

2021

Strategies to Improve Project Management of Software Development Processes

Tiffany Nichole Fair
Walden University

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Walden University

College of Management and Technology

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Tiffany Nichole Fair

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Review Committee

Dr. Brenda Jack, Committee Chairperson, Doctor of Business Administration Faculty

Dr. Olivia Herriford, Committee Member, Doctor of Business Administration Faculty

Dr. Janie Hall, University Reviewer, Doctor of Business Administration Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2021

Abstract

Strategies to Improve Project Management of Software Development Processes

by

Tiffany Nichole Fair

MA, Webster University 2011

BA, George Mason University 2000

Doctoral Study Submitted in Partial Fulfilment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

January 2021

Abstract

Excessive project failure rates result in billions of dollars in wasted resources annually. Information technology (IT) businesses lose competitive advantage when leaders fail to utilize project portfolio management (PPM) initiatives to improve performance and increase consumer value. Grounded in the project portfolio management theory, the purpose of this qualitative multiple case study was to explore strategies some project management offices (PMO) IT project leaders use to manage projects successfully in the information technology industry. The participants were 5 IT project leaders within the Northeastern region of the United States who successfully manage information technology projects. Data were collected using semistructured interviews, transcribed, and analyzed using thematic analysis. Seven themes were identified: (a) identification of objectives and desired outcomes, (b) appointing the team, (c) planning and strategizing, (d) stimulating teamwork, (e) keeping close communication throughout the project, (f) developing best practices, and (g) supervision and monitoring. A key recommendation includes project leaders fully understanding the objectives and desired outcomes of a particular project better to mitigate any potential issues or risks to the effort. The implications for positive social change include potentially increasing profitability and positively impacting employment and economic growth.

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Dedication

I would like to first dedicate this dissertation to my four sons, Michiah, Jaiden, Darien, and Davien who have inspired me to grow and become a better me. I would not have been able to complete this journey without their love, support, sacrifices, and inspiration. Those four are my reason and my heart. Special gratitude to my oldest, Michiah, who grew along with me in life and was my inspiration to continue educational growth. I am forever indebted to you all for your support.

I further dedicate this dissertation to my grandmother, Betty Lynn Frankfort, who raised me from six months old. She loved me unconditionally, supported me, and encouraged me to always pursue my dreams and aspirations. Though she watches over me now in heaven, I thank her for her loving support.

I also dedicate this dissertation to my best friends, Christina Logan and Cassie Adkins who have always supported me throughout each journey in life. Both have cared for my children throughout this process and have supported me in every step along the way. They have been my strongest supporters and my true champions on this path. They are more than friends, they are my sisters.

Lastly, I dedicate this dissertation to the military and government bosses I have had in my career who saw strength in my abilities and inspired me to grow, providing me with amazing opportunities I would not otherwise have. Thank you for believing in me along the way and pushing me to this moment.

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Section 1: Foundation of the Study

Successful project management is positively related to project success (Golini, Kalchschmidt, & Landoni, 2015). When completed properly, the five main phases of project management can contribute to this success. Those phases are initiation, planning, executing, monitoring and controlling, and closing (Rahmanian, 2014). Well-planned yet flexible strategy is an integral part of successful project management (Cleden, 2017). As such, the proposed study will explore project leaders' project portfolio management (PPM) strategy, specifically in the IT industry, with the goal of improving PPM within this field.

Background of the Problem

As project management can lead to project success, poor project management may lead to project failure. Project failure is detrimental to a firm's overall performance, since some project failures could potentially tarnish their credibility and reputation as a desirable business to the consumers. When this happens, firms diminish their respective competitive advantage over other firms that may have better project leaders, project management offices, and overall project management performance and success. As such, it is necessary that firms focus on project management strategies to ensure project success and maintain competitive advantage.

Additionally, it is important that these strategies account for varied circumstances and can adapt to changing markets and economic conditions (Cleden, 2017). While there is a wealth of research in the extent literature regarding project management theory and methodologies, there is a need for research on project management strategies and

practices (Andersen, 2016). In this study I explored project leaders' perspectives regarding successful project management strategies.

