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Key Strategies for Successful Information Technology Projects

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Walden University

College of Management and Technology

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David Morris

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Walden University
2020

Abstract

Key Strategies for Successful Information Technology Projects

by

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MBA, Ashford University, 2009

BS, Malone University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

November 2020

Abstract

The successful implementation of information technology (IT) projects globally depends on the increasing reliance of project managers on IT innovations. Some project managers and business leaders do not possess the strategies to effectively manage and successfully implement IT projects. Grounded in coordination theory, the purpose of this qualitative multiple case study was to explore strategies used to successfully implement IT projects. Data were collected using semistructured interviews and from company documents. The participants comprised 6 IT project managers in Northeast Ohio who successfully implemented IT projects. Thematic analysis was used to analyze the data. Four themes emerged: communication amongst all members of the project, professional development in project management, extensive planning, and experience in the field. A key recommendation for successful implementation of IT projects is for project managers and stakeholders to increase both the frequency and organization of communication within project teams, which could reduce the overall cost of implementation. The implications for positive social change include the potential for providing knowledge to IT project managers, IT leaders, and organizations as a whole. Further implications include potentially creating and maintaining job growth which could, in turn, impact the local community standard of living.

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Dedication

I dedicate this doctoral study to my family who have been with me every step of the way on my doctoral journey. To Lindsey, Henry, Tony, my mother, and to the rest of my family and friends, thank you all for your patience and understanding as I have spent much time on this doctoral journey and sacrificed much to complete the program. Thank you to everyone for teaching me how to be patient, how to communicate, and for pushing me any time I started to feel down about the whole process. Without all of you I would not have been able to complete this. Thank you all very much.

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Section 1: Foundation of the Study

Driven by the success of information technology (IT) project managers and the projects they administer; technological innovations have taken prominence in much of the business world. Within the past 30 years, 10 of the top 20 innovations in the world involved technology and computers (Thomas, 2015) thus indicating the rise in importance of technological innovations. For business leaders to remain competitive, the success of IT projects is of paramount importance (Poonpool et al., 2013). To ensure the success of IT projects, these business leaders must employ project managers who have shown both an aptitude and successful record of implementing projects and a level of adaptation to new technology. Project managers who create strategies aligning properly with the goals of the organization are valuable because the business leaders can then focus on other portions of the business (Singh & Khamba, 2016). However, because IT project success rates are as low as 67% (Qin, Guangping, & Xuyan, 2017), IT project managers and the key strategies they use are important to ensure higher success rates in an industry that is constantly growing.

Background of the Problem

In 2011, businesses spent \$3.7 trillion on IT and information system (IS) projects with the expectation of success across every project (Wamba et al., 2017). The project failure rate of 67% is concerning both for experienced project managers and for those entering the field for the first time (Curtis et al., 2017; Obradovic, Kostic, & Mitrovic, 2016). Even though a 68% failure rate is an improvement from years past, the lack of success in the project management field directly affects a business and those employed in

it. Leaders of businesses engaging in IT and IS projects expect success to help implement their business processes, but without a higher success rate, strategies for successful IT projects are failing at an alarming rate (Lai, Hsu, & Li, 2018).

Researchers have studied success rates of IT and IS projects and the strategies involved in achieving project success (Javani & Rwelamila, 2016). The deliverable of the projects includes phases, industries, regions, stakeholders, and organization (Rezvani et al., 2016). Aaltonen and Kujala (2016) explored the impact on IT and IS project success of project environment, business strategy, and project strategy. Additional categories for IT and IS projects include strategic alignment, coordination, clear goals, and requirements (Hermano & Martin-Cruz, 2016; Singh & Khamba, 2016). Most research has focused on the categorization of specific project types and the definition of success for IT and IS projects. In this study, I explored the strategies used by IT project managers to successfully deliver IT projects.

Problem Statement

With 50% of capital investments in IT projects over the last 10 years, business leaders need to invest in the right projects to contribute to organizational sustainability (Bhutani, Kumar, Garg, & Aggarwal, 2016). Despite researchers focusing on explaining and mitigating the problem of project failure, the success rate for IT projects is 67% with fewer than 50% of projects completed on time and within budget (Qin et al., 2017). The general business problem was that some companies are losing productivity and money due to failed IT projects. The specific business problem was that some project managers in the IT sector lack strategies for delivering successful IT projects.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies project managers in the IT sector use for delivering successful IT projects. The targeted population consisted of six IT project managers from three businesses in Northeast Ohio who had developed and implemented strategies for delivering successful IT projects. The implications for social change included the potential for business owners to learn strategies to successfully complete IT projects, thereby allowing owners to increase and conserve financial resources to create more jobs or pay higher wages to current employees. New employees and employees who earn more may spend more money within their communities, contributing to local economic growth.

Nature of the Study

Qualitative researchers focus on interviewing participants and collecting data from a natural setting to understand why a phenomenon occurs (Gehman et al., 2018). A qualitative approach was appropriate for this study because I explored strategies used by project managers to positively impact the success of IT projects. Researchers using a quantitative method analyze numeric data to test predetermined hypotheses and to present justification of research conclusions (Park & Park, 2016). I did not collect and analyze numeric data to test hypotheses. Therefore, a quantitative method was not appropriate. Researchers using a mixed methods approach include quantitative and qualitative components (Annansingh & Howell, 2016). Because I did not use a quantitative element to explore the strategies used to deliver successful IT projects, a mixed methods approach was not appropriate.

A researcher uses a case study design to explore a phenomenon and to investigate a problem within context (Ji, Plakoyiannaki, Dimitratos, & Chen, 2019). The case study design was appropriate to my research because of the defined boundary of the selected population for my study topic. I explained, based on this research, the strategies behind successful IT projects. Researchers use a phenomenological design when attempting to understand human behavior rather than explaining the behavior (Clayton, 2016). When researchers use a phenomenological design, they study existence and focus on the meanings of participants' lived experiences (Saunders, Lewis, & Thornhill, 2015). I explored the strategies project managers use to deliver successful IT projects. Therefore, the phenomenological method was not appropriate for this study. Researchers use an ethnographic design to explore the customs of people or communities (Robson, 2016). I explored the strategies used by IT project managers to support their delivery of successful projects, so an ethnographic design was not appropriate.

Research Question

RQ: What strategies do project managers in the IT sector use for delivering successful IT projects?

Interview Questions

1. What strategies have you used to deliver successful IT projects?
2. How did you develop these strategies to deliver successful IT projects?
3. How did you measure the effectiveness of the strategies to deliver successful IT projects?

4. Based on your measurement of effectiveness, what strategies did you find to be necessary to deliver successful IT projects?
5. Based on your measurement of effectiveness, what strategies did you find to be unsuccessful for the delivery of IT projects?
6. Please provide any additional information about strategies for the delivery of successful IT projects that we have not yet discussed.

Conceptual Framework

The conceptual framework for this study was coordination theory as proposed by Malone and Crowston in 1990. The tasks, processes, and principles governing the coordination of a project are all part of coordination theory (Malone & Crowston, 1990). Included in these tasks, processes, and principles are also identifiers that assist project members in coordinating not only the activities performed but the project members themselves. Without coordination in a project, the project manager will likely fail at the implementation of a project (Madsen, 2013). Crowston (1997) observed that within coordination theory dependencies exist in any situation but that leaders mitigate these dependencies in multiple ways. One of these dependencies is risk. Risk exists when project managers decide how to move forward with those projects. In addition, when considering the systems development lifecycle for projects managers, a focus on sequential and linear development is important (Stoica et al., 2016). Project managers can use coordination theory to deal these and other factors to support their efforts to control outcomes in administering IT projects (Karpowicz et al., 2018). I used coordination theory as a lens to explore how project managers develop and deploy strategies to

successfully deliver IT projects in the time allotted while adhering to the budget of the project. Coordination theory is a tool that project managers can use to achieve project alignment with stakeholder requirements and resource restraints. Because IT project managers need structure, coordination theory can be used to explore strategies that positively impact IT project success rates.

Operational Definitions

Information technology (IT): IT is a function of computing and computers to store, retrieve, transmit, and manipulate data for a business (Thatcher, Wright, Heshan, Zagenczyk, & Klein, 2018).

Information system (IS): IS is a system that collects, organizes, stores, and communicates information to organizations (Gupta, Kannan, & Sanyal, 2018).

Project life cycle: The project life cycle is a defined set of steps project leaders use to organize a project. Project teams can use the organization of the project life cycle to successfully implement a project from start to finish (Ruiz-Espiga, Severino, & Humero, 2018).

Project manager: A project manager has responsibilities including planning and execution of a project while also administering the project budget, project plan, and project charter (Oliveira, Alencar, & Costa, 2018).

Project strategy: Project strategy includes goals and plans for a project and is closely related to the larger strategy of the parent organization (Kapustin & Grushevenko, 2018).

Systems development life cycle (SDLC): The SDLC is the framework professionals use to design, create, and test, and deploy software (Kneuper, 2017).

Virtual project teams: Virtual project teams are groups of employees working for the same business using tools that enable them to communicate and work with one another while not located in the same area (Zuofa & Ochieng, 2017).

Assumptions, Limitations, and Delimitations

Assumptions

How a researcher views a phenomenon is a combination of knowledgeable beliefs and experiences that lead to assumptions (Antonenko, 2015). For this study, I assumed all participants were project managers and had more than 1 year of experience in the field. I also assumed that the project managers had completed at least one IT project on time and on budget. I mitigated these assumptions by vetting each project manager on their experience and provided them with the background of the study. I further assumed that the participants would answer all questions truthfully. To allay participant concerns about confidentiality, I informed participants that each interviewee receives a unique code in lieu of using their first and last name. Finally, I assumed that I would be able to identify enough participants in the Northeast Ohio region.

Limitations

Limitations are the challenges and issues that cannot be controlled by the researcher (Schary & Cardinal, 2016). The main limitation in this study was the requirement that all participants must be a project manager. From there, I limited the study to only include project managers with 1 or more years of experience and those who

have achieved success in at least one project. I included only project managers in the Northeast Ohio region, which limited the generalizability of study findings to other geographic regions.

Delimitations

Delimitations are those characteristics that researchers use to define the scope of their research (Hill, Knafl, & Santacroce, 2018). I focused only on the IT project managers and IT industry located in Northeast Ohio. Because of the assumption that there is enough research material to focus on the Northeast Ohio region, I limited the study to only this area.

Significance of the Study

To successfully implement projects, project managers complete many actions to deliver the project on time and within budget. As Qin et al. (2017) observed, project managers complete fewer than 50% of projects on time and within budget. Leaders of organizations might use findings from this study to identify strategies they can implement to begin and close IT projects with an enhanced likelihood of success.

Contribution to Business Practice

Project managers perform data collection, data analysis, and processing to successfully implement projects. By understanding and using all phases of the project lifecycle, project managers may be able to achieve higher rates of project success and project coordination (van Marrewijk, Ybema, Smits, Clegg, & Pitsis, 2016). Guo (2019) observed that project managers with a better understanding of the project lifecycle and processes for improved project coordination incorporated better communication practices

and increased the potential for higher success rates of project implementation. Findings from this study may assist project managers in identifying strategies they can use to increase the likelihood of successful project implementations. Project managers who increase the success rate of project implementations may provide their organizations with more financial and resource flexibility to support other projects or departments for improving the organizations' performance.

Implications for Social Change

Project managers who are more successful in the implementation of IT projects assist the organization in saving money on projects and enable cost savings to be passed on to consumers. Project managers can create positive project results by using the processes of successful IT projects to potentially create an opportunity to hire additional employees due to the cost savings from IT projects. Guo (2019) observed that successful administration of projects is of paramount importance to the survival and growth of an organization. By learning and applying key strategies to deliver successful IT projects, organizational leaders may increase the effectiveness of their organizations and gain financial resources necessary to pursue expansion and improve the stability of their organizations, thereby contributing to the growth of the local economy and communities.

A Review of the Professional and Academic Literature

In this section, I provide a comprehensive review of the literature regarding the strategies that IT project managers have used to successfully implement IT projects. I organized the literature review by analyzing broad theories followed with a focused look at IT project management and successful project implementation. The literature review is

organized into four sections: (a) coordination theory, (b) systems development life cycle, (c) project life cycle, and (d) project management.

In the first section, I explain how the conceptual framework is associated with this study by focusing on coordination theory. Coordination theory was appropriate for this study because an IT project is a complex and multifunctioning system with numerous interdependent components requiring coordination to function successfully (Momeni & Martinsuo, 2019). By using coordination theory, I combined both the smaller scope of the study and the main functions of how an IT project functions successfully. By using coordination theory, researchers are able to more deeply explore how and why components and individuals work together successfully (Crowston, 1997; Malone & Crowston, 1990).

In the second section, I provide a review of the current literature regarding the definition and application of the SDLC. The SDLC phases include systems planning, systems analysis, systems design, systems implementation, and systems maintenance (Church, Schmidt, & Smedley, 2016). Because of the amount of risk involved in IT projects, IT project managers must control as much of the process as possible while also monitoring the changes in technology and the IT industry to be successful (Thalman et al., 2014). IT project managers assist organizational leadership by implementing solutions that will best assist those organizational leaders in making the best decisions for the organization. The strategies implemented by organizational leadership depend, to an extent, on the effectiveness of IT project success and implementation (Williams, 2016). Because of the importance of IT projects, project managers must understand the phases of

the SDLC and must successfully navigate each phase to completion for the best results for the organization.

In the third section, I review the current literature regarding the definition and application of the project life cycle. The phases of the project life cycle include initiating, planning, executing, closing, monitoring, and controlling (van Marrewijk et al., 2016). Similar to the SDLC, the project life cycle involves a level of uncertainty because of the technology and changes within the technology industry. Project managers must fully understand the project life cycle to control the responsibilities and tasks involved in each successive phase (Rasnacis & Berzisa, 2017). The project life cycle includes the same set of successive phases that will occur one after another as each phase completes (Yalegama, Chileshe, & Ma, 2016). Project managers who understand the project life cycle and are capable of controlling tasks and resources of each phase are more likely to be successful than those project managers unable to exert control.

In the fourth section, I review the current literature regarding project management as a discipline. The principles and procedures of project management create a foundation for both project managers and organizations to deliver the best possible product or service (Martens & Carvalho, 2017). Due to the increasing complexity and difficulty of successfully implementing IT projects, project managers are required to understand the processes and procedures of project manager at an expert level (Torp & Klakegg, 2016). The project management tenets provide a foundation for a project manager to be successful in the implementation of a successful IT project. Organizational leaders and project managers explore potential informational cues to define a successful IT project

and also use that information to determine additional changes or updates (Zickert & Beck, 2012).

