were the precursor to a more accurate forecast of project costs. According to Carrillo de Gea et al. (2016), sufficient requirements gathering increased the likelihood of better cost estimates. Participant 4 ensured that the customer clearly defined the requirements and that the team clearly understood the requirements to develop an accurate cost estimation and a realistic performance schedule. Naumchev and Meyer (2017) advocated that firms utilize more robust requirement gathering tools to increase the effectiveness of developers to deliver quality software products. Participant 3 experienced a cost ceiling increase due to the customer's realization of project requirements. Participant 5 noted that inadequate requirements and assessments for new IT type projects could negatively affect project cost estimates. Government project requirements affect both the execution of a project as well contractor project staffing.

As Participant 2 and I continued to explore strategies surrounding requirements, Participant 2 expounded upon staffing requirements as well. According to Participant 2, government contracted firms must be able to staff appropriately, or the government officials may terminate their contract. The IT experience from 15 years ago is vastly different from the landscape of today. Participant 2 shared a staffing constraint that a government customer compelled a years of experience criteria that does not correlate with the current IT industry profile. Participant 2 expressed a concern that some

government labor categories require 10 years or more of experience, but much of the technology and techniques have only been available in the last 5 years. Bachiller, Serna, and Serna (2017) concluded that requirement specifications make a significant contribution to project success. I reviewed government labor category requirements that listed the experience criteria for senior personnel that exceeded the maturity of some IT products. According to Participant 2, incongruent labor category requirements has hampered competitive salary offerings for experience IT professionals. Participant 1 also shared a staffing plan that included communicating with the focal actor concerning difficult staffing requirements. The ability to overcome the burden of staffing to the lagging experience criteria can contribute to IT project success.

**Theme 2: Monitor and Control Effort**

Adherence to processes and procedures add a measure of control for project managers to ensure that a project team works toward customer requirements. Christ and de Albuquerque (2015) found that the ANT framework helped them to illustrate business processes. Process control is a critical success factor for IT project management (Chen et al., 2017). Senior leaders' oversight through recurring project reviews is instrumental to project success (Miyamoto, 2015). All five of the successful IT project manager participants tailored their monitoring and control efforts specific to a project. Each participant used a measure of monitoring and controlling to align staffing and cost containment. I reviewed the Capability Maturity Model Integration for Development 3 (CMMI-DEV/3) for software development criteria achieved by Participant 4's firm. To retain CMMI-DEV/3 certification, independent auditors periodically inspect an

organization's processes and procedures for compliance (Pane & Sarno, 2015). Actors have used the principles of ANT to justify process flexibility to help ensure project success (Christ & de Albuquerque, 2015). The two subthemes related to monitoring and controlling included (a) periodically synchronize efforts and (b) Monitor staffing costs (see Table 4). Synchronizing project efforts helps to prioritize labor expenditure.

Table 4

*Monitor and control*

| Subthemes | Participants |
|---|---|
| 1. Periodically synchronize efforts | P1, P2, P3, P4, P5 |
| 2. Monitor staffing costs | P1, P2, P3, P5 |

**Periodically synchronize efforts.** The participants periodically synchronized team efforts to ensure that their team worked towards the correct goals and objectives. Katzy et al. (2015) used ANT to highlight the need to synchronize the collective efforts of actors within a network. Van der Horn and Whitty (2017) discovered that successful project managers use strategic meetings to align project tasks. Participant 4's firm developed processes and procedures to implement and monitor successful repeatable efforts. I was able to briefly view Participant 4's company MS SharePoint database used to synchronize project efforts. This firm relied upon their processes and procedures to help reduce schedule delays as well as meet customer requirements. Participant 3's firm relied upon agile methodology to ensure that the project team's efforts aligned with customer requirements. Participant 5's firm also relied upon the agile methodology, which helped their team improve both the speed and quality of their work. Participant 4

stated that they regularly review monitoring and control tools to ensure that the project team performed efforts according to the planned work. Participant 1 shared documentation that allowed me to review the extent of their project synchronizing efforts. Each participant expended several hours of work to synchronize the project team's effort to help ensure project success.