Problem Statement

Information technology (IT) businesses lose competitive advantage when leaders fail to utilize PPM initiatives to improve performance and increase value to consumers (Finkenstadt & Hawkins, 2016). According to Alami (2016), 25% of IT projects fail. Additionally, failure of IT businesses represents an annual loss of \$178 billion in the United States' economy (Sanchez-Morcilio & Quiles-Torres, 2016). The general business problem is that project leaders in the IT industry fail to sustain competitive advantage when not utilizing PPM initiatives in business processes. The specific business problem is some IT project leaders within project management offices (PMOs) lack strategies to manage projects successfully using portfolio management initiatives.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry using portfolio management initiatives. The study population consisted of five project leaders from three project management offices in the north eastern region of the United States. This population was selected because they have demonstrated success in managing projects using portfolio management initiatives.

This study may contribute to positive social change when IT project leaders use the results to enhance organizational performance, which improves their ability to extend additional employment opportunities within their local communities. Project managers

who expand employment opportunities through improvement of organizational efficiencies may improve local economic growth and stimulus.

Nature of the Study

The qualitative research method fits this study. A qualitative method is appropriate because my goal is to obtain in-depth data based on participants' experience with project management efficiencies that will assist in answering the research question. Researchers use the qualitative method to conduct an in-depth exploration of phenomena from participants' perspectives within the context of the study (Park & Park, 2016). In quantitative studies, researchers focus on numbers and testable facts that generate statistical data (Park & Park, 2016) to test and explain the relationships among variables (Ridder, 2017). A quantitative method is not appropriate for this study because I will not be focusing on numbers, metrics, and variables. A mixed method approach is a combination of both quantitative and qualitative methods (Creswell & Creswell, 2017). Mixed method approach is inappropriate for exploring the research problem because this study will not test relationships among variables.

I used a multiple case study design. Researchers use the multiple case study design to gain a deeper analysis of the phenomenon under investigation than the single case study design by evaluating the similarities and differences of the information among the multiple cases (Harrison, Birks, Franklin, & Mills, 2017). Case studies are useful for investigating phenomena within their context (Ridder, 2017). The opportunities to augment and validate the information gathered are greater in multiple cases than in single cases because the information is from various sources and perspectives (Ridder, 2017). I

did not select ethnography design, because it is best for understanding organizational cultures (Bass & Milosevic, 2018). The focus of phenomenology is to understand how participants think and feel through a probing analysis of the phenomenon of the study (Harrison et al., 2017). For this reason, phenomenology design was not appropriate. Lastly, researchers use the narrative design to address issues through personal stories of participants without independently analyzing the full experience (Bass & Milosevic, 2018). Therefore, I did not choose the narrative design for this research because I did not focus on the lives of participants. The multiple case study design is to explore and understand strategies that project leaders within IT industry PMOs use to manage projects successfully using portfolio management initiatives.

Research Question

The overarching research question to guide this study was: What strategies do project leaders within PMOs use to manage IT projects successfully using portfolio management initiatives?

Interview Questions

There were nine interview questions that I used to answer the research question.

1. How do you deliver a successful project?
2. What metrics does your PMO utilize to help determine project success?
3. What strategies do you utilize to incorporate PPM initiatives to improve operational efficiencies within your PMO?
4. How do you manage relationships among key project stakeholders both internal and external to the PMO?

5. What project leader improvement strategies have you used that have contributed to project success?
6. How does the project leader in your organization affect project success?
7. What challenges do you face when implementing PPM processes to achieve project success within the PMO?
8. What leadership strategies do you use to successfully implement PPM into your IT projects?
9. What additional information would you like to share about the way you achieve project success using PPM in your IT projects?