For the literature review, I gathered information related to the research question from peer-reviewed articles, dissertations, doctoral studies, and related academic websites. My primary location for gathering data was the Walden University databases. I used the Business Source Complete, ABI/INFORM Collection, Emerald Insight, SAGE Journal, and ProQuest Dissertations & Theses Global databases as the primary sources for researching and documenting journal articles. I used related academic websites to locate articles that contained information related to the research question. For the database searches, I used the same set of keywords to locate articles. The primary keywords included *project management*, *information technology*, *information technology project management*, *systems development life cycle*, *project life cycle*, *information technology projects*, and *coordination theory*.

I cited 219 literature sources in this study. Of those 219 sources, 212 were peer-reviewed and 163 were within 5 years of the anticipated publication of this study. In Table 1, I provide the literature source statistics for the (a) total number of sources; (b) number of peer-reviewed sources; (c) number of sources within 5 years of the anticipated graduation date of September, 2020; (d) percentage of peer-reviewed sources related to the total number of sources; and (e) percentage of sources within 5 years of the anticipated graduated date of September, 2020, related to the total number of sources.

Table 1

Summary of Literature Review Sources

	Total sources	Peer-reviewed sources	Sources published within five years (2016 - 2020)
Sources (number)	219	212	163
Percentage	100%	97%	74%

The topic of this qualitative multiple case study was the exploration of key strategies for the successful implementation of IT projects. To explore these strategies, I used coordination theory as the conceptual framework for the study. Researchers using the coordination theory analyze the procedures and activities of specific segments of the business and how those specific segments affect the organizational effectiveness when coordinated properly (Crowston, 1997; Jing et al., 2018).

Coordination Theory

Project managers must use a method that assists them in setting up and completing the project. Malone and Crowston (1990) developed the body of principles known as coordination theory. Coordination theory includes the coordination of activities that describes and defines how individuals work together (Crowston, 1997; Malone & Crowston, 1990). The coordination of activities and information processing by more than a single team member is greater than that of a single team member, thus creating a benefit for the project manager to manage dependencies between projects (Crowston, 1997). Organizational coordination refers to multiple groups or individuals working to complete specific tasks (Havakhor & Sabherwal, 2018). Project managers are tasked with

coordinating human and nonhuman resources to best complete projects (Malone & Crowston, 1994). As defined by Malone and Crowston (1994), effective coordination is not seen and is unnoticed by most.

When leaders make a concerted effort to increase the level of coordination within an organization, collaboration improves, and teams work together more effectively. By coordinating both the economic and social influence of an organization, leaders can enhance organizational performance and effectiveness (Santos & Baptista, 2016). Leadership empowering individuals is essential to increasing the amount of coordination throughout all levels of work. These individual team members use different types of coordination to work with others on their teams by creating points of reference that are easily managed (Luna & Terra da Silva, 2015). The types of coordination found by Luna and Terra da Silva (2015) were the forming of shared goals and objectives, the building of a shared knowledge base, and the creation and development of common language to more easily communicate. This sharing of goals, objectives, knowledge, and language improves organizational capabilities by enhancing communication amongst team members. Coordination is a required function for project managers and those managers using the principles of coordination theory to successfully implement IT projects.

Researchers from many disciplines use the tenets of coordination theory. Coordination theory affects numerous disciplines, including computer sciences, management sciences, economics, linguistics, and psychology (Malone & Crowston, 1994). Because of the versatility of coordination theory, I used it as a lens to explore the strategies used by IT project managers to successfully implement and execute projects.

Four coordination processes and groups identified by Malone and Crowston (1994) are the following: (a) management of shared resources and assignments of tasks, (b) management of producer-consumer relationships, (c) management of tasks occurring simultaneously, and (d) management of task and subtask relationships. Project managers use each of the four coordination processes identified while implementing projects successfully. Project managers also govern dependencies within the project which are directly related to the coordination processes and project success (Crowston, 1997). While governing these dependencies, effective project managers work through all four coordination processes instead of only focusing on one process.

IT project managers must manage project teams and the resources, time, and capital, while coordinating the actions of all resources interacting together. Because functional boundaries exist within an organization, leaders must create coordination processes to empower the project managers to achieve success (Jiang & Klein, 2014). The significance of the success of project managers is on display because of the importance of competitive advantage in global business. Project managers using the coordination principles and processes ensures the success of IT projects, thus increasing the competitive advantage of an organization (Banks, Pollack, & Seers, 2016). To achieve corporate goals such as competitive advantage and successful project implementation, IT leaders must focus on coordinating and engaging the project teams and activities.

Resource allocation is a central concept for project managers. Successful project managers create processes for resource allocation activities to ensure consistency across

multiple tasks and projects. The assignment of resources to tasks and the determined amount of time each task requires is included in the planning of the project manager (Malone & Crowston, 1994). Few organizations have unlimited resources to dedicate to every project, so the importance of reliable resource allocation practices is easily visible. Successful project managers create reasonable and easily understood project plans and resource allocation plans to help leadership understand the resources needed to complete a project, thus demonstrating why a specific project should receive resources over another project (Parameswar, Dhir, & Dhir, 2017). The producer-consumer relationship involves a notification process resulting in an activity creating an output that another party can use in a separate activity (Malone & Crowston, 1994). Project managers must manage interrelated tasks and resources, thus showing the importance of the producer-consumer relationship where the output of one team directly affects another team or team member. The communication between and among groups regarding decisions are an important facet of every phase of the project to ensure consistent and reliable use of coordination theory (Rodriguez, Ortega, & Concepcion, 2016).

IT project managers focus on implementing procedures and methods that help them facilitate communication and success. Organizational leaders and project managers determined these procedures and methods to ensure proper alignment with teams and resources. Project managers focus on the alignment of organizational goals, teams, and resources to achieve the goals of projects as laid out by leadership teams. When project management or organizational leadership do not create the necessary coordination and alignment, mistakes occur in the project, thus creating issues for project team members

and leadership (Jiang, Klein, & Fernandez, 2018). All leaders, project managers, and team members should have a basic and shared understanding of the goals of the project leading to a greater amount of collaboration and coordination among groups within an organization (Xia, Dawande, & Mookerjee, 2016). When project managers accomplish alignment of goals and coordination, the project team has a better understanding of what is required of them. Leaders in the organization also require alignment of goals and the project teams to implement effective strategies to ensure success.

All project teams have a multitude of activities to complete the project goals and interaction among these teams is an important part of organizations. Xia et al. (2016) found that effective and efficient collaboration among teams proved why activity coordination is so important to project managers. Complex projects and processes require more coordination to be successful; otherwise, it is possible for activities to become out of sync. When project activities are not properly aligned, the project manager is at risk for failing to meet expectations and requirements as set forth by stakeholders. Because of a high degree of complexity of some IT projects, project managers must have a full understanding of the project, the resources available, and the goals of the project. If the project manager does not maintain effective coordination, the functions of the project can become inefficient or corrupt, thus causing more work, longer timeframes, and increased use of resources (Jiang et al., 2018). Through clean and efficient coordination practices, a project manager increases the likelihood of project success and positive communication with stakeholders (Xia et al., 2016).

Communication amongst project managers and their project teams is of paramount importance to the goals of project managers and the project stakeholders. Patanakul, Kwak, Zwikael, & Liu (2016) found that efficient and timely coordination processes increase the likelihood of success of a project. Project managers can manage large projects or small projects, but the complexity of large projects likely includes additional tasks and communication for the project manager. As projects increase in size, coordination of activities including communication, resource use, and team expenditures become more important. Establishing effective coordination processes at the beginning of a project is necessary to avoid a change in processes later or to avoid costly errors (Jiang & Klein, 2014). Stakeholders expect the coordination processes to achieve positive results and rely on the project manager to ensure these processes are occurring along with communication along all levels of the project.

One of the most vital skills for a project manager to possess is the ability to coordinate with project stakeholders and project team members. According to Wang Han, de Vries, & Zuo (2016), there are three project features that require some level of coordination by a project manager and the project team. To be successful, members of the project team must solve all issues and continually work toward the goal as set forth by the stakeholders. Project managers use the first feature of identifying projects as being large or small to demonstrate the importance of effective coordination functions. Project managers then focus on the second feature of requiring increased coordination of activities as the project environment changes or adapts, which potentially causes confusion in the project life cycle. Lastly, project managers are required to ensure that all

those project tasks that increased in complexity are operating interdependently, efficiently, and effectively to properly coordinate all tasks. Project managers increase the amount of coordination in complex projects to decrease the level of confusion for all activities taking place with the project. Also, by creating more effective coordination strategies, project managers enable the project team and stakeholders to collaborate with one another to reduce the risk of error and increase the likelihood of project success (Xia et al., 2016).

Project managers coordinating amongst all teams to work toward a common goal assist the project teams in accomplishing the tasks needed to complete the project. Poor coordination among project teams can lead to poor communication of project requirements, lack of communication throughout the different levels of stakeholders, unnecessary increased expenditures, and defects in the project tasks (Doherty, 2011). Project managers can avoid many of these pitfalls by implementing effective coordination at the beginning of the project and ensuring there is an open line of communication to all levels of the project. Coordination theory does have limitations, however. Sanchez, Terlizzi, & de Moraes (2017) found that the cognitive aspects of situations such as the different ways people think and communicate those thoughts are not considered and thus may not be the most complete theory. Because I chose to focus on all aspects of a successful project manager, coordination theory was the best choice to focus on the entire process rather than only the cognitive processes that Sanchez et al. (2017) studied. Project managers effectively managing the project team understand that the cognitive process is an important part of coordinating activities, but it is not the only

process. By focusing too much time on an individual process, project managers may lose sight of the goal and why they chose coordination theory.

Project stakeholders and project managers analyze the requirements and needs of an organization to best address how a project is constructed. Contingency theory is the idea that the best course of action to operate a business is contingent upon both internal and external factors (Worren, 2017). Project managers and leaders of organizations use contingency theory of management to create an organization based on what the environments in which they are working require (Worren, 2017). Leaders in the organization should not limit their management to one management approach. Some leaders adapt and change their management method based on the environment they are working in and the demands of that environment (Longenecker & Pringle, 1978). I did not choose to pursue research using the contingency theory of management because I wanted to focus on how coordination happens in an environment that is largely constant and does not change rapidly. I chose coordination theory over the contingency theory of management so I could more easily research and study situations that were not in a constant or near-constant state of change due to project needs. Project managers must consider how the interdependence of systems in a project affects the stakeholders and project team and must adjust accordingly (Santos & Baptista, 2016; VanVactor, 2015).

The final theory I considered using as a framework for this study was the theory of constraints. Project managers use the theory of constraints as a guiding tool to manage the day-to-day and long-term goals of an organization (Parker Dressel, Chevers, & Zeppetella, 2018). I chose not to use the theory of constraints as the framework for my

study because the theory states that the single most limiting factor in project processes must be identified and then improved upon (Killen, 2017). Rather than focus on only one process improvement at a time, I preferred to research all strategies included in successful projects. Additionally, in researching the strategies that project managers use to successfully complete projects, there can still be process improvement on a broader scale rather than focusing on only one issue at a time.

In selecting coordination theory as the framework of my study, I recognized the entirety of the scope of my project and so limited myself to only one theory. Because coordination is such an important aspect of all projects, focusing on this aspect of project management allowed me to gain information from my research and interviews that I used to advance the study of successful projects. I used the basic principles of coordination theory to research and determine how project managers manage the expectations of the stakeholders as well as the needs of the project team (see Momeni & Martinsuo, 2019). Project managers can increase the likelihood of project success by developing coordination strategies that assist both the stakeholders and project team and communicate expectations and goals (Xia et al., 2016). With each successful project implementation, project managers should record the processes and strategies that were effective and use those strategies on future projects to increase the chance of project success.

Systems Development Life Cycle

The SDLC was developed to improve the success of IT projects and to increase efficiencies within those projects. Organizational leaders began to understand the

importance of refined and coordinated activities within an IT project because of the increased capabilities of technology (Zou, Kiviniemi, & Jones, 2016). The implementation of IT projects is a complex undertaking that requires both individual and team coordination to successfully build a product as specified by requirements from stakeholders. The SDLC is divided into five distinct phases: (a) system planning, (b) system analysis, (c) system design, (d) system implementation, and (e) system maintenance (Church et al., 2016). Project managers use the SDLC and associated phases to monitor each task assigned to a project team member and to gauge the progress made at each phase (Stingl & Geraldi, 2017). When used properly by project managers and stakeholders, the SDLC is a powerful tool to increase the likelihood of success for any given project. While each phase in the SDLC has specific tasks and timelines associated with it, project managers can oversee multiple phases of a project at one time because some tasks do not line up perfectly chronologically and must be completed before or after another task.

System planning. The system planning phase is the time the project manager uses to assess what the stakeholders require. The system planning phase is also the time the project manager spends estimating timelines and resources required to complete the project. The project managers and stakeholders set goals, define targets, establish schedules, and estimate budgets for the new project during the system planning phase (Sabri & Alfifi, 2017). Project managers use project planning documents and meeting minutes to organize the system planning phase (Sabri & Alfifi, 2017). During the planning phase, project managers explain to stakeholders the strategic value of the project

and the benefits incurred by the organization (Khaparde, Somani, & Malde, 2015). The system planning process is integral to the system development life cycle as it is necessary for it to occur before project managers and stakeholders can move on to the system analysis as a lack of planning may result in incorrect goals and misunderstanding of the project. Project managers plan as much of the system development life cycle as possible and implement the timelines and guidelines proposed.

System analysis. After the project manager has planned the high-level view of what the project will look like, an analysis is performed on the current system and how the new system will interact with it. The system analysis phase also includes the limitations, risks, and assumptions the project manager must analyze and understand (Church et al., 2016). The project managers and stakeholders analyze all interacting components of the project and also analyzes the operational procedures of the organization (Sabri & Alfifi, 2017). Using a system interface and pseudocode are what project managers do to organize the system analysis phase (Sabri & Alfifi, 2017). By determining the needs and requirements stakeholders have for a project, project managers can start the next phase of the system development life cycle (Church et al., 2016).