**Monitor staffing costs.** Monitoring staffing cost is another aspect of monitor and control. de Moraes et al. (2017) deduced from survey results that successful IT projects incorporate robust monitor and control processes that include reporting cost metrics. Successful project managers employed monitor and control techniques to ensure that the project progresses as planned (Bashir et al., 2017). Participant 5 shared that cost monitoring allows the project manager to reduce or add staff as appropriate to stay within budget. Participant 2 ensured that monthly milestones were met through monitoring and meeting weekly goals. Project managers help to verify cost controls and schedule progress through monitor and control techniques (van der Horn & Whitty, 2017). Participant 1 stated that they regularly communicate the level of effort pertaining to hours worked expectations to the employees. Each project manager ensured that employees only worked the approved number of hours on a project. Participant 3 distributed the firm's labor resources as required among projects to maximize cost and meter the efforts throughout the life of the project. Participant 4 repeatedly expressed the importance that their firm places upon comparing the level of effort to the integrated master schedule to ensure that the project team performed efforts according to the planned work.

**Theme 3: Personnel Training**

All five participants shared that personnel training in project management tools and techniques was a critical component to a successful project. I reviewed documentation from participant 5 that favored one-on-one targeted associate training. Actors gather external knowledge and then apply that knowledge to help improve the incidence of project success (Chen & Hung, 2016). An organization's ability to learn from project failures and lessons learned contribute to future project success (Coners & Matthies, 2017). The two subthemes related to personnel training included (a) recurring associate training and (b) recurring project manager training (see Table 5). I reviewed training documentation from participants that expressed the importance of recurring training for project success.

Table 5

*Personnel training*

| Subthemes | Participants |
|---|---|
| 1. Recurring associate training | P1, P2, P3, P4, P5 |
| 2. Recurring project manager training | P1, P3, P4, P5 |

**Recurring associate training.** Recurring training takes place at various intervals for each participant. The recurring training included technical certifications as well. Brière et al. (2015) noted personnel training helped to increase the overall capacity of the team. Successful project managers developed team members through recurring training (Brière et al., 2015). Participant 1 found that one pillar of the success of their projects

was for the project team to utilize PMBOK principles. Participant 3 was of the belief that training enriches the employee to more of the customer's needs and broadens the employee's experience. Participant 3 also shared proper training helped to focus the firm on delivering the right product and the right product for the employee – experience, value, and purpose. Participant 4 insisted on training new associates to follow the firm's processes. Participant 5 also conceded that there was a knowledge gap that had to be trained away to ensure project success. Participant 5 advocated their use of mentorship to guide to junior project managers as well as on-the-job training.

**Recurring project manager training.** Four of the five participants expressed the importance of recurring project manager training to project success. de Carvalho et al. (2015) analyzed data from 1387 projects and found that project manager training had a positive effect on project outcomes. Participant 2 shared the import of management competence that focused on associate wellbeing. IT project managers that process domain knowledge have can a positive impact on successful project performance (Engelbrecht et al., 2017). Participant 3 stressed the importance of a project manager to gain domain knowledge and that project managers that understand the domain are better advocates for the project. Participant 4 found it necessary for the team to use the tools available and resist reinventing tools or simply relying upon tools that are within their comfort zone. Participant 5 found it helpful that project managers understand profit and loss reporting and ensured that they monitor on a monthly basis the spending and the overall budget projection for the year.

**Theme 4: Communication**

Each of the five participants shared the importance of effective communication to project success. Ali et al. (2018) shared the necessity to view ANT in terms of communication pathways. Brière et al. (2015) conducted a qualitative study with 28 project managers in which each participant shared their experience with the project manager competencies that contributed to project success. The two subthemes related to communication included (a) purposeful communication and (b) foster communication (see Table 6). I reviewed documentation from each participant that highlighted the importance of both project and company communication.

Table 6

*Communication*

| Subthemes | Participants |
|---|---|
| 1. Purposeful communication | P1, P2, P3, P4, P5 |
| 2. Foster collaboration | P1, P2, P3, P4, P5 |

**Purposeful communication.** Company documentation for the participants indicated the significance of purposeful communication. Purposeful communication can help influence network actors to make a favorable change through grass root efforts and smaller course corrections during the course of projects. Ali et al. (2018) used ANT to illuminate the level of commitment that actors displayed with influence from various network elements. To manage successfully, project managers should master the various aspects of communication including writing, speaking, and listening (Brière et al., 2015). Participant 1 practiced a top down communication with each team member so that each

member understood the team's roles and responsibilities. Project managers utilize purposeful communication to help ensure that the project team members align their efforts with that of project leadership (Henderson et al., 2016). Purposeful communications include defining project manager expectations for both personal conduct and level of effort (Henderson et al., 2016). Participant 2 relied upon communication to listen to the project team members to help ensure that the firm's leadership understood their challenges and aspirations. Participant 3 found it particularly useful to communicate with all associates at every level of the project. Participant 4 and later Participant 5 echoed the sentiment that effective communication is critical to successful project execution and to understanding customer requirements.