Conceptual Framework

The conceptual framework for this study was the PPM theory, introduced in 1973 by American business theorist, Richard Nolan. Project leaders use PPM as a method to centrally manage processes and technologies (Kopmann, Kock, Killen, 2017). Organizational efficiency improves as project leaders reach a level of maturity in project management (Kerzner, 2019; Muhammad, 2018). Project leaders using PPM maximize their contribution to the overall welfare and success of the enterprise subject to internal and external constraints by maximizing the project value, balancing the portfolio, and aligning it with overall organizational strategies (Too & Weaver, 2014). Project managers utilizing PPM to manage inter-related projects yield increased benefits for stakeholders when handled together under the constructs of cost, schedule, and performance parameters (Too & Weaver, 2014). PPM is a tool that projects leaders use to compare, contrast, and explore experiences and perceptions of factors that affect participant work

leading to the improvement of project success (Kaiser, Arbi, & Ahlemann, 2015).

Therefore, the PPM theory was an applicable conceptual framework to this proposed study.

Operational Definitions

Agile methodology: Agile methodology is an approach to project management that involves an iterative and incremental software development process for managing information technology projects that allows some flexibility to adapt to a changing market (Aniche & Silveira, 2011).

Critical path methodology: Critical path methodology is a method of prioritization that ensures projects are completed on time and in order of urgency. Project leaders prioritize tasks on the critical path that must start and finish on time (Fleming & Koppelman, 2016).

Project Management Body of Knowledge: Project management body of knowledge is a set of standards of terminology for project management (Rahmanian, 2014).

Scrum methodology: Scrum methodology is a continuous review of programs with both short and long timeframes, related to agile methodology (Acosta, Espinosa, & Espinosa, 2019).

Assumptions, Limitations, and Delimitations

Assumptions, limitations, and delimitations are a means for researchers to describe potential restrictions of research (Marshall & Rossman, 2016). The purpose of

this section is to identify and define assumptions, limitations, and delimitations of this research study.

Assumptions

Assumptions are statements that are considered true although they have never been tested (White, 2018). In this study, I assumed that participants will be honest and forthcoming in their interviews to provide accurate and relevant data. Additionally, I assumed that the subjective data obtained through the study provided valuable insight into the strategies used by project leaders to ensure successful PPM in the IT industry.

Limitations

Limitations are constraints beyond the control of the researcher that may affect the outcome of the study (Marshall & Rossman, 2016). The primary limitation of the proposed study was the small sample size. Given the sample size, the research findings were not generalizable. However, a smaller sample size allowed for a more in depth understanding of the phenomenon and population under study. Moreover, findings were used to identify strategies that can be tested in future studies.

Delimitations

Delimitations are factors the researcher has the ability to control to help define boundaries in a research study (Simon & Goes, 2015). Delimitations result from the specific and conscious choices of the researcher (Simon & Goes, 2015). A delimitation of the proposed study was the concentration on project leaders in the IT industry to understand the perspectives and experiences of this population and to narrow the focus on

a relevant and thriving industry. A further delimitation was the focus on PPM strategy vs. project management strategy in general.

Significance of the Study

The results of this study have the potential to expand understanding of critical success factors commonly associated with IT projects. The findings of the study may further add value to business knowledge about managing IT projects. More specifically, project leaders may gain an understanding of strategies to enhance IT project effectiveness (Davies & Brady, 2016). Information technology project managers may benefit from the findings of this study by realizing potential value creation in strategic business processes (Chang, 2016). If project leaders understand portfolio project management strategies better, it may lead to improved success rates and efficiencies. The results of this study could further improve project leaders' understanding of best practices regarding operational strategies.

Contribution to Business Practice

The study findings may contribute to business practices by identifying methods useful in reaching viable levels of success for IT project leaders. The results of this study could positively contribute to project leaders' ability to increase revenues, increase market shares, and improve both competitiveness and sustainability. It is critical for leaders to maintain an understanding of how to manage projects with increased efficiency and outcomes to decrease costs. Implementing PPM tools may also improve project leaders' abilities to enhance employee job satisfaction, thus reducing employee turnover in project management organizations constrained by cost, schedule, and performance in

the IT industry (Kaiser et al., 2015). PPM implementation may further lead to an overall improvement in project success.