System design. The system design of any project is of the utmost importance to a project manager and the project team. The system design phase is where the planning of the system and analysis of the current and future systems combine to form a complete picture of what the project team will work toward (Tilk, 2016). This phase includes involving project managers, system architects, and business analysts to create a system design that will not only enhance the current system but will work with all other systems.

The members of the project team define the architecture, components, modules, interfaces, and data of the new system to address all requirement specifications (Sabri & Alfifi, 2017). An application flow and data flow diagram are useful to project managers when organization the system design phase as well as using system specifications so the system is well-defined (Sabri & Alfifi, 2017). Also included in the system design phase are the establishment of a code review process, the creation of testing requirements, and the creation of a traceability matrix (Tilk, 2016). Project managers use these tools to align the project resources and goals and to move into the implementation phase.

System implementation. The system implementation phase is the phase in which much of the visible work is performed by the project team. Software developers spend nearly all of their time implementing the system or solution that has been planned, analyzed, and designed by other members of the team (Aljawarneh, Alawneh, & Jaradat, 2017). During the system implementation phase, the project team processes all data, installs the new or updated product, trains users and stakeholders on the use of the new or updated product, and provide any other support needed to complete the project (Sabri & Alfifi, 2017). Project managers organize the system implementation phase by rolling out actual program code and using a graphic user interface to display all the changes or updates made to the product (Sabri & Alfifi, 2017). Architectural changes may take place during the system implementation phase if conflicts arise when developers are creating the product (Aljawarneh et al., 2017). When this occurs the project manager must gather all necessary information to make an informed decision before completing the project and moving into the maintenance phase.

System maintenance. The system maintenance phase occurs directly after the system implementation phase but both can occur concurrently depending upon the structure of the project. This phase is planned for by the project manager, organizational leadership, and software engineers to ensure the outputs of a completed project continue to function beyond the timeline of the project (Kumari & Srinivas, 2016). After system implementation or during the implementation phase, members of the project create data backups, install and manage malware components, install file system maintenance, and perform any other general maintenance as needed by the requirements of the project and the requirements set forth by the customer (Sabri & Alfifi, 2017). The project team creates reports and change management documents to organize the system maintenance phase (Sabri & Alfifi, 2017). These reports and change management documents are especially important because they are included in organizational documents beyond the project and those project team members tasked with maintaining the product after the project has been completed can use those documents to understand what is needed and how tasks can be accomplished best (Kumari & Srinivas, 2016). Without the documentation of how the system works, the project manager would struggle to maintain the product and the system maintenance phase would become much more involved.

Project Life Cycle

The four phases of the project life cycle are the initiating phase, the planning phase, the executing phase, and the closing of the project. During these four phases, changes occur within a project that are oftentimes unpredictable and must be managed by a project manager (van Marrewijk et al., 2016). The sequencing of these changes and

phases to ultimately accomplish the goal of the project is the entirety of the project life cycle (Saghir & Abdullahi, 2017). Different activities from each of these phases can occur simultaneously but the phases themselves occur in a logical and meaningful order to give a project a viable solution and timeline (Yalegama et al., 2016). The initiating phase always comes first as this starts the project and leadership determines the direction from that point.

Included in the project life cycle are the steps of gathering of requirements, analysis of those requirements, designing an applicable solution to the project that is to be solved, and finally implementing that solution once it has been developed and tested (Rasnacis & Berzisa, 2017). The business requirements come from the business idea to initiate the project and system, and technical specifications follow (Addas & Pinsonneault, 2016). Leaders recognize the need for change by using informational cues and focusing on the interdependencies among these cues to determine where processes and practices can be improved or built upon (Zickert & Beck, 2012). When leadership communicates these changes, project managers are then expected to follow through with initiating the project life cycle to accomplish the goals set forth.

An important facet of the project life cycle is the activity of estimating of the time and resources required to complete the requested changes and accomplish the goals determined necessary by leadership. Before the development phase occurs, the project manager and stakeholders plan the project to determine the necessary resources for expedient and successful completion of the project (Korytkowski, 2019). The time estimation of project managers is directly impacted by three factors: preparation,

production, and proving (Armour, 2013). The first factor, preparation, involves the setup of infrastructure such as servers, tools, and applications as well as the sourcing of staff to prepare for actual production (Armour, 2013). The second factor, production, occurs when the work is being completed and development is performed by the development team under the guidance of the project manager (Armour, 2013). The third factor, proving, occurs when development has completed and testing as well as fixing is performed by the development again under the guidance of the project manager (Armour, 2013).

Project managers and stakeholders have been using iterations of the project life cycle for years. The project life cycle has evolved from a basic viewpoint of project managers in the 1980s to now include the planning phase in all preparation (Badewi, 2016). Previously, the planning phase was not included until leadership recognized the importance of stakeholder management on project success and so the planning phase was included more frequently (Badewi, 2016). The additional tasks within the planning phase for project managers and stakeholders include refining objects and goals and determining risk and resource allocation (Almgren, 2014). Organizational leadership started adopting the principles of the project life cycle with the understanding that projects with increased amounts of structure are more likely to succeed than those projects without the structure and guidance of a project manager in place (Badewi, 2016).

Initiating phase. The first phase of the project life cycle is the initiation phase. The tasks included in this phase are the setup of the project including identification of any issues that exist, solutions proposed to solve the issue, objectives to be achieved

during the course of the project, and conceptual aspects pertaining to how to complete identified activities (Portillo-Tarragona, Scarpellini, Moneva, Valero-Gil, & Aranda-Uson, 2018). Also included in the initiating phase are tasks that leadership to create the definition of the project using a full investigation of possible solutions, the scope of work to be completed as well as what is out of scope, risk analysis, and finances and other resources available to start and complete the project (Portillo-Tarragona et al., 2018). Organizational leaders must evaluate what needs to be accomplished and must also ensure the project aligns correctly with the corporate strategy and vision (Joslin & Müller, 2016).

The initiating phase is where the project starts and where organizational leadership communicate clear goals. By definition, if there is no initiating phase then the project has not officially started as this marks the beginning of any project (Krajcik, 2013). The ideas and goals set forth by organizational leadership are of paramount importance; otherwise, no work can be accomplished. Organizational leaders determine project scope as well (Kocherla, 2012). Stakeholders create a risk management plan and a cost-benefit analysis (Kocherla, 2012). Also important to note is that there are many activities that overlap not only for the initiating phase but for all phases because tasks need to be completed in a timely manner and dependencies and interdependencies exist among the phases (Portillo-Tarragona et al., 2018).

Many roles are involved in the project life cycle beyond the stakeholders and organizational leadership. Those roles include product owners, project managers, business analysts, system analysts, and quality assurance analysts (Kocherla, 2012). The

definition of roles by organizational leadership is important because confusion will be avoided as to who is responsible for what task (Portillo-Tarragona et al., 2018). After assembling the team, communicating objectives, and defining tasks, the final artifact is an approved project charter to maintain consistency with the objectives of the project (Yalegama et al., 2016).

Planning phase. The planning phase is the second phase of the project life cycle. The tasks included in this phase are for leadership to refine the objectives and goals as well as determine the risk for the project and resource allocation (Almgren, 2014). The project manager and all stakeholders collaborate to determine the information communicated to the project team to complete the project, discuss primary risks, define what a successful project is considered, and allocate required resources (Saghir & Abdullahi, 2017). The planning phase is especially important because this is the time stakeholders and project managers come together to plan the entire project and put together a logical plan to achieve the best results (Cleland, 2007). If leaders lay out logical and efficient goals and tasks on how to accomplish those goals, the entire project team benefits from leadership with a clear understanding of why the project exists.

During the planning phase, stakeholders and project managers must evaluate the impact the project will have on an organization during the project and after the project has completed. Employee practices and tasks, organizational processes, and customer relations are affected by the decisions of leadership on why and how a project should be completed (Kocherla, 2012). The stakeholders and project managers must determine what the goals of the project are, how to achieve those goals, how to create a schedule and

timeline, and how to create an estimation of the need of resources such as time, employees, and finances (Sabri & Alfifi, 2017). By establishing these guidelines for the project during the planning phase, stakeholders can ensure tasks are done on time with the resources that are needed available for use.

The planning phase of a project is integral not only for setting requirements for the project but also because project managers and stakeholders can come together to create avenues for communication and directly discuss expectations. Project managers and stakeholders must consider the planning phase to be a primary part of the entire project to be successful (Alsharo, Gregg, & Ramirez, 2017). All responsibilities must be split among the stakeholders and project managers. Project managers are responsible for most of the planning while stakeholders are responsible for looking ahead and understand that expectations and requirements may alter in the future as the project evolves (Cleland, 2007). Even though project leadership cannot anticipate all possible changes and events, all those involved in the planning phase must do their best to draw upon their experiences and knowledge to anticipate as many of the challenges as possible that may arise during the project to ensure success.

Another piece of the planning phase includes analysis of the risks associated with the project as well as contingency planning in the instance that the original planning does not accomplish all objectives or risks are encountered that need to be mitigated. A tool developed to analyze and assess risk is named the risk matrix and this contains each of the risks identified by stakeholders and project managers in the order of their impact and the likelihood of them occurring (Ahamed, 2012). If the impact of a risk is low or the

likelihood of the risk occurring is low, project managers assign this risk a lower value because it is unlikely to affect the project when compared with other risks. Project managers and stakeholders perform this analysis during the planning phase (Project Management Institute [PMI], 2017).

The last part of the planning phase involves project managers and stakeholders creating detailed lists of necessary activities to achieve project success. These necessary activities are then assigned by the project managers to the appropriate resources while also estimating the duration of each of these activities (Ahamed, 2012). After the estimation is completed, the resources must be scheduled to align properly with when these tasks need to be completed as this allows project managers to successfully communicate with both stakeholders and project team members (Ahamed, 2012). Stakeholders and project managers assign the responsibilities and resource allocation after reviewing processes and the requirements of the project (Karpovsky & Galliers, 2015). When analyzing requirements for the customer, stakeholders and project managers must understand the requirements of the customer in the present as well as the requirements of the customer after the project has been completed.

Executing phase. The executing phase primarily includes the tasks performed by the project team to create a product as specified by the customer. The project manager monitors costs to ensure the budget is followed as closely as possible. The project manager performs this task by coordinating the actions and tasks of the project team and communicating to project stakeholders regularly (Hak, Morandi, & Magenes, 2018). Project managers start the executing phase after all tasks have been created, timelines are

communicated, project success is defined, and all necessary resources have either been obtained or a plan is created to ensure the resources are available when needed (Windapo, Oyewobi, & Zwane, 2014). By properly aligning resources and expectations before the start of the executing phase, project managers can increase the likelihood of success and allows them more time to focus on unexpected issues that may arise during the course of the project.

The executing phase for a software project involves many actors including software architects, project managers, project stakeholders, business analysts, software developers and several others. Every actor in a project has a specific role to play during the executing phase. The software architect and customer work closely together along with the project manager to design a product that works best for the customer (Sabri & Alfifi, 2017). The business analyst works with all team members to gather and interpret business requirements while the software developer works on the implementation of the project per the designs of the software architect (Sabri & Alfifi, 2017). When the project team works together effectively and completes their tasks successfully, the likelihood of on-time project success increases. The software architect will deliver a design for a software developer to create while the business analyst gathers business requirements before any designs have begun. The business analyst gathers requirements and works with the team to deliver those business requirements in a more technical way to help create technical documentation. The project manager must cultivate positive communication practices to listen to what the customer needs and to translate those needs into a product (Vasumanthy & Mohan, 2013).

During the executing phase, the project manager may need to change small or large portions of the project to suit the needs of the customer. The project manager may also be required to change the structure of the project due to internal or external factors that are not in the control of the project team. These internal and external factors are most commonly changes to time, resources, and team members (PMI, 2017). Even those teams consisting of the most skilled project team members may encounter unanticipated delays or issues (Vasumanthy & Mohan, 2013). When changes occur, the project manager must communicate expectations and how the project team will stay on track to complete the project in a timely manner.

Closing phase. The project manager initiates the closing phase of a project when all tasks are completed or accepted as complete. As part of completion, the customer reviews and accepts the project deliverables (Yalegama et al., 2016). This review and acceptance of deliverables by the customer may take a significant amount of time because the customer will ensure all components of the project work as specified (Yalegama et al., 2016). A major component of most projects and a stipulated condition of customers is the timeliness of a completed project as delivered by one organization to another. Because project stakeholders and project managers are unable to correctly anticipate every detail throughout the project, it is possible that the project may extend beyond the original date of completion. Project stakeholders must intervene when it is apparent that a project will not complete on time and work with both the project team and the customer to determine the best path to success (Yalegama et al., 2016).

The impact of the project managers and stakeholders managing the closing phase appropriately cannot be overstated. If the closing phase is correctly performed, the project team conducting the project is likely to have a greater chance of success in delivering the project to the customer more quickly than if the closing phase is not performed appropriately or at all (Yalegama et al., 2016). A project manager can use the time spent during the closing phase to schedule meetings with organizational leadership, other project managers, the project teams, and with the customer to determine those actions deemed most successful and those deemed unsuccessful (Kocherla, 2012). Although every project is different, important lessons learned by the project teams can be implemented in future projects to help increase the likelihood of success.

Monitoring and controlling. The project managers and stakeholders monitor and control aspects of a project. Project managers perform monitoring and controlling activities throughout the life of the project and beyond completion of the project (PMI, 2017). This aspect of the project is crucially important because all activities should be monitored and controlled to ensure the best results. Without proper monitoring and controlling of all tasks of a project, the project manager may lose track of where the project is, what tasks are being completed by project team members, and may report inaccurate updates to the project stakeholders. The project manager must manage the time of all tasks including the overall timeline of the project, the cost of the project and each individual component of the project, and the overall quality of the work to ensure it meets the standards set forth by organizational leadership (Kocherla, 2012). Also included in the responsibilities of the project manager is to communicate properly with

stakeholders and link all work together in a cohesive manner so as to efficiently complete all tasks (Kocherla, 2012). During the course of the project, the project team may encounter issues or changes to the project structure and it is the responsibility of the project manager to continually update success factors and risk with the changes (Kocherla, 2012). Simultaneously, while the project manager manages the responsibilities of the project, they must also collaborate with organizational leadership to create reporting structures to follow all facets of the project and also to monitor project performance (Wysocki, 2014). Without the appropriate level of oversight and management of a project by project managers, the risk for failure or extra costs increases.