**Foster collaboration.** Fostering project team collaboration was instrumental to project success. Participant 1 shared that collaboration between all team members is a key to project success. Henderson et al., (2016) contended that robust communication within a project fosters collaboration and helps to clarify roles and responsibilities among team members. Participant 3 also utilized various software programs to communicate lessons learned among team members. Butt et al. (2016) discovered that successful project managers foster collaboration among stakeholders to influence change within the project. Participant 2 relayed the need to foster dialog with the focal actor to communicate the negative impact that artificially low labor rates have on project execution. Participant 4 and Participant 5 shared that their teams expended tremendous effort during the planning phase to foster collaboration between the project team and the focal actor. Project managers typically exercise and plot their deliberate communication processes during the

planning phase of a project (Butt et al., 2016). Each participant designed tools to that fostered collaboration to help ensure project success.

**Theme 5: Demonstrate Leadership**

All five participants in this study utilized a myriad of leadership aspects to execute IT projects on time and within budget. Project managers utilize their power to engage actors to accomplish project goals and objectives (Dedeke, 2017). The project manager in an actor-network typically functions as the translator when enrolling actors onto the project (Dedeke, 2017). The project manager transforms disparate actors into an incorporated network (Dedeke, 2017). Chen et al. (2017) shared their study findings that surveyed 82 project managers that found leadership to be their number one critical success factor. Kromidha (2017) asserted that projects fail in part due to a lack of vision. Project managers utilize their power to engage actors to accomplish project goals and objectives (Dedeke, 2017). The subthemes related to Demonstrate Leadership included (a) motivate team to accomplish goals, (b) cultivate sense of belonging, and (c) associate buy-in (see Table 7).

Table 7

*Demonstrate leadership*

| Subthemes | Participants |
|---|---|
| 1. Motivate team to accomplish goals | P1, P2, P3, P4, P5 |
| 2. Cultivate sense of belonging | P1, P2, P3, P4 |
| 3. Associate buy-in | P1, P2, P3, P4 |

**Motivate team to accomplish goals.** I reviewed documents such as customer feedback as well associate comments to triangulate the efforts that the participants used to motivate their teams. Burga and Rezania (2017) used the lens of ANT to explore project manager accountability regarding both process accountability and outcome accountability. A project manager typically allocates several tasks and subtasks to complete a project and an observer may presume that a project manager exhibits a transactional leadership style (Andersen, 2015). Participant 4 shared the thought that project managers at that firm subject themselves to both process accountability and outcome accountability. Successful project managers leverage actor accountability in each stage of a project to help ensure on time and within budget project completion (Burga & Rezania, 2017). Participant 1 motivates their team so that their firm becomes the company that workers want to join. IT project managers realized project success when they exercise inspirational leadership techniques (de Moraes et al., 2017). A motivated team enhances the possibility of completing a project on time or ahead of schedule. Participant 2 shared the belief that "if the leadership takes care of the people, then the people will take care of the project."

Project managers have varying approaches to project management because project managers must adjust the tools and techniques for the appropriate network setting (Andersen, 2015). Successful project managers may empower associates by encouraging associates to challenge the status quo and develop new and improved methods to accomplish project task (Ding et al., 2017). Participant 3 routinely asked associates probing questions that helped to both solve customer problems and encouraged associates

to solve conventional problems in an unconventional manner. Participant 5 utilized a measure of high relationship to assess the individual goals and training needs of project associates. A project manager that is inspirational and forward thinking exhibits a transformational leadership style (Andersen, 2015). Successful project managers establish their vision for the success of the project and share them with the project team (Andersen, 2015; Miyamoto, 2015). The five successful participants each exhibited a measure of transformational leadership style. Miyamonto (2015) shared study findings from 118 projects in which project managers that displayed transformational leadership had increased instances of IT project success.

**Cultivate sense of belonging.** Cultivating a sense of belonging for IT project team members has a level of difficulty for project managers. Miyamoto (2015) asserted that project managers require increase leadership skills to lead multifaceted and diverse project teams. Project managers help to cultivate associate commitment through coaching and mentorship (Ding et al., 2017). Participant 1 shared the belief that a company's culture impacts project performance. Ding et al. (2017) shared that a project manager's leadership style has a positive correlation to an associate's commitment and sense of belonging to an organization. Participant 3 practiced leadership in manner that inspired the culture to engage to solve customer problems and grow the firm's presence in the space – "put the cult back into culture." Some project associates exhibit limited commitment to temporary organizations such as project teams and require personalized motivation (Ding et al., 2017). Participant 1 also shared their strategy is to engage employees with retention in mind. Participant 2 emphasized that their leadership is about

inspiring employees beyond their personal compensation but rather accepting the individual as a part of a larger family-oriented firm.