Implications for Social Change

The results from this study may contribute to positive social change when IT project leaders use the results to stimulate social responsibility by realizing cost savings through efficiency, enabling them to contribute to local community projects. Profitable project management offices can expand employment opportunities, which may in turn stimulate local economic growth, also contributing to positive social change (Levin & Wyzalek, 2015). Failing businesses result in loss of employment, which has negative consequences on household incomes and economic growth for local communities (Fitzgerald & Muske, 2016). Therefore, the results of this study may improve overall success of a project management office through implementation of tools that strengthen organizational competitive advantage, ensuring leaders can expand on future employment opportunities to stimulate local economic growth.

A Review of the Professional and Academic Literature

Within this section, I provide a critical review of existing literature on the topic of PPM. The review of literature pertains to the competencies necessary to achieve project management success. The purpose of this qualitative multiple-case study was to explore IT project leaders' experiences in project management offices (PMOs) directly relating to PPM. The overarching research question was: What strategies do project leaders within PMOs use to manage information technology projects successfully? The PPM theory was applicable for this proposed study because project leaders who implement PPM can

better manage inter-related projects that yield increased benefits for stakeholders when handled together under the constructs of cost, schedule, and performance parameters (Attakora-Amaniampong, 2016; Levin & Wyzalek, 2015). The purpose of this section is to provide readers with an analysis of prior research that supports the specific business problem based on the conceptual framework.

The initial search resulted in approximately 8500 results for scholarly sources that supported multiple categories of the conceptual framework. I used the Walden University Library, Business Source Complete, Google Scholar, EbscoHost, and Science Direct when locating literature for this study. The key word searches included: (a) *project management*, (b) *portfolio project management*, (c) *project leader*, (d) *project manager*, (e) *stakeholder* with an emphasis on portfolio project management theory as the conceptual framework. I concentrated on the conceptual framework tracing from its origins to 1983-1984 using EbscoHost and Business Source Complete. The literature review consists of 113 sources, 16 (14.2%) were published before 2016. The review is organized into categories relevant to the specific business problem. The categories are PPM, capability maturity model, project management, project management triangle, project leaders, stakeholders, project management office, project management leadership, project success, project failure, PPM tools, agile methodology, sprints, scrum methodology, critical path methodology, alternative theories, and project management maturity. Section one will end with a summary leading to Section 2.

Project Portfolio Management

The purpose of this qualitative multiple case study was to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry. The main conceptual framework for this study was PPM. PPM is the management of all projects in an organization from a high-level perspective (Kopmann, Kock, & Killen, 2017). Program and project managers assigned to group projects practice PPM, which allows them to facilitate effective management to meet strategic business objectives (Hadjinicolaou & Dumrak, 2017). Project leaders use PPM as a framework to resolve potential issues and risks as well as to provide centralized visibility to all key stakeholders.

Project leaders implement PPM strategies in organizations to leverage abilities to effectively manage project selections. PPM strategies, in turn, improves potential for execution success (Artinger & Thomas, 2016; Pajares & Lopez, 2014). It is important for project leaders to understand their team members to better train them on how to work towards a united goal. Further, the project leaders should also be equipped with sufficient skills in terms of software project management. Following a top-down approach, project leaders who implement PPM into strategic business processes focus on resource planning and conflict resolution to create an increase in value for the business.

Project leaders implement PPM strategies to evaluate, prioritize, and align projects with the overall business strategy. PPM includes the following key tasks: (a) strategic alignment, (b) resource management, (c) planning, (d) training, (e) implementation, (f) project portfolio controlling, (g) project support, and (h) program

support. Strategic alignment ensures a prioritization of projects that specifically align to strategic objectives (Artinger & Thomas, 2016). Resource management includes planning and resource allocation in terms of projects. Planning includes initiating, planning, implementing, and completion of projects (Artinger & Thomas, 2016). Training includes ensuring proper training for project leaders and teams. Implementation includes implementing PPM methods, tools, and techniques into business processes. Project portfolio controlling includes monitoring and evaluating project team status. Project support includes providing direct communication and support for project teams (Artinger & Thomas, 2016). Program support includes providing communication and support for all program managers and project leaders to ensure risk mitigation for potential issues that may arise on a specific project. Strategic alignment among projects within an organization leads to a positive effect on PPM performance.