Communication among all levels of the organization is key to ensuring monitoring is performed successfully by project managers. Project managers can perform this communication and monitoring using formal or informal methods. Both of these methods are important to the project as both formal and informal strategies performed by project managers are useful in different ways (Mao, Liu, Zhang, & Deng, 2016). Formal control is defined as a rigid set of measures and rules with which project teams interact and perform their tasks while informal control is directed by project managers at forming a cohesive team and ensure that everyone on the project team can work together, communicate in a logical and thoughtful manner, and perform their tasks and others while working closely with the team (Mao et al., 2016; Marks, O'Connor, & Clarke, 2017). Even with the strictest of guidelines, however, a project manager cannot guarantee success of the project because there are many other variables that need accounted for outside of the full control of the project team.

Project managers must use control of the project as a tool to successfully manage a project. However, the control a project manager has over a project is only one factor for project success. Both project stakeholders and project managers should understand that all employees perform differently and all need to be monitored and controlled in a different way to work as efficiently as possible (Abbasianjahromi, Sepehri, & Abbasi, 2018). One of the keys to working correctly with all levels of an organization is gaining an understanding of what each employee needs to succeed and it is then the job of the project manager to research and implement strategies that complement the skills and abilities of each employee (Abbasianjahromi et al., 2018). These levels of control include basic performance management performed by the project manager and the stakeholders to ensure everyone on the project team is correctly aligned and everyone is working toward the same goal.

Project Management

Employee turnover and loss is a starting point to determine if the selection of Agile or Waterfall methodologies contributes to turnover and loss. March and Simon (1958) introduced the distal-proximal turnover framework to research why employees leave a business. March and Simon observed employees leaving because the employees felt they were contributing more than what they were receiving from the business. Secondly, March and Simon observed that employees moved if they truly want to move and if they can easily move. Lastly, March and Simon also observed that employees will leave under certain conditions, but there are other conditions that were not taken into

consideration. However, the foundation built by this research allowed for researchers later to expand upon the content (Venkatesh, Brown, & Sullivan, 2016).

Before a researcher begins analysis of employee turnover, the first task completed is researching why turnover occurs. The research performed by March and Simon (1958) is a start to analyzing why employee turnover occurs. Research, methods, and communication have changed since 1958, but it is still important to note that the two aspects of the turnover theory are still relevant today. Many more aspects were added to the research performed by March and Simon, but their studies formed the foundation of this research. The IT industry experiences a high turnover rate amongst younger employees due to the availability of higher salaries at other organizations but largely experiences similar turnover reasons as other industries (Guha & Chakrabarti, 2016). Employee turnover is a result of several factors including my research of choice on the selection of project management methodologies.

Researchers must take a step to analyze the risk of a project while also researching ways to mitigate any issue that arises. Acevedo (2016) explored the strategies used by IS and IT project managers to control and mitigate risk for their projects. This study uses the coordination framework posed by Malone and Crowston (1990) explaining how to coordinate tasks and how employees can work together to accomplish those tasks. Acevedo (2016) observed that project managers receiving support from the leaders of the business is the main factor for project success or failure. With the support leaders, employees can move forward on the project knowing their work is useful and appreciated. Because the research is limited to Puerto Rico, the results may not test the

same in other areas. A replication of the study performed by Acevedo in different areas is needed to observe if the results are the same or different in other parts of the world.

By selecting a specific region to perform research, researchers narrow the focus of the research thus allowing for more time spent on a specific subject. Acevedo's (2016) research is specific to Puerto Rico but is well-situated within the coordination framework research performed by Malone and Crowston (1990). Acevedo observes the same results and characteristics and focuses on support from management. The same research can be done in other areas of the world and with other businesses to identify gaps in the current literature. Many of these studies are likely to come to the same conclusion, but further research needs performed to identify gaps and resolve issues that arise from those gaps.

Managing projects comes with risks the project manager must understand and mitigate as needed. Project managers and project stakeholders have a general understanding of project risk thus application of project risk management is an important facet to the organizational project life cycle (Javani & Rwelamila, 2016). The loss of resources such as time and money can result from incorrectly managed projects (Zhang & Zuo, 2016). Anticipating a risk before it happens is the most effective way to remove that risk. However, this is not always possible. When a risk is found, a straightforward solution is the best choice, or the leaders can remove the cause of the potential risk entirely thus avoiding the risk. There is a flaw in some of the reasoning that leaders can simply eliminate the cause of the risk to remove the risk altogether. By eliminating a cause, another risk may be created inadvertently, and the leaders may not know about this new risk until much later in the project.

Identifying the cause of risks and acting upon them fits within the framework of the study. Zhang and Zuo (2016) observed several ways to mitigate risk including finding the causes of risks or addressing the risks in a straightforward manner. Conrow and Shishido (1997) observed the inconsistent performance in software projects which let them studying why this was occurring. Zhang and Zuo (2016) performs a logical analysis of why projects fail using the framework Conrow and Shishido (1997) posed.

Researchers make use of tools to best analyze and mitigate risk in their projects. Ahamed (2012) created a risk and probability matrix to help leaders analyze the risks that can occur during a project. Shrivastava and Rathod (2017) created a similar framework to assist IT leaders in mitigating risks in projects by ensuring communication among all stakeholders is positive and all gaps are addressed. The goal of creating this matrix and framework was to develop solutions and contingency plans to mitigate the risks. While it is not possible to determine all risks at the beginning of the project, the exercise is a useful one. Project managers identify many risks thus allowing leaders to prepare plans.

Researchers and organizational leaders should use the tools available to them to best address any project situation that may arise. Leaders have tools and research at their disposal to analyze and mitigate risk (Ahamed, 2012; Shrivastava & Rathod, 2017). This research follows research that reveals the necessity for risk mitigation before a risk exists. Project managers preparing for potential or future risks are better prepared for risk situations that may arise (Shishodia, Dixit, & Verma, 2018). By anticipating what may happen, project managers can create an accurate project plan to save time, money, and

other resources. The next step in the process may be to create a scoring system that suggests the next actions depending upon the risk the project contains.

To best research or complete a project, project managers must perform an analysis on the type of methodology that best fits the project. Rasnacic and Berzisa (2017) examined how to select a methodology using their decision tool and support. A similar approach the researchers noted is the analytic hierarchy process by Saaty (2008). The decision model and tool developed by Rasnacic and Berzisa (2017) have been used in practical situations and assists leaders in making the correct decision based on available information. Of importance is that the decision model should not replace an expert in the field. Leaders must use the model and tool to assist in the decision-making process but not as the sole determination method.

Many tools and decision models share similarities with other tools and decision models. The tool and decision model created by Rasnacic and Berzisa (2017) is similar to the analytic hierarchy process created by Saaty (2008). These two hierarchies and processes work together to answer questions the other model cannot. The next step for the decision model is to focus on the rules and characteristics of the model (Rasnacic & Berzisa, 2017). When the decision model and tool are updated, the usefulness of both will increase thus allowing more professionals the opportunity to use both.

Voluntary training in IT is an important aspect of professional growth. This training adds to the success rate of projects (Mamonov & Koufaris, 2018) as long as the training is conducted in a useful and logical manner. The importance of training and education for project managers is emphasized by the research performed by Geithner and

Menzel (2016) when they studied the failure rate of projects compared to the amount of training and education received. A correlation exists between failed projects and little to no training and education in project management techniques. However, there is no guarantee that training and education in project management techniques will automatically cause success in projects. Other factors not addressed by Geithner and Menzel (2016) such as time constraints and monetary resources should be taken into consideration to provide a fuller view of how and why projects fail.

Project managers have numerous choices of how to increase their skills and knowledge. However, there is little evidence that traditional project managers with certifications are more capable in the project manager role than those who have no formal training (Marzagão & Carvalho, 2016; Papke-Shields & Boyer-Wright, 2017). This evidence shows the need for more progressing and updated training. Many project managers learn by having a large quantity of information thrown at them with some of that information sticking with them (Chen et al., 2019). Geithner and Menzel (2016) build upon these ideas and data by addressing the updated training and education concern.

Transition

In Section 1, I presented my topic and created the foundation of the study while focusing on the background, business problem, research question, conceptual framework, research method, and interview questions. Included is the significance of the study showing the positive impact this research will have on both business and the topic of project management. In the literature review, I explored the topics of project

management, project lifecycle, systems and software development lifecycle, and technological communication tools and I discovered information on the application of project management today.

In Section 2, I focused on the design of the study and the methodology of the study. Section 2 also includes the use of qualitative research to analyze the key strategies for IT projects. I described the method of ethical qualitative research, the data collection and organization techniques, and the data collection instruments I used. Data analysis, and reliability and validity of the findings are also included in Section 2. Finally, Section 2 includes discussion of the role of the researcher, participants, and population selected for the study while also restating the purpose statement. I concluded Section 2 with a transition and summary section.

In Section 3, I restated the purpose statement and the research question as well as included the findings from my research. I then discussed the application for professional practice that my research addresses. I included the implications for social change, recommendations for action, and recommendations for further research based upon my findings. To finish, I included a reflection section as well as a conclusion.

Section 2: The Project

IT project managers add value to organizations when successfully leading projects to completion. However, project success rates remain low despite efforts to increase the rate of success (Qin et al., 2017). In Section 2, I explain in detail (a) the role of the researcher, (b) participants, (c) research methodology and design, (d) population and sampling method, (e) ethical research, (f) data collection instruments, (g) data collection techniques, (h) data organization techniques, and (i) reliability and validity.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies project managers in the IT sector use for delivering successful IT projects. The targeted population consisted of six IT project managers from three businesses in Northeast Ohio who had developed and implemented strategies for delivering successful IT projects. The implications for social change included the potential for business owners to learn how strategies could be used to successfully complete IT projects, thereby allowing owners to increase and conserve financial resources to create more jobs or pay higher wages to current employees. New employees and employees who earn more may spend more money within their communities, contributing to local economic growth.

Role of the Researcher

The researcher plays a vital role in conducting the study in qualitative research. Hamersly (2015) noted that the researcher designs the study while also gaining approval from the institutional review board prior to data collection. To best gather information from participants, researchers must establish a trusting relationship with them (Sanabria,

2014) while simultaneously collecting, organizing, and analyzing the data (Hooper, 2013). The data collection process involves the researcher performing interviews, observation, and analysis of archives and documents (Petrova, Dewing, & Camilleri, 2016; Yin, 2017). I followed the appropriate form and protocol while conducting each interview to gather information in a relevant and consistent manner. To obtain the relevant and consistent information I asked questions that required an in-depth explanation, I recorded all interviews in audio form, I typed notes as the interview occurred, and I prepared all data gathered to allow for a follow-up interview to clarify answers or gain new information.

My career has been focused on IT project management and I have worked in conjunction with other IT project managers as well as others involved in implementation of the projects. Successful project implementation and the strategies used by project managers are of unique importance because of the direct impact to business operations. By maintaining the business and personal relationships with project managers, I selected several previous colleagues for this study. To ensure I met ethical standards, I followed the ethical guidelines and principles in *The Belmont Report* (National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research, 1979).

The Belmont Report identified three ethical principles for the conduct of interviews: (a) respect of persons, (b) beneficence, and (c) justice (National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research, 1979). By adhering to these three ethical principles, I treated each participant with respect and integrity. Before beginning the questioning process, I ensured the interviewee understood

there is no compensation or incentives offered for their time and participation in the study.

To reduce bias, I used bracketing and member checking. Researchers use bracketing to reduce and mitigate bias in interviews (Chen & Han, 2016). All researchers potentially affect information gathering during direct interaction with the interviewees by injecting their personal bias whether it is intentional or unintentional (Kalu & Bwalya, 2017). Through note taking during interviews, bias was mitigated through bracketing. I also used member checking as this increases the accuracy of the data collected by following up with interviewees to ensure the correct information has been collected for analysis (Wilson, Velera et al., 2016). After each interview, I asked the participant to review the summary of findings and either make corrections to the summary, add more information, or correct the incorrect information in the summary (see Wilson, Valera et al., 2016).

I used an interview protocol and semistructured interviews to gather data from participants through the use of open-ended questions created before the interviews. I asked each participant the same questions as the other participants. The participants also read through a standardized script at the beginning of the interview before the questions and at the end of the interview after all questions had been answered (see Castillo-Montoya, 2016). To minimize potential biases or personal influences by shifting to another attitude, I used bracketing (Englander, 2016). By taking notes during the interviews and during analysis, I minimized bias and personal influences. I created the transcripts of the interviews and asked the participants to review the transcripts to ensure

all answers provided had been transcribed correctly (see Birt, Scott, Cavers, Campbell, & Walter, 2016).

Participants

The selected participants for the study possessed a predetermined amount of experience and could answer the interview questions posed. The experience requirement for the participants was a minimum of 5 years of managing IT projects. Eligible study participants were individuals who could answer the interview questions knowledgeably and logically (Khodyakov et al., 2017). Participants are typically chosen for qualitative research because of the knowledge those participants possess about a specific topic and the goals to be achieved by the qualitative researcher (Yin, 2017). I selected six participants who (a) were current IT project managers in the Northeast Ohio area, (b) were knowledgeable about the topic of the study, and (c) met the eligibility requirements.

To gain access to these six participants, I used professional relationships for some project managers and referrals from other project managers to interview those with whom I did not have a professional relationship. I created a pool of more than six potential participants so if one or more of the original participants was unable to interview, I could maintain my plan of six participants. Purposive sampling or selecting the best candidates for the research first that are the most knowledgeable (Merriam, 2014), is the sampling method that I used for the pool of candidates.

To build a working relationship with each participant, I gained an understanding of their project management experience and their overall work experience. By using face-to-face meetings, phone calls, and e-mails, I developed a professional relationship with

each participant before completing the interviews to ensure I had the correct participants. I also communicated via writing and verbal communication the reason for the research as well as the boundaries for those interviewed. Disclosing relevant information is how qualitative researchers gain trust with each participant (Evans, 2018).

After gaining Institutional Review Board (IRB) approval to conduct my study, I called and sent e-mails to each candidate to discuss participation in the study, including the purpose of the study, how the study and results would be kept private, and how both the community and business leaders can potentially benefit from the results of the study. An informed consent form was included in the e-mail, and I asked the participants to sign this form and return it to me if they wish to participate in the study or decline and return the form to me if they did not wish to participate in the study. After gaining participant acceptance and approval to participate in the study, I contacted each willing participant by phone to discuss an interview date and time that best suited their schedule.