**Associate buy-in.** The participants each employed various leadership behaviors to gain associate acceptance of each firm's processes and procedures. Some leaders demonstrated leadership through inspirational guidance while others utilized intellectual stimuli to invoke logic to influence cooperation (Luo et al., 2016). Participant 4 emphasized leadership insistence to get associate and team acceptance to implement and trust their processes. Participant 2 believed that retention lead to better cost performance and endeavored to ensure that associates committed to their firm. Associates are less likely to leave the organization when project managers cultivate a cooperative team-oriented work environment (Ding et al., 2017). Participant 1 found that culture clashes among teammates affect performance and overcame those clashes by gaining associate buy-in. Participant 3 actively participates in developing solutions with the project team to cultivate a team approach to problem solving.

## Applications to Professional Practice

IT projects continue to fail at an alarming rate, but some IT project managers have developed strategies reduce the rate of failure. The findings of this study may have a positive impact on IT firms executing Government contracted IT projects. This study may help IT leaders discover why IT projects fail and more importantly, what strategies they may use to improve IT project performance.

The findings of this study are relevant to professional practice because the study contains the documented the strategies of successful IT project managers. A review of

this study reveals the successful strategies to overcome the pitfalls that bewilder IT project managers in this industry and lead to IT project failure. IT project managers may implement the practical strategies found within this study to improve the outcome of their Government contracted IT projects.

## Implications for Social Change

Communities often compete for limited resources within finite budget constraints. Martinuzzi and Krumay (2013) included project management into its analysis of corporate social responsibility. It is better for corporations to incorporate society's corporate social responsibility concerns into projects during the initiating projects stage (Martinuzzi & Krumay, 2013). Many companies worldwide have embraced the corporate social responsibility concept (CSR) by incorporating ISO 14001 standardization. CSR includes the duty of a firm to act accordingly to the principal objectives of humanity. The European Commission challenged every corporation stating that CSR is the obligation of every firm for its impacts on nature and humanity. A positive relationship exists between corporate social responsibility and achieving the benefit of competitive advantage while others report a neutral experience (Martinuzzi & Krumay, 2013; Ross & Morrison, 2014). Implementing successful IT project strategies could increase the effectiveness of limited resources including finite budgets.

Some corporations initiate corporate social responsibility projects that are outside the core competency of the firm. These types of projects are themselves not sustainable because they are not part of a company's core competency. Corporate social responsibility projects are, by definition, short-term, and the limited resources plague

continued project success. Corporate social responsibility is most effective when it is beyond the project stage and becomes a part of the corporate culture (Martinuzzi & Krumay, 2013). IT project success strategies help to strengthen corporate resolve in support of social change projects.

Adding sustainability to strategic planning helps to prioritize sustainability efforts within all projects. Successful sustainability plans are performance-based, involves senior management, and has an operational impact (MacLean, 2013; Reynolds & Yetton, 2015). When corporations add sustainability to the overall strategic plan then operational elements develop sustainability plans to execute strategic goals and objectives. Implementing successful IT project strategies has broad implications for social change.

## Recommendations for Action

The five major themes were (a) Clearly defined requirements, (b) monitor and control, (c) personnel training, (d) communication, and (e) demonstrate leadership. Each participant developed successful IT project strategies and the peer reviewed literature provided support for those strategies. Considering the findings of the study, I recommend that IT project managers devise a plan to thoroughly understand the client requirements. The plan should include a review with the customer to ensure that the customer remove any ambiguous language and provide agreed upon verbiage. The IT project manager should provide an opportunity for the project team to review the requirements for clarity and to understand the customer's expectations.

IT project teams can exceed IT Project costs and exceed the IT project schedule if robust monitor and control procedures are lacking. I recommend tailoring monitor and

control techniques to provide immediate alerts when the team exceeds cost and schedule parameters in addition to milestones. Milestone alerts may trigger days or weeks too late for the project manager to recover.

IT project associates provide functional expertise for IT projects. I recommend expanding associate training to include training on some of the project management tools and techniques as well. If project associates better understood requirements, gathering then the customer interactions may be more substantial. Another aspect of associate training in project management is project scheduling. Associates may provide more timely alerts in the event a project experiences a delay.