PPM initiatives increase overall quality and value to consumers. Project leaders must focus on key areas of activity, which include the ability to strategize and collect the details that are necessary (Artinger & Thomas, 2016). Other key areas include plan resources for the project and allocate resources for the project. Further, good PPM also entails being able to decide and execute the plans. These areas of activity ensure that leaders focus on the appropriate projects. Focusing on value-creating activities is essential in effective business process implementation. Introducing new initiatives of PPM into business processes will benefit project managers' ability to sustain competitive advantage.

Additionally, firms can use PPM to adapt their information systems to changing markets. Clenden (2017) underscored the need to manage project uncertainty in the midst of external variables such as changing markets and economic conditions for the survival of the firm and success of the project. Flexibility also accounts for the variance in project selection. The inclusion of a new project depends on how it will affect strategy, financial gain, risk, schedule, and cash-flow (Pajares & Lopez, 2014). Based on this principle, the researchers suggested that PPM decisions should be considered in the management of a portfolio as a whole and not just based on specific factors.

Project leaders maintaining flexibility is necessary for successful project management. Rahmanian (2014) suggested the need for flexibility and conducted a comparative study on hybrid IT project management. Project management that begins by planning extensively without accounting for major changes will fail, given that change is likely to occur (Rahmanian, 2014). Rahmanian combined traditional development methods (extensive planning) with the agile method or scrum methodology to create a model that provides for greater flexibility. The use of this combined methodology was compared to that of a hybrid of traditional methods and the Project Management Body of Knowledge. Hybrid methodologies were preferable over strictly traditional methods, given their greater flexibility (Rahmanian, 2014). Project leaders maintaining flexibility throughout a project is critical to their overall success.

Capability Maturity Model

The Capability maturity model (CMM) stems from a study based on the collection of data from organizations that were contracted with the United States Department of

Defense and is the pre-cursor to PPM is (Artinger & Thomas, 2016). CMM is a tool for assessing the ability for government contractors to implement contracted software projects. CMM consists of a series of structured events for the practices and processes in which an organization may reliably produce for outcomes. The maturity model serves as a benchmark for success indicators involving a five-structured approach.

Organizations can improve when there are project managers who push for organizational effectiveness and create project policies. Within the CMM structure, there are five main levels, which lead to organizational improvement in predictability and effectiveness for software projects. The five maturity levels are (a) initial, (b) repeatable, (c) defined, (d) capable, and (e) efficient. Organizational improvement for software projects is important to be able to predict the effectiveness of project management in the field of technology. Therefore, project managers have the duty to make sure they focus on overall organizational performance. Ensuring successful implementation of PPM through a capability maturity process may improve effectiveness of individual project tasks.

Projects

A project can have several definitions based on the context. According to the Project Management Institute, a project is a temporary endeavour to create a unique product, service, or deliverable (PMI, 2013). Projects are temporary and are dependent on the available resources for the project (PMI, 2013). Project leaders manage projects within constraints of time, cost, scope, quality, benefits, and risk (Kerzner, 2017, 2019). Projects differ from other ongoing organizational activities because they have a definitive

beginning and end, thus creating a limited duration. Furthermore, projects contain elements that are unique and have not yet completed.

Project Management

Project management has a rich history and is still emerging and evolving as an independent discipline (PMI, 2013). The purpose of this study is to explore strategies some PMO IT project leaders use to manage projects successfully in the information technology industry. Project leaders practice project management to ensure successful completion and execution of projects. The main purpose of project management is to forecast any dangers or risks that may potentially arise and mitigate those risks to ensure successful completion of the project (PMI, 2013). The literature on project management contains six major categories: contextualization, sociopolitical components, practice, complexity, actuality of projects, and conceptualization (Svejvig & Grex, 2016). Svejvig and Grex (2016) suggested the practice category of project management be further researched. In this study I considered this suggestion by seeking to explore project management strategies that project leaders are using to guide practice.