Building a trusting relationship by discussing with participants all information important to the study is essential for qualitative researchers (Evans, 2018). I discussed with each participant the objectives and goals of the study, the interview protocol, and how each participant received a unique code to protect confidentiality. I asked questions the participants had to offer clarity on all parts of the study. After discussing with the participants what would happen during the interview, I asked them to complete an informed consent form to ensure I conformed to expected and published ethical standards. There is an expectation of qualitative researchers to develop a level of trust

with the participants of the study and the use of consent forms demonstrates that level of trust (Evans, 2018; Kokolakis, 2017).

Research Method and Design

I used a qualitative research methodology and a multiple case study design for the study. Researchers use qualitative methodology to gather data in a flexible manner while developing a rich understanding of the specific research topic (Caputo, Veltri, & Venturelli, 2017). Researchers use case study design to gather data from participants who experience the phenomenon directly (Fletcher, de Massis, & Nordqvist, 2016).

Research Method

I used a qualitative research methodology for the study. By using qualitative research methodology, the researcher implements a process to acquire knowledge about a subject (Mohajan, 2018). Qualitative researchers identify themes and patterns to gain a greater understanding of the phenomena they are studying (Petrova et al., 2016). The complexity of the technical phenomena in the IT field is a good fit for a qualitative research methodology but not for quantitative research (Chughtai & Myers, 2017). The use of qualitative research does not place limits on researchers by assuming a specific outcome and allows the researcher to gain insight into the phenomena (Caputo et al., 2017). Using qualitative methodology enabled me to explore participants' insights and ideas regarding strategies they have used and to develop themes and patterns to explore. The qualitative approach was a more complete and appropriate method to use for my study than a quantitative methodology or a mixed methods.

Qualitative research is exploratory while quantitative methodology involves statistical research and procedures. Quantitative researchers examine a hypothesis by using measurements to (a) test theory, (b) evaluate statistical significance, and (c) establish relationships (Paskaleva et al., 2017). Quantitative researchers use statistical procedures and models to conduct tests on relationships through the use of numerical data and variables (Park & Park, 2016). The purpose of this study was to research and explore the strategies of the participants by using open-ended interview questions and so a quantitative methodology was not appropriate.

The mixed methods approach is a combination of both qualitative and quantitative research. Researchers use mixed methods when neither the qualitative nor the quantitative methodology are sufficient to explain a phenomenon independently (McDonald et al., 2019). The purpose of this study was to explore the strategies project managers use to successfully implement projects. The use of statistical analysis and hypothesis testing was not appropriate, so I did not select the mixed methods approach for the study.

Research Design

I used a multiple case study research design to conduct this study. A multiple case study design is used to research a holistic and real-world perspective of the phenomenon (Yin, 2017). In qualitative research, a case study does not have clear boundaries between the phenomenon and the environment thus researchers can more freely explore and investigate the phenomenon (Ji et al., 2019; Yin, 2017). By using a case study design, researchers gain a greater understanding of a phenomena allowing them to create further

research opportunities (Runfola, Perna, Baraldi, & Gregori, 2017). A researcher can use a multiple case study to investigate research questions that require an in-depth understanding through the use of interviews and research (Hitch, 2016). The case study research design was most appropriate for my research and enabled me to answer my research question and gain a greater understanding of the strategies project managers use to successfully implement IT projects. Also considered was the use of either an ethnographic or phenomenological research design for this study.

An ethnographic research design was not appropriate for this study. Researchers using an ethnographic research design are heavily involved in fieldwork studying the cultures of people during their normal day-to-day lives (Caffaro et al., 2018; Caliandro, 2018; Moustakas, 1994). Researchers gain an understanding of the culture of a group of people by connecting the patterns in experiences and behavior in an ethnographic research design (Birken et al., 2015). Because I was not exploring or investigating the behavioral patterns of a culture or group of people, an ethnographic research design was not appropriate for this study.

A phenomenological research design was also not appropriate for this study. Researchers use phenomenological research designs to investigate the lived experiences of people or a group of people for a phenomenon (Finlay, Peacock, & Elander, 2018). Researchers explore a phenomenon experienced by an individual or a group of people (Conklin, 2014). Starting by researching a phenomenon, researchers then analyze how or why an event occurred and conclude with reviewing the individuals who have

experienced the phenomenon (Sanders, 1982). Because I was not exploring the lived experiences of a phenomenon, a phenomenological research design was not appropriate.

To ensure complete and quality data collection results, I checked data saturation while performing the research and collecting data. A high degree of data saturation, or when little to no new information is discovered, is how qualitative researchers best ensure the high quality of data collected (Hyett, Kenny, & Dickson-Swift, 2014). Researchers also use data saturation as a rule for achieving the correct sample size in a qualitative research design (Boddy, 2016). In addition to selecting the appropriate sample size, I used member checking, I scheduled follow-up interviews, and I used data triangulation to further reach data saturation with my research. By using member checking and follow-up interviews, data saturation was achieved because the participants had an opportunity to provide feedback or validation on research questions (Marshall & Rossman, 2016). By using data triangulation, researchers provide another method to achieve data saturation by using more than one source or method to collect data on the same topic (Fusch & Ness, 2015). Using the determination of the correct sample size, member checking, follow-up interviews, and data triangulation, data saturation in the research was ensured.

Population and Sampling

The target population for the study included IT project managers who had managed or were currently managing IT projects in the Northeast Ohio area. The target population consisted of six IT project managers who had managed or were currently managing IT projects in the Northeast Ohio area. Study participants were (a) knowledgeable in the area of research, (b) capable of answering the research questions

posed, and (c) familiar with the particular phenomenon researched (Leedy & Ormrod, 2013; Merriam, 2014; Yin, 2017). The target population consisted of IT project managers with a minimum of one year of experience managing IT projects and had completed at least one IT project on time and on budget. Based on these requirements, the target population for the study was knowledgeable in the subject area, capable of answering the research questions, and were familiar with the phenomenon I was studying.

I used subjective sampling to select the appropriate participants and to gain access to the participants. Subjective sampling, also known as purposive sampling, is used by qualitative researchers to generalize information (Saunders et al., 2015). Qualitative researchers select participants based on their knowledge of the research topic (Merriam, 2014). Voluntary participants from IT managers who have successfully managed projects and have proven success in the IT field will be selected. Because one of the requirements for selecting participants is success with IT project management, I used subjective sampling to ensure the participants had relevant experience to the research topic (Mittelstadt, Allo, Taddeo, Wachter, & Floridi, 2016).

Typical sample sizes for qualitative studies are between five and 50 samples whereas quantitative studies require more samples depending upon the details and goals of the study (Boddy, 2016). The sample size of qualitative research is determined by data saturation (Boddy, 2016) while also being impacted by the unique requirements and constraints of the topic (Varpio, Ajjawi, Monrouxe, O'Brien, & Rees, 2017). To determine when data saturation occurs, gathering data will continue until no new themes or patterns revealed during the information gathering process (Murgatroyd, Lockwood,

Garth, & Cameron, 2015; Nelson, 2017). Through the use of member checking, follow-up interviews, and triangulation of collected data I worked toward data saturation. I achieved data saturation through member checking and follow-up interviews and collected additional data from the interviewees and used these methods to discover more information than was initially shared by participants (Marshall & Rossman, 2016). Another method to confirm data saturation to be used is data triangulation through cross verification (Fusch & Ness, 2015).

Ethical Research

I obtained permission from the participants before collecting information from them. Obtaining approval from the institutional review board was sought and achieved and an e-mail to all prospective participants with the informed consent form was sent. In the informed consent form, guidelines for participation in the study and the process were included to ensure their confidentiality. The guidelines included information on (a) details of the study, (b) procedures for conducting the study, (c) steps for removal from the study, (d) benefits that may exist from the findings, and (e) my contact information including my e-mail address and my telephone number. A requirement that all researchers must adhere to is providing oversight procedures of the study and how identities are protected for the participation in the study (Wilson et al., 2018). All prospective participants were required to reply to the e-mail sent them with the words “I consent to this study.” If there was no response or the prospective participants responded that they were not interested, I removed them from consideration from the study. I offered the opportunity to withdraw from the study if the participant initially chose to

participate in the study but changed their mind at any point during the study. For this study, the Walden IRB approval number was 12-24-19-0676441.

All participants had the opportunity to withdraw from the study at any time for any reason. Per Holmes, Blackwell, Heyes, Renner, & Raes (2016), I informed all participants of their opportunity to withdraw and how the withdrawal process occurs. The participants were required to inform me of their decision to withdraw and their participation was removed from the study. Because there was no compensation or benefits received for participant in the study, the participants who requested withdrawal did not incur a penalty. If a participant chose to withdrawal from the study at any time, I removed the data collected from that participant from the study.

All data collected remained confidential for the duration of the study as well as after the study has concluded. The confidentiality of participants is of the utmost importance when qualitative researchers conduct a study using the concepts of confidentiality (Lancaster, Sear, Treloar, & Ritter, 2017). To guarantee confidentiality, each participant was assigned a randomly-generated number. All data collected is securely stored for five years to protect the confidentiality of the participants for the five-year span.

Data Collection Instruments

I was the primary data collection instrument for the study. The researcher acts as the primary instrument for qualitative studies and is active in collecting data from interviews and other sources of information (Bengtsson, 2016; Lazard & McAvoy, 2020; Vidgen, Shaw, & Grant, 2017). semistructured interviews were used to collect the data

necessary for this study. To obtain this data through the use of semistructured interviews, I asked six semistructured questions along with probing questions based on the responses of the participants during the interview (Appendix). Researchers gain a comprehensive data collection for their research through the use of semistructured interview questions (King et al., 2019).

I used several methods to contact the participants including in-person interviews, e-mail, or telephone calls. IT project managers were contacted that I know personally as well as those referred to me by professional colleagues. The interview process included communication with each participant to ensure all questions from the participant were answered and availability for the interview was confirmed, the interview was scheduled, and the consent form was given to the participant. The interview was conducted in a setting the participants chose and was comfortable with. I informed the participant that this location must be outside their place of employment to allow for more interaction and less distractions that might occur in their place of work (Oltmann, 2016).

I followed the interview protocol as provided in the Appendix. The credibility of research is improved with the use of an interview protocol (Yin, 2017). The first step of the process before interviews begin was to ensure each participant received and understood the informed consent form. If the participant had any questions about the informed consent form, I answered any questions at that time. Face-to-face interviews were used as the primary method of data collection for the study. I scheduled each interview for one hour to allow for sufficient time to appropriately include all steps in the interview and data gathering process. For all semistructured interviews, I listed the

interview questions listed in the Appendix. These interview questions are directly related to the research question concerning the strategies that IT project managers use to deliver successful IT projects. Follow-up questions during a semistructured interview is important to a researcher because this can lead to additional information that is more in-depth and detailed (Roulston & Shelton, 2015).

I used an audio recorder, a journal, and a pen to ensure accurately collected data during the interviews. I used a journal to supplement the audio recordings to note body language of each participant. Immediately following each interview, I recorded my thoughts on the participant and interview in the journal to mitigate potential personal biases and issues. Bracketing is an effective way for researchers to manage potential biases and issues and this is accomplished by using a journal and writing notes in the journal during interviews and other data gathering sessions (Chen & Han, 2016). By using a journal and pen in addition to an audio recorder, the recordings were as accurate as possible.

I asked each participant to provide any documentation used by their organization in the management of IT projects. These documents were valuable to my research of how IT projects are successfully delivered. The information contained within these documents were used to analyze if such documentation was useful or necessary with regards to the overarching research question. The credibility of all findings is enhanced when the researcher includes multiple sources of evidence to the reader (Yin, 2017) thus enhancing the credibility of my research. I also used member checking to increase the reliability and validity of all data collection instruments. After all documents had been gathered, I

compared my analysis of the documents to the interviews to add context to each interview.

I used member checking with all participants to increase the accuracy of data, decrease incorrect data, and to increase the reliability and validity of the study. Each participant received the data and my interpretation of the data and this is referred to as member checking (Birt et al., 2016). After gathering all data from each participant, the findings were reviewed. To increase the reliability and validity of the findings of a study, researchers use member checking after gathering data (Jensen, Agersted, Nielsen, 2020). Through the application and use of member checking, reliability and validity was increased to ensure there was as little error as possible.

Data Collection Technique

I used one primary data source and two secondary data sources. The primary data source was the use of semistructured interviews. The secondary data sources were field journal notes and organizational documents. For the semistructured interviews, I used face-to-face interviewing and telephone calls as the primary methods to collect data. To collect information for their research, qualitative researchers use interviews, document analysis, and direct observations (Arseven, 2014; Norlyk, Haahr, & Hall, 2016). I used semistructured interviews to gain an in-depth and intimate knowledge directly corresponding to my research.

I obtained IRB approval before any contact with participants occurred to ensure I adhered to all regulations. I used the interview protocol in the Appendix to conduct the semistructured interviews. The interview protocol is an important component of research

because it helps to build a foundation of the format of an interview and directs how an interview operates (Yin, 2017). After IRB approval was obtained, I contacted each potential participant by e-mail or telephone. After initial contact had occurred, an e-mail to each participant containing the informed consent form was sent to instruct each participant to respond with *I consent* in an e-mail reply to me to participate in the study. Upon reception of the consent forms from participants who desired to participate, all consent forms were gathered and securely stored. All participants consenting to the study were contacted to schedule a date, time, and location for the interview and also tentatively schedule a secondary date, time, and location if the original date, time, and location if the interview did not occur. I allowed the participants to choose the date, time, and location of the interview to ensure the participants were as comfortable as possible but requested that the location was not their current place of employment. By allowing the participant to choose the date, time, and location of the interview, researchers empower the participant to help build a level of trust and comfort that may not already exist (Dempsey, Dowling, Larkin, & Murphy, 2016; Novakovich, Miah, & Shaw, 2017). To ensure open communication with all participants, I confirmed the interview appointment one week before the chosen date and then confirmed the interview appointment one day before the chosen date. The time and location were confirmed to ensure the participant and I were fully aware of the scheduled interview.

I conducted each interview using the following standardized process:

1. Introduce myself to the participant to develop a rapport and connect,

2. Explain the topic of the research and the reason for the interview with the participant,
3. Retrieve the informed consent form for the participant and explain the form in detail,
4. Explain to the participant how their confidentiality will be kept,
5. Ask the participant for permission to record the interview,
6. Explain to the participant that they have the ability to stop the interview at any point during the interview with no consequences,
7. Explain to the participant the importance of answering each question as truthfully and fully as possible to the best of their ability,
8. Conduct the interview after the entire process has been explained, and
9. Thank the participant for their participation in the study and the time they spent assisting me in my data gathering.