The findings of this study may be significant to IT project managers and business leaders because the strategies led to successful IT project execution. All the participants from this study will receive a copy to reference the successful IT project strategies. I plan to share the study findings with the Baltimore Chapter of the Project Management Institute.

## Recommendations for Further Research

I recommend that future researchers expound on the assumptions, limitations, and delimitations noted in this study. I recommend that future researchers conduct this research solely from the customer's point of view with participants from the same geographical area. The actor-network theory was the lens used to explore IT project failure but other social theories such as the leadership theory may help further explore the phenomenon.

## Reflections

I started this project with the belief that the project management community deserved additional insight into the successful strategies of IT project managers. The participants responded to questions developed from peer-reviewed articles. The peer-reviewed articles helped to reduce the instance of bias. Both member checking, and triangulation helped to further reduce bias. The participants provided corrections to the initial interview summaries to clarify and edit their responses. Additionally, I used NVivo software to help generate the emergent themes of the study.

The project management profession has grown over the years and in particular IT project management. The participants in this study conveyed their passion for successful IT project execution. The participants in study said *yes* to the first request to share their successful IT project strategies. Each of the participants in this study imparted valuable insights for the contractor project management community as well as government stakeholders. I selected IT project failure because I believe that with the appropriate strategies a project manager can successfully manage an IT project. If a practitioner employs all the strategies that the participants shared, then their probability of IT project management success increases.

## Conclusion

During this qualitative multiple case study, I explored the strategies that government contracted IT project managers use to reduce cost overruns and improve on-time delivery. The participants in this study conduct IT project management within the Maryland area and shared the successful strategies that they used to execute IT projects. I

used member checking and triangulation to help clarify and verify the much of the data collected. The participant's experiences coalesced into several themes. The five major themes were (a) clearly defined requirements, (b) monitor and control, (c) personnel training, (d) communication, and (e) demonstrate leadership. I searched the relevant peer-reviewed literature that supported the strategies of the emerged themes.

The data contained within this study may contribute to the effective practice of business by providing strategies IT project managers use to reduce cost overruns and improve on-time delivery. Government contracted IT project managers also have a burden to be good stewards of taxpayer dollars. Unfortunately, failed government IT projects represents wasted public funds. I endeavored to find and share the strategies that IT project managers used to reduce the instances of IT project failure. I recommend that U.S. Government contracted IT project managers use the successful strategies within this study to execute their IT projects on time and within budget.

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Appendix A: Interview Protocol

| Interview | |
|---|---|
| What to Do | What to Say |
| Start interview protocol | |
| Establish Rapport- Introduce myself and the topic under study | My name is X and I am a doctoral student at Walden University. I would like to thank you for your time and for granting me this interview. The primary research goals are: (a) to explore strategies government contracted IT project managers use to reduce cost overruns and improve on-time delivery, (b) to identify common themes from participants on this topic. |
| Explain content of the consent form and address any concerns the participant may have. | On [Date] you received a consent form via mail containing some legal and ethical requirements. On [Date] you replied granting me the consent for this interview. Are there any concerns that you may want to address before we proceed? |
| Receive consent to start interview. | We will proceed if I have your consent. |
| Start audio recording. | I will now start the recordings. |
| Introduce participant with code, the date, and time. | Interview with Participant [1...5], [Current Date], and [Current Time] |
| Start interview with the initial probe question, followed by the targeted concept questions, targeted follow-up questions, and ending with the wrap-up question respectively. | 1. How does your firm reduce cost overruns?<br>2. How does your firm improve on-time delivery?<br>3. How did your firm implement the strategies to reduce cost overruns and improve on-time delivery?<br>4. What barriers did your firm have to address in implementing the strategies? |

| | |
|---|---|
| | 5. How does your firm measure the strategies' effectiveness?<br>6. What additional strategies can project managers use to improve project performance? |
| End interview section and discuss member-checking with participant | .<br>I would like to thank you for your time and information provided. As explained in the consent form This interview will be de-identified using your code [Participant X] and summarized. You will get the opportunity during a follow-up member-checking interview to ensure that I correctly synthesized and interpreted the interview. |
| Schedule follow-up member checking interview | I will email you the transcript on [Date] and would like to schedule the follow-up interview on [Date]. |
| Record reflective notes | Record and summarize interview observations, notes, and reflections in reflexive journal. |
| End interview protocol | |