At the completion of each interview, all details deemed important were recorded in the journal. Details that were recorded for each participant included the name of the participant, date of the interview, time of the interview, location of the interview, and any observations made during the interview. The use of a journal to record general responses and thoughts on the interview improves the trustworthiness of the study (Corsaro, 2019). To minimize potential biases, qualitative researchers create written notes during interviews in a journal (Chen & Han, 2016). Through the use of a journal, confirmability of the data collected during the interviews was enhanced in addition to the secondary data gathered from all organizational documents provided by the participants. Additional

experiences may be found to explore during a later study by using a journal to record notes (Kogan & Schoenfeld-Tacher, 2018).

I used semistructured interviews because there are numerous advantages to do so in the type of data gathering planned. My research topic was most easily studied through the use of semistructured interviews. Using semistructured interviews, researchers design the interview questions to address the specific topic (Yin, 2017). My intention was to specifically hone in on answering my research question through the use of semistructured interviews. Additionally, the use of semistructured interviews allows participants the ability to offer their own views and opinions to the study adding depth and context to the research (Wehner, Ritter, & Leist, 2017). During the interview process, participants were allowed to offer additional ideas and opinions outside of what they consider to be facts to gather information outside the specific interview questions. The collection of this additional data through semistructured interviews provides researchers with new information that can be gathered and analyzed to explore different ideas (Karadzhov, Yuan, & Bond, 2019). However, it is important to focus on the information most relevant to the study while recording any additional information for future use. Qualitative researchers must be aware that while there are numerous advantages of using semistructured interviews, there are also disadvantages.

There are several disadvantages of using semistructured interviews that researchers must understand. Those disadvantages include a (a) mistake in the analysis of the data collected, (b) incorrect recall of information by participants, (c) a misrepresentation of information from the participant due to a desire to satisfy the

interviewer, or (d) the possible selective representation of data and misleading the researcher (Oltmann, 2016; Wilson, Onwuegbuzie, & Manning, 2016). Researchers benefit from paying strict attention to the interview to control the direction of the conversation as needed and to ensure the participant does not digress (Yin, 2017). By paying attention to the interview and to the participant, the researcher builds trust with the participant and maximizes comfort of the participant and the reliability and validity of the information collected during the interview (Oltmann, 2016; Yin, 2017).

The advantages of a researcher using a journal during semistructured interviews include assisting researchers in gathering a greater depth of data than would otherwise occur (Kogan & Schoenfeld-Tacher, 2018) and improving the understanding of both nonverbal and verbal cues of the participants (Gray & Jones, 2016). The researcher benefits from adding written notes to the audio recording because the audio recording does not capture nonverbal communication and cues. If the researcher does not properly interpret nonverbal communication and cues, it is possible that the researcher will incorrectly record a written note and this is a disadvantage of the use of a journal during and after a semistructured interview (Saunders & Townsend, 2016).

Organizational documents were collected as provided by the participants after receiving their written confirmation of participation in the study. I asked each participant to provide documentation through e-mail or printed forms they were able to provide from their organization that is of use in IT project management. Primary data collected was supported through the analysis of secondary data such as documentation and effectively supports research (Arseven, 2014; Norlyk et al., 2016; Yin, 2017). I used these

organizational documents to support all primary data collected by checking consistency and added context and depth to the data gathered. The information found within the secondary data sources contained additional ideas and concepts that were not uncovered during the interviews.

Gathering the organizational documents from the participants has both advantages and disadvantages. By using document review of documentation directly from an organization with a record of successful project implementation, the researcher increases reliability and validity of the data gathered (Gresham & Burleigh, 2019; Yin, 2017).

Document review can be used to corroborate evidence reliably (Evans, 2018).

Researchers must be vigilant in obtaining documents that are accurate and complete. A disadvantage of using document review is that it is possible the documents gathered from the participants are outdated, incomplete, inaccurate, or biased in one form or another (Yin, 2017). The researcher should always check all documentation received to ensure the information on the documents is as accurate as possible. To help improve the accuracy of the data gathered, member checking was used with the participants.

Member checking was used to increase the quality, reliability, and validity of the collected data from the semistructured interviews. By providing the participants with a summary of the interpretations to their responses after the semistructured interviews, a researcher uses the member checking process by allowing the participants to verify the accuracy of the summary and information gathered during the interviews (Wilson, Onwuegbuzie & Manning, 2016). After all interviews were completed and the data was analyzed, all participants were provided with a report of the findings of the interviews

and my interpretation of their responses. Each participant received only their responses and my interpretation of their responses and did not receive my interpretation of any other participant's responses. I then discussed with each participant whether my summary of their responses was accurate or if I needed to take corrective action. I also asked for each participant to add any other information they felt was useful for the study. By using member checking, qualitative researchers enhance the reliability and validity of collected data during interviews and other data gathering sessions (Birt et al., 2016; Yin, 2017).

Data Organization Technique

Both a hard copy filing system and an electronic filing system was created to store all data gathered and both of these systems are secure. I created both of these systems prior to the collection and analysis of data as this is an important task before the data collection and data analysis tasks (Duffy et al., 2017). Per Castleberry (2014) and Ose (2016) the use of NVivo 12 is an effective software application to store data gathered from research securely as well as performing the management and analysis functions of data. NVivo 12 was used to manage and analyze data and Microsoft Word was used as the tool to transcribe the interviews. Microsoft Excel was used as needed for other data requirements that required a spreadsheet format. All data gathered was organized into categories using both the hard copy and electronic format for easy retrieval. The hard copies of data was stored in an electronically locked safe to which only I have the security code while the electronic data is stored in an online database that requires two-factor authentication to access to ensure only I have access to the data as needed. The confidentiality of all participants is of the utmost importance and restricting access to the

data ensures proper care is taken to maintain that confidentiality (Evans, 2018). I transferred all hard copy documentation to the secure database to maintain both a primary and backup of all data gathered.

I gathered, organized, and securely stored all data collected during interviews in both electronic and hard copy format. Immediately following each interview, I transcribed the recording. By transcribing the recording immediately following the interview, researchers are less likely to make an error in the transcription and interpretation of the data gathered (Yin, 2017). After transcribing the interviews, the data was transferred to NVivo 12 for analysis at a later point in time. NVivo is an appropriate and effective software application to manage data organization and assist in analysis (Ose, 2016). I organized and placed all data gathered into the categories defined before the data gathering process and interviews. By creating categories and using those categories, qualitative researchers more easily summarize the data gathered by creating more manageable data units (Bevort & Suddaby, 2016). Because the summary and analysis of data is more easily completed by focusing on specific categories, I did not attempt to summarize and analyze all the data at one time. The identity of all participants and the organizations was replaced with pseudonyms to ensure confidentiality and privacy during the data organization process.

A field journal was used to supplement the interview data and documentation provided by participants. Qualitative researchers use a field journal to gain a deeper understanding of qualitative data and to explore additional research opportunities at a later time (Kogan & Schoenfeld-Tacher, 2018). Qualitative researchers may also discover

additional themes that were not discovered initially through the use of a field journal (Shek, Wu, & Chai, 2017). By using a field journal, qualitative researchers may capture nonverbal communication and responses from the participant, and this may assist the researcher in understanding the interview data in a deeper manner (Wilson, Onwuegbuzie & Manning, 2016). I included my field journal notes in the organization of data task to ensure correct categorization, summarization, and analysis.

After I collected the research information, I updated the data organization and analysis techniques to ensure the most effective methods were used. Research results may be enhanced by updating and changing their data organization and analysis techniques throughout the research process (Vernon-Dotson, 2013). During the data collection and organization, additional categories and themes were uncovered that had no definition prior to the data collection process. Marshall and Rossman (2016) noted that qualitative researchers enhance their data analysis by creating groups and categories with which data can be organized into. By reviewing all data gathered, qualitative researchers may create a high quality and accurate study (Yin, 2017). Because of the need for confidentiality and a need to maintain a copy of all data gathered, all data is stored securely for a period of five years.

The confidentiality and privacy of all participants is protected for a period of five years by restricting access to all research data including names and the organizations with which each person is associated with. All researchers that take action to restrict data gathered ensure the data is securely stored (Evans, 2018; Thorpe et al., 2018; Wilson et al., 2018). All hard copy data is stored in an electronically locked safe to which only I

have the security code. Electronic data is stored in an online database requiring two factor authentication to access. After five years, I will destroy all confidential documentation and other materials related to the research study. This documentation and other materials include transcripts of interviews and other correspondence, recordings of interviews, organizational documentation provided by the participant, informed consent forms, and a field journal containing notes and other materials.

Data Analysis

I analyzed and interpreted data from the collected information to attempt to generate themes and ideas. Researchers perform data analysis to discover themes that pertain to the research question of the study (Thomas, 2015). For qualitative researchers, data analysis provides information to apply and to discover additional relevant information. (Kalu & Bwalya, 2017). Per Paulus, Woods, Atkins, & Macklin, (2017), data analysis includes coding the data gathered and identifying themes from the data. I used data analysis to identify themes, ideas, and patterns related to the research question to get the best results from the gathered data. As an additional method to increase confidence in my findings, triangulation was used for more reliable information.

Qualitative researchers use triangulation to increase the confidence of the research findings. When qualitative researchers use triangulation for their research findings, they are using three or more sources of data for the research (Overgaard, 2015). By using triangulation, qualitative researchers increase the credibility and trustworthiness of a qualitative study by combining data, connecting sources, and drawing conclusions (Buis et al., 2017; Erlingsson & Brysiewicz, 2017). By increasing the confidence in the results

of a study, a qualitative researcher increases their credibility and the accuracy of the results. There are several types of triangulation that qualitative researchers can use for qualitative studies.

Qualitative researchers may use four types of triangulation for their research. These four types of triangulation are (a) data triangulation, (b) investigator triangulation, (c) theoretical triangulation, and (d) methodological triangulation (Erlingsson & Brysiewicz, 2017; Walters, 2016). I used methodological triangulation for this study by using notes from my field journal, interviews with participants, and organizational documentation provided by the participants. Through the use of methodological triangulation, qualitative researchers provide a full view of the research performed and rely on more than one source for information (Overgaard, 2015). The most common method of triangulation for a case study design is the methodological triangulation method (Kalu & Bwalya, 2017).

The five-step process described by Yin (2017) was used to analyze information as it relates to strategies used by organizational leadership and IT project managers to manage their IT projects. The five steps are (a) compiling, (b) disassembling, (c) reassembling, (d) interpreting, and (e) concluding (Yin, 2017). To ensure a high-quality analysis, Yin (2017) suggests that qualitative researchers take all information gathered and disassembling the data to regroup it prior to analyzing. This breakdown of the data and reassembling makes the process of analysis simpler as the data will then be grouped in a logical manner.

Compiling

For the compiling tasks, I gathered data from interviews of participants, organizational documentation provided by participants, and from journal notes. I used NVivo 12, Microsoft Word, and Microsoft Excel to collect and organize data. After conducting the interviews, I read through the transcribed interviews, reviewed the organizational documentation, and reviewed my journal notes to gain a greater understanding of the information gathered. Qualitative researchers can identify concepts, phases, and themes by examining data gathered several times thus revealing additional information that may not be identified immediately (Karadzhov et al., 2019; Leedy & Ormrod, 2013; Vernon-Dotson, 2013). I disassembled the data immediately after compiling the data.

Disassembling

After compiling the data, disassembling the data began to identify concepts, themes, and phases. During the disassembling task, coding started by tagging the data into categories identified in the literature review. To identify themes or patterns correctly, a code is used to represent the data collected (DeVaney, Spangler, Lee, & Delgadillo, 2018). After coding process occurs the categories or themes are then grouped (Eker & Zimmermann, 2016). I identified themes and patterns in the data by listening to the audio while transcribing the interviews. I also reviewed all organizational documentation provided by participants and reviewed the field journal notes to identify additional themes and patterns. Additional codes were added as they were identified during the analysis as qualitative researchers should do so to continue analyzing additional themes

and patterns identified (Bengtsson, 2016). Immediately following the disassembling task, data reassembling into logical groups began.

Reassembling

Reassembling the data into groups of common themes and groups began after disassembling the data. I used NVivo 12 to organize and identify themes and groups as this software is an appropriate and effective application for the organization of data and the management tasks of the data (Ose, 2016). Researchers may discover themes and groupings that may not have otherwise been discovered by using NVivo (Cai, Huang, Liu, & Liang, 2016). The features of the NVivo 12 application such as the auto-coding feature to identify and organize themes and groups was used. After reassembling the data into themes and groups, interpretation of the meaning of the data collected occurred.

Interpreting

I interpreted the data after reassembling the data into logical themes and groups. By identifying and interpreting themes and groups, I connected these themes and groups with the research question of the study. By interpreting data that has been reassembled, qualitative researchers may increase knowledge about the research question and may open additional areas of study (Thomas, 2015; Yin, 2017). The themes and groups I discovered through interpretation connected directly to the research question of the study to increase the knowledge base of how IT project managers successfully implement IT projects. After I interpreted the data, the data analysis portion of the study was completed.

Concluding

The concluding step of this data analysis was to finalize the conclusions from the study. Participants received a copy of my interpretation of the data gathered to allow them to add information or thoughts to my interpretations. I enhanced the reliability and validity of my interpretations by requesting feedback from the participants. By requesting the perspective of participants on interpretations, qualitative researchers enhance the accuracy and credibility of their interpretations (Birt et al., 2016). To enhance the integrity of the data analysis and complete study, qualitative researchers will include direct quotes from the participants (Karadzhov et al., 2019). Qualitative researchers must ensure there are no personal biases and that findings should be based entirely upon the data collected to increase the reliability and validity of the study (Noble & Smith, 2015). I ensured that only the data gathered influenced my interpretations with no personal ideas or biases affecting the interpretations. By doing so the reliability and validity of my study was increased.

I used the NVivo 12 software to assist in coding and identifying patterns and themes. The NVivo 12 application is an effective application to organize, manage, and analyze data (Ose, 2016). Through the use of auto-coding in the data analysis phase, researchers can use NVivo 12 to discover themes and patterns (Cai et al., 2016). Following the pattern and theme recognition of the data analysis, the data was investigated and correlated to the data to the literature review.

I focused on themes and patterns uncovered during the data analysis phase to connect the themes and patterns from this phase to the themes and patterns discovered in

the literature review. I also focused on the themes and patterns uncovered during the data analysis phase and correlate those themes and patterns to the conceptual framework chosen for this study. I chose the coordination theory as the conceptual framework for this study. Qualitative researchers may add depth of information by connecting uncovered themes and patterns to the conceptual framework to assist in answering the overarching research question (Karabulut-Ilgu, Cherrez, & Jahren, 2017; Yin, 2017). Additionally, qualitative researchers may improve the integrity of the study by using direct quotes from participants in the study during the data analysis phase (Karadzhov et al., 2019). After completing the data analysis and the concluding phase, a greater understanding of how IT managers successfully manage IT projects and implement processes to positively impact those projects was gained.

Reliability and Validity

By developing the reliability and validity of a study, researchers increase the quality of the themes and patterns in the study. Other researchers following the steps of the original researcher will benefit from the reliability of the original research while consistently concluding studies with similar results (Sanders et al., 2016). The accuracy of the representation of a phenomenon is referred to as the validity of a study (Chen & Han, 2016). Qualitative researchers must ensure a proper level of rigor in their study to develop an appropriate amount of reliability and validity. Researchers must develop an appropriate amount of rigor to accurately portray the findings of the study, increase the confidence of the study, and provide appropriate details to replicate a study (Caffaro et al., 2018). I included dependability, credibility, transferability, and confirmability to

increase the level of reliability and validity. These four qualities are positively associated with rigor and increase the trustworthiness of the study (Hays, Wood, Dahl, & Kirk-Jenkins, 2016).

Reliability

A key aspect of qualitative research is quality. Qualitative research must contain a level of quality that must be present at every stage of the research process (Ali & Yusof, 2011). Qualitative researchers reach a saturation point where no new information is uncovered creating a consistency of findings thus increasing the level of reliability (Cadez, Czerny, & Letmathe, 2019; Varpio et al., 2017). Dependability, credibility, transferability, and confirmability exist when trust is present in the findings of study (Cadez et al., 2019; Golafshani, 2003).

Qualitative researchers focus on a high degree of reliability by increasing the level of trustworthiness and dependability for their research. To increase the level of dependability, researchers must ensure the study is repeatable and is able to be replicated (Cadez et al., 2019; Lorenz et al., 2018). Several strategies exist to enhance the level of trustworthiness such as triangulation, audit trails, and systematic data collection procedures (Lorenz et al., 2018). To establish and enhance dependability for my study I used systematic data collection and audit trails.

I enhanced the level of dependability in my study by conducting semistructured interviews and using the interview protocol detailed in the Appendix. I used open-ended questions along with a script that details instructions at the beginning of the interview and summarizes information at the end of the interview. These semistructured interviews are

important because the structure of the questions allow the participant to add all detail they possess (Jacob & Furgerson, 2012). To ensure consistency across all interviews, researchers ask the same open-ended questions of all participants (Kallio et al., 2016). I focused on asking each participant the same set of questions in the same order and the same tone to ensure I received responses consistently from each participant.

I used a field journal during the interviews to write any notes on body language or nonverbal cues. The field journal is effective to record additional information while also writing about any ideas or problems that arise during data collection (Caffaro et al., 2018; Doherty, 2011). The field journal serves as an additional data point that is useful when creating an audit trail (Cadez et al., 2019). Researchers use these strategies to increase the level of reliability in their study by enhancing consistency and descriptions of the research process for their study.

Validity

Qualitative researchers conduct studies that include credibility, transferability, and confirmability (Cadez et al., 2019). Qualitative researchers strive to increase the validity of their study by demonstrating how the results of a study correlates with the phenomena observed by the researcher (Cadez et al., 2019; Caffaro et al., 2018). A high level of validity enhances the overall perception of a study by other researchers.

Credibility. To ensure a high degree of credibility, the researcher must carefully select the participants of their study. The degree to which the perspective of a participant is believable is how credible the perspective is to the researcher (Cadez et al., 2019; Stieglitz et al., 2018). I used processes such as transcript review, member checking, and

triangulation to ensure all data was correct and each participant was comfortable with my research and interpretations. By using such processes, I enhanced the level of credibility for my findings. Each participant received the interview transcript created after each interview and they received it via e-mail. A review time of seven days was set for the participants to request changes or edits to the transcripts. After seven days had passed, I considered the review and edit phase closed. If the participants had any changes or edits, I analyzed the suggestions and updated my research as necessary. It was possible the participant required a follow-up interview and I scheduled that follow-up interview within seven days of the review and edit phase. Follow-up interviews may clarify any questions after the initial interviews and the follow-up interviews may ensure an enhanced amount of validity (Navimipour & Charband, 2016). The member checking process is the process by which participants verify the accuracy of their answers and this ensures a higher level of validity and also ensures that fewer errors or inaccuracies exist in the transcripts and interpretations (Birt et al., 2016).

I used triangulation to enhance the level of validity for my study. Yin (2017) and Cadez et al., (2019) remark that triangulation improves the validity of case studies by crosschecking data collected from several sources. By crosschecking data from several sources, I ensured a high level of consistency. The organizational documentation provided by the participants was crosschecked with the interviews to increase the overall credibility of the study.

Transferability. To enhance the validity of the study, I established transferability of findings. If a study has a high degree of transferability, researchers can use the

findings of one study in another study that is similar to the initial study (Buis et al., 2017; Cox et al., 2016; Petrova et al., 2016). I focused on creating rich descriptions of data during the data analysis phase to ensure all data collected and interpretations were easily transferable. Stieglitz et al., (2018) remarks that creating thick and rich descriptions is necessary for easily transferable findings. Additionally, descriptions of each participant were created to ensure the participants fit well within the bounds of what is considered an appropriate participant. I identified and communicated with IT project managers with at least one year of IT project management experience.

Confirmability. The third element of validity is confirmability. Confirmability is the extent to which other researchers are capable of verifying and substantiating the findings of a study (Stieglitz et al., 2018). Confirmability is achieved when qualitative researchers complete the study and the results of the study reflect the responses of the participants (Chen & Han, 2016). Additionally, researchers may achieve confirmability by creating an audit trail displaying the decision-making during the study and why judgments were made (Petrova et al., 2016). I kept a detailed field journal to document all notes, judgments, and decisions made. Also, I ensured there was an awareness of personal feelings and biases during the research process by maintaining a reflexive journal. Removing personal feelings and biases is important piece of the confirmability element.

Data saturation. I achieved data saturation to increase the quality of my study and to improve reliability and validity. Researchers may improve the quality of the study by displaying that data saturation has occurred (Hyett et al., 2014). I used the review of

literature to display data saturation. Researchers assume data saturation occurs when all relevant information for the research question has been researched and no new information will be found by analyzing other sources of data (Assarroudi et al., 2018). By detecting the point at which no new relevant information is found, data saturation is ensured. No new information such as ideas or themes should be revealed through further examination of data if data saturation has occurred (Assarroudi et al., 2018).

Transition and Summary

In Section 2, I have described the research methodology of this study and have detailed the benefits and consequences of using the research methodology. Additionally, I have detailed why multiple case study design was the most effective design to use for this study. The role of the researcher, the participants that will participate in this study, and the selection criteria to determine the participants are detailed in Section 2. I detailed the strategies I used for the data collection procedures and the data analysis stage. I detail how reliability and validity of the study was established by including descriptions of the processes and procedures of the study. In Section 3, I will present the findings of the study, the recommendations for action, the recommendations for future research, and the implications of social change due to the study and the results.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore the strategies project managers in the IT sector use for delivering successful IT projects. For this study, my focus was to identify strategies used by project managers in the IT sector. Upon receiving IRB approval to conduct this study (IRB approval #12-24-19-0676441), I started the data collection process. The data collection process occurred during a 3-week period and involved semistructured face-to-face interviews with six IT project managers with at least 1 year of experience from three businesses in Northeast Ohio.

As written in my interview protocol, I met with each interviewee and recorded and transcribed the interviews to gain a solid understanding of the data collected from the participants. I triangulated the data gathered with the project documentation that each participant provided from their place of employment. To code, analyze the data, and identify themes, I used NVivo 12 software. From the data analysis, I found four main themes: (a) communication amongst all members of the project, (b) professional development in project management, (c) extensive planning, and (d) experience in the field. These three themes provided information and insight in understanding the major reasons IT project managers are successful in implementing IT projects.

Presentation of the Findings

The overarching research question of this study was as follows: What strategies do project managers in the IT sector use for delivering successful IT projects? I conducted semistructured interviews to answer this question. After conducting the

semistructured interviews I reviewed all responses and analyzed additional documentation that each interviewee provided. I analyzed the data and triangulated the responses of the interviewees. Each interview was conducted in a location selected by the participant to ensure comfortability. Additionally, to ensure confidentiality of each interviewee and the company represented, I coded each company and interviewee as presented in Table 2.

Table 2

Participant and Organization Codes

Company A	Column B	Column C
Participant CA-P1	Participant CB-P3	Participant CC-P5
Participant CA-P2	Participant CB-P4	Participant CC-P6

The primary focus of this study was to determine strategies used by IT project managers to effectively implement IT projects. The participants involved had varying degrees of experience ranging from 5 years of experience to 20 years of experience managing projects. Table 3 shows the participant along with the number of years of experience and the theme or themes discussed in the interviews.

Table 3

Participants, Experiences, and Themes

Participant	Experience in Years	Theme(s)
Participant CA-P1	5	Communication, Planning
Participant CA-P2	14	Experience
Participant CB-P3	7	Experience, Planning

Participant CB-P4	20	Experience, Professional Development
Participant CC-P5	6	Experience
Participant CC-P6	5	Communication, Professional Development

Four themes emerged from the data analysis: (a) communication amongst all members of the project, (b) professional development in project management, (c) extensive planning, and (d) experience in the field. The discovered themes displayed a wide understanding of the challenges facing IT project managers in Northeast Ohio. Additionally, the themes provided insight into the strategies IT project managers used to manage teams and resources.

Theme 1: Communication

The first theme that emerged was communication and how communication from all levels aids in the successful completion of projects. Communication is one of the most important factors for all IT projects and is also one of the most cited factors in the literature about IT project management (Hassan, Ahmad, & Zuhaira, 2018; Kocherla, 2012; Müller & Jugdev, 2012; Rashid & Boussabiane, 2019; Slepian, 2013). Two of the six participants remarked that communication was a key factor in successful projects. Participant CA-P1 remarked that communication was the most important factor in the success of IT projects because communication allows for both successes and failures to be communicated to all stakeholders of the project. Not only did participant CA-P1 remark that communication was important but that it was necessary to ensure success of any IT project, and this included communication from the leadership overseeing the project all the way to the individual project members performing everyday tasks.

Participant CC-P6 remarked that communication was an integral part of the success of all IT projects. Participant CC-P6 also stated that if there is no communication or if improper channels of communication were used, the project should be considered a risk because the varying participants of the project may then work toward goals that did not align with the project as a whole. Participant CC-P6 said that without proper communication, the project becomes at risk of failure at the onset. The importance of communication as stated by two of the six participants confirmed the findings of researchers in the field that communication is a critical factor in the successful implementation of IT projects (Jan, Dad, Amin, Hameed, & Shah, 2016).

Zuofa and Ochieng (2017) found that communication strategies used in the proper format and with the proper participants were critical for the success of project implementation. Participants CA-P1 and CC-P6 both followed a logical communication methodology to ensure all participants were kept up-to-date and knew what other participants in the project were working toward. Stakeholders from leadership were also aware of how the projects were proceeding because of effective communication. Both CA-P1 and CC-P6 effectively communicated leadership decisions to project team members to ensure communication was present at all levels of the project. The organizational documentation provided by CA-P1 and CC-P6 on how IT projects were to be implemented included a section on communication. This section on communication from both participants stressed the importance of face-to-face meetings to keep stakeholders and project team members updated. Weekly and biweekly meetings were held at all levels by both participants CA-P1 and CC-P6.

Participant CA-P1 remarked that all team members and stakeholders were in the same building every day so face-to-face communication was an easy task. Participant CA-P1 set up meetings with leadership and other high-level stakeholders every 2 weeks and allowed for up to 2 hours of discussion to ensure there was enough time to communicate progress, issues, and resolutions. For the project team members, participant CA-P1 set up daily meetings that were no more than 15 minutes and had weekly meetings to discuss all progress for that week. Participant CA-P1 remarked that the scheduled meetings were not the only meetings during the week as they had a relationship with nearly all project participants and would discuss the specifics about the project in a less formal structure at other times during the week.

Participant CC-P6 created a communication plan at the beginning of each phase of the project with the assistance of project leadership. This communication plan detailed when meetings should occur and how often participant CC-P6 should meet with each level of the project team. Participant CC-P6 indicated that even though the communication plan was very specific, these plans would often not occur as expected because there were several members of the stakeholder group that were routinely unavailable and so the communication plan could not occur as laid out. Participant CC-P6 indicated that communication still existed throughout the project but would often occur through text messages or e-mails.

Participants CA-P1 and CC-P6 demonstrated an ability to communicate effectively with stakeholders and project team members and many studies have affirmed the findings of this research showing that proper communication is essential to the

successful implementation of IT projects (Deshpande, Beecham, & Richardson, 2013; Kuehn, 2016). Additionally, the highly-regarded Project Management Institute created the Project Management Book of Knowledge that included an entire chapter about the importance of communication in project management (PMI, 2017).

Theme 2: Professional Development

The second theme was professional development and the positive outcome of using resources aimed at furthering knowledge and information about project management. Two participants, CB-P4 and CC-P6, remarked that professional development for IT project management is an important strategy to ensuring successful IT project management. Professional development from both internal and external sources is important to better understand how future projects occur for organizations (Langley, 2015). Both CB-P4 and CC-P6 had well-documented professional development experiences and focused on increasing their knowledge of IT project management by using classroom learning and conferences to enhance their experience.

Participants CB-P4 and CC-P6 work for organizations that require documentation of attendance at professional development classes and of passing along information learned from the classes to the other parts of the organization. After attending the professional development classes, CB-P4 was required to hold several small conferences with those coworkers interested in hearing about the professional development classes and the content that came from them. CC-P6 was required to hold one larger seminar in which all employees in the organization were invited to attend. In both situations the meetings were recorded and posted on an internal company website.

By attending professional development classes, participants CB-P4 and CC-P6 learned from the mistakes and successes of other IT project managers and then passed along that information to others in the organization. This method of information gathering through professional development allowed participants CB-P4 and CC-P6 to draw on knowledge that they did not previously possess and go through a sort of postproject review on projects they did not manage. By going through this practice during the professional development classes, participants CB-P4 and CC-P6 identified what went right or wrong in the final phase of the project and used this knowledge to ensure they and others would not commit the same mistakes in future projects. The final part of the closing phase is the postproject review where the researcher appraises what was successful and what was a failure during the project (Windapo et al., 2014). Participants CB-P4 and CC-P6 used the knowledge gained from the professional development classes to gather information in a more detailed and thorough process so they could then apply those learnings to projects in the future.

Theme 3: Planning

The third theme was planning for the project both before the project started and while the project was underway. Two participants, CA-P1 and CB-P3, identified planning as one of the most important pieces to successfully implementing an IT project. Both participants identified in-progress planning as an important tool to understand the direction of the project and to ensure high performance. Monitoring and controlling activities used by project managers assist in understanding the direction of the project and if the project is moving along successfully or if something within the project needs to be

changed (PMI, 2017). Project managers must monitor the correct activities and decisions to understand the day-to-day progress of each project and understand how each interaction affects other parts of the project (Mauerhoefer et al., 2017). Participants CA-P1 and CB-P3 used appropriate monitoring and controlling systems provided by their organization to assist in decision-making and to provide greater definition to the direction of the projects.

For both CA-P1 and CB-P3 and their respective organizations, Microsoft Office Project was used to monitor and control the project and timelines associated with the project. Both participants tracked timeline and resource availability while also using the dependency function of Microsoft Office Project. Both participants conducted daily and weekly meetings to communicate and understand the progress of all projects. By using a Gantt chart, both participants gave an illustrated display of the project progress while also displaying the dependencies each task was associated with. The participants planned with both stakeholders and project team members to get a better understanding of the project and the direction needed after each meeting.

Participants CA-P1 and CB-P3 understood that to successfully implement an IT project there would need to be a high degree of monitoring and the flexibility to change dependent upon what happened on a day-to-day basis. The plan must be constantly compared to the progress of the project which requires constant monitoring and updating (Allen et al., 2014; Zhang & Zuo, 2016). The PMI (2017) stated that project managers must frequently monitor and control the progress of projects to ensure that the established

project plan is being followed while also adapting the needs of the project to fit any changes that may occur.

Theme 4: Experience

The fourth theme that emerged was experience and how learning from prior projects, both successful and unsuccessful, can aid a project manager in the implementation of other projects. Participants CA-P2, CB-P3, CB-P4, and CC-P5 recognized experience as being an important part in implementing successful IT projects. Similar to professional development, experience allows the participants to understand how and why projects in the past succeeded and failed (Langley, 2015). All four participants that identified experience as an important factor in IT project implementation stated they performed a lessons learned meeting at the end of the project to gather as much information as possible for what went correctly during the project and what failed during the project.

Participants CA-P2, CB-P4, and CC-P5 used organizational documentation to determine what was successful in the project and what was not successful in the project. These documents were formalized by the organization and after they were completed the participants would meet with leadership to determine the next steps in implementing further projects based on the experience from the project that had just concluded. Participant CB-P3 was not provided with formal documentation by their organization but the expectation after a project had concluded was for participant CB-P3 to gain an understanding of the successes and failures of the project and report them to all stakeholders in a meeting before formally closing the project. All documentation for all

four participants was required to be signed by the CTO before formally closing each project.

Participants CB-P4 and CC-P5 conducted a formal process for both the closure and opening of new projects. These two participants were required by their organization to use the documentation on successes and failures of their previous projects to plan for their next project to aid in avoiding the failures that occurred previously. Researchers have affirmed the importance of using documentation from previous projects to avoid similar mistakes in future projects thus confirming the findings of this study (Allen et al., 2014; Winch & Leiringer, 2016; Zhang & Zuo, 2016). Participants CB-P4 and CC-P5 remarked that the formal process of using the documentation on the successes and failures of their previous projects aided them in making positive decisions in the following projects. Both participants stated that the process was not perfect, but they felt more comfortable making decisions than they would have otherwise.

Findings Related to the Conceptual Framework

Malone and Crowston (1994) developed the coordination theory which is the basis of the conceptual framework for this study. To be successful in any project, leaders must develop processes and procedures to coordinate communication and project work among different groups (Malone & Crowston, 1994). The results and findings of this study indicates the applicability of coordination theory and confirms the general idea of coordination theory. Project managers that successfully implement IT projects use effective communication and coordination amongst all parties in an organization (Tan et al., 2017; Thalmann et al., 2014). Using the coordination theory, I uncovered and

identified themes and strategies that IT project managers use to successfully implement projects.

The results of this study demonstrate that correct and proper coordination of activities by project managers and project teams is important to the success of the project (Tan et al., 2017). Also demonstrated through the findings of this study is that inefficient or poor coordination in projects remains problematic for IT project managers and lowers the likelihood of successful implementation of IT projects (Jiang & Klein, 2014). Because of the complex nature of IT projects, project managers are required to understand how to coordinate functions throughout the organization and amongst the many levels of employees within the organization (Barata & Cunha, 2017).

Findings Related to Existing Literature

The results and findings of this study may add to the existing body of literature by promoting specific strategies to ensure that IT project managers are as well prepared as possible to successfully implement an IT project. All strategies used by the participants of this study aligned closely with the existing literature on strategies to successfully implement IT projects. Purkayastha and Sharma (2016) noted that identifying and using the best possible strategies helps to successfully implement IT projects thus increasing the capabilities of the IT department in an organization.

The four themes identified in this study are communication, professional development, planning, and experience. Communication is a wide topic but the participants that specifically identified communication as an important piece of successfully implementing an IT project specified that communication includes daily,

weekly, and monthly meetings. The participants also noted that the correct type of communication is necessary to successfully communicate with all levels of the organization. The communication ideas presented by the participants links directly with the coordination theory as posed by Malone and Crowston (1990) suggesting that IT project managers must understand the dependencies and what is happening with their project to understand how to best coordinate all functions for a project. Communication among all levels of the project and stakeholder teams is not only useful but necessary for a project manager to grasp progress and dependencies for the project (Crowston, 1997). With the advent of agile project methodologies, many IT project managers used those strategies that work best for their projects (Azanha et al., 2017; Ozieranska et al., 2016). Because agile project methodology focuses on a constant stream of communication with many meetings, the participants of this study focused on meetings for their primary method of communication.

Applications to Professional Practice

The purpose of this study was to explore the strategies that IT project managers use to effectively manage and implement IT projects. As IT continues to grow and support more departments of all organizations, leaders must rely on IT capabilities to not only fix issues that arise but also implement new solutions that helps organizations move forward (Sanchez-Morcilio & Quiles-Torres, 2016; Thalmann et al., 2014). The four themes gathered from IT project managers may have a positive effect on the strategies used by IT project managers. The findings and results of this study may assist IT project managers in using the correct tools to best implement an IT project. IT leaders may also

gain a better understanding of the effective methods and strategies of implementing an IT project and may create new or additional organizational standards to which IT project managers must adhere.

The results contained in this study are relevant to professional practice because the findings were gathered from IT project managers with varying levels of experience who have successfully implemented IT projects. IT project managers continue to fail at implementing IT projects as a majority of these IT projects do not progress as expected (Larson & Chang, 2016; Terlizzi, de Souza, & de Moraes, 2016). The results of this study may assist IT project managers and IT leaders to better understand what an IT project needs to be successfully implemented. Current IT project managers may use the findings of this study to implement better practices and procedures whereas future IT project managers may get a positive start to their career as an IT project manager by using the findings of this study.

Implications for Social Change

The findings of this study may help to create positive social change by providing knowledge to IT project managers, IT leaders, and organizations as a whole thus creating and maintaining job growth which will, in turn, impact the local community standard of living. By implementing the strategies and information in this study, IT leaders may promote positive growth in the business and may implement more successful projects leading to resources being used more across a larger range of products and services. The innovative efforts of organizations will increase thus leading to more innovative products and services. These innovations can lead to a reduction in the cost of products and

services thus allowing customers of the products and services to buy more with the resources they possess. Additional benefits such as improved quality in the products and services, higher customer satisfaction, and an increase in sales are some of the benefits that may follow the use of more effective strategies.

Through an increase in organizational efficiency, the local community may benefit through consideration of hiring more employees as efficiencies increase. Additionally, products and services may become more available to the general public through the reduction in cost of these products and services. An increase in volunteerism and charitable giving may also occur. Increased efficiencies in the organization may possibly lead to more proactive engagement by the organization in the local and remote communities.

Recommendations for Action

The findings of this study may assist current and future IT project managers to anticipate challenges and issues that may arise during IT projects. In this study, I explored the strategies used by IT projects managers to successfully implement an IT project. Based on the results of this research, I recommend the following to all current and future IT project managers:

- schedule daily meetings,
- schedule weekly meetings,
- develop a project plan to gather and record requirements,
- create a communication plan that includes all project team members,
- create risk assessments and risk mitigation plans,

- develop a lessons learned schedule after each major accomplishment.

The results of this study are significant and applicable to IT project managers, IT stakeholders, IT professionals, and any organizational leader that works with or leads an IT team. To communicate these strategies from this study I will submit the results to journals and other professional literature. Additionally, I will present the findings to my local PMI Cleveland Chapter. I will also present these findings to my coworkers who desire to learn more about effective IT project management strategies.

Recommendations for Further Research

The purpose of this qualitative multiple case study was to explore the strategies used by IT project managers to successfully implement an IT project. For this study, I identified three limitations. The first limitation dealt with only allowing IT project managers to take part in the study. To overcome this limitation, I contacted only those potential participants that I knew to be currently employed as an IT project manager. The second limitation I identified was that each IT project manager was required to have at least one year of IT project manager experience while also having completed successfully at least one IT project. The definition of a successful implementation of a project was determined to be a project that was completed both on time and having used only the allotted resources or less than the allotted resources. To overcome this limitation, I contacted only those IT project managers I knew to have successfully implemented IT projects in the past. The third limitation concerned the sample size and the geographic location of the study. I limited the study to include a sample size of six IT project managers from the Northeast Ohio area. To overcome this limitation, future researchers

could expand the geographic location of the study as well as increasing the sample size of the study. Based on the limitations of this study, I recommend future research consider the following:

- use a larger sample size of IT project managers,
- increase the geographic region to other states or other areas of Ohio,
- consider using IT project managers from other countries,
- use different methodologies than this study,
- research more deeply into specific IT projects rather than all of IT.

Reflections

The DBA Doctoral study process was a long and challenging process but, ultimately, a fulfilling and rewarding one. Prior to the start of this program, I generally understood the difficulty and time commitment this journey would require but did not anticipate the full extent of the time commitment. The time commitment has been a consistent challenge to overcome as there are always situations in life occurring that takes away from my academic focus.

Based on the subject of this study, I did have preconceived ideas about the subject matter because I am an IT project manager and have many years of experience so I am already aware of many of the strategies that are required to successfully implement an IT project. To mitigate any potential biases on the subject matter, I focused only on the facts and research I found in articles and other forms of research. When interviewing participants, I did not lead them into any answer and allowed them to speak as much or as little about a topic as they desired. If I required clarification of an answer, I would ask the

participant to repeat their answer in a different manner so I could better understand the response given. Additionally, I used NVivo software to aid in the generation of themes and the interpretation of results to mitigate any bias I may have had. To further increase reliability and credibility, member checking was used so the participants were able to see a summary of their responses and my interpretations and they were able to correct anything that was incorrect.

During the interview process, I identified four major themes from the participants. Several of the participants had very similar responses to one another and used the same general strategies to successfully implement IT projects. While there was variation in the responses received by the participants, most used very similar strategies. Because of these responses, I now have a better grasp of some of the basic concepts of IT project management that I did not incorporate into my own process before. Additionally, with this gathering of knowledge, all six participants expressed interest in receiving a summary of findings so they could use the techniques that others use.

Conclusion

For this qualitative multiple case study, I explored the strategies IT project managers use to successfully implement IT projects. I collected data from IT project managers with at least one year of experience and one successfully implemented IT project. The data was collected in the Northeast Ohio geographical area. I used methodological triangulation to analyze two sources of data until I reached data saturation. From the data, four major themes were identified that can assist both IT stakeholders and IT project managers to improve the implementation of IT projects. The

four major themes included (a) effective communication, (b) professional development, (c) extensive planning, and (d) experience in the IT project management field. Each theme was analyzed in relation to existing literature and I used coordination theory to address the differing levels of complexity in successfully implementing an IT project. Identifying and using the strategies to successfully implement IT projects is the main contribution to business practice. The potential positive social change is the increase in efficiency in organizations thus potentially leading to more community involvement through increased hiring and larger charitable acts.

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Appendix: Interview Protocol

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

Introduction:

The purpose of this qualitative multiple case study is to explore the strategies project managers in the IT sector use for delivering successful IT projects. My belief is that sharing successful strategies amongst project managers in the IT sector may benefit organizations through improved business practices as well as positively impacting social change. The sharing of successful strategies may produce increased revenues, increased market share, and enhanced competitiveness. The positive social change that may occur includes increased economic stability, increased amount of jobs available in the community, and additional opportunities for growth within the community.

Interview Protocol

Interview questions will be provided to all participants for their review. The participants will be made aware that the interview will be recorded and the researcher will exclude the participants name and any other information that can be used to identify the participant. Any questions the participant does not want to answer may be skipped at the request of the participant. After the interview, the participants will be reminded that they will receive a copy of the findings and interpretation for their review.

Dear Participant,

The following questions posed by the researcher will be asked to understand the strategies used by project managers to successfully complete IT projects. Additional

probing questions not listed may be asked depending upon the answers to the initial interview questions.

1. What strategies have you used to deliver successful IT projects?
2. How did you develop these strategies to deliver successful IT projects?
3. How did you measure the effectiveness of the strategies to deliver successful IT projects?
4. Based on your measurement of effectiveness, what strategies did you find to be necessary to deliver successful IT projects?
5. Based on your measurement of effectiveness, what strategies did you find to be unsuccessful for the delivery of IT projects?
6. Based on your measurement of effectiveness, what strategies did you find to be unsuccessful for the delivery of IT projects?