The achievement of an organization's goal can be planned with good project management. PMI (2013) noted that project management can include sets of various tasks such as determining the different important factors within an organization for the achievement of a goal. Project management is the knowledge, skills, tools, and techniques project leaders use to manage activities to meet project requirements (PMI, 2013). There are five main project management processes that help ensure successful project management; initiating; planning; executing; monitoring; controlling; and, closing

(PMI, 2013). Successfully managing a project relies heavily upon its specific goals and schedule.

A good form of project management can be rooted in several factors. Successful project management has implications for project success (Golini, Kalchschmidt, & Landoni, 2015). In one study, Joslin and Müller (2016) examined project methodologies on project success in different project environments. In a similar study, researchers used structural equation modeling, and found that the response variable schedule and project management implementers were positively related to project management implementation and development (de Carvalho, Patah, & de Souza Bido, 2015). Additionally, project complexity affected margin and schedule, two components of project success. Overall, successful project management was related to project success. Project success is dependent on the successful completion of each phase of project management, including initiation, planning, executing, and closing.

Initiating. The initiating phase is the first phase in a complete project management lifecycle. This phase particularly is where the project is assessed for relevance and alignment to PPM. Moreover, this initial phase relates to PPM as project leaders identify a project's objectives, scope, purpose, and desired deliverables (Golini et al., 2015). When project leaders initiate a new project, they follow six key steps to ensure successful project initiation (Golini et al., 2015). These six steps include the following: (a) developing a business case, (b) undertaking a feasibility study, (c) establishing a project charter, (d) appointing the project team, (e) establishing a project

office, and (f) performing a phase review (Golini et al., 2015). Project leaders following the critical steps of initiating a project may realize greater success.

The initial stage of developing a business case is critical in determining the need for a specific project. Conducting a feasibility study is a method project leaders use to determine the validity of an idea or concept to ensure that idea is technically feasible and financially justifiable (Golini et al., 2015). In short, feasibility studies reveal whether a project is worth the investment. Project leaders conducting a feasibility study typically address the technical, economic, legal, operational, and scheduling feasibility before determining whether to move forward with a project.

Once project leaders determine that a project is necessary, they must establish a project charter. Project leaders establish project charters to outline specific roles and responsibilities along with project objectives for the key stakeholders (PMI, 2013). Within the project charter lies the identification of the reason for completing a project, the project objectives, scope, and stakeholders (PMI, 2013). The next step is selecting the project team and identifying appropriate resources to successfully complete the project. Establishing the project office is critical to ensure the appropriate office is selected to carry out the intended mission of the project (PMI, 2013). Project leaders then establish and utilize phase reviews to monitor the overall cost, schedule, and performance of the project to ensure mission success (PMI, 2013). Phase reviews are critical to project leaders' overall success in executing efforts within the constraints of cost, schedule, and performance.

Planning. The second phase in the project lifecycle is planning. Planning involves the creation of a set of plans that assist with guiding the project team throughout the execution and closure of the complete project (Golini et al., 2015). Project leaders utilize the planning phase to outline the expectations on how to manage cost, schedule, and performance of a given project (Golini et al., 2015). Project leaders begin to identify the project solution during the planning phase.

The importance of planning in project management has been emphasized in different references regarding project management (Golini et al., 2015). Many studies have focused on the planning phase of project management (Heravi, Coffey, & Trigunarsyah, 2015; Kerzner, 2017; Samset & Volden, 2016). Samset and Volden (2016) identified ten paradoxes regarding project management in the planning phase. Some of these include the success paradox; significance of front-end management; early information overflow; opportunity space; strategic alignment; cost estimation; analyses of costs and benefits; “predict and provide” strategies; perverse incentives; and myopic decisions (Samset & Volden, 2016). The researchers concluded that these paradoxes present issues of efficiency and strategic success (Samset & Volden, 2016). Risk can also impact success by moderating between planning and success (Saher & Khan, 2018). Project leaders must identify and assess risks early in a project’s life cycle to maintain success.

One factor of success is the specific people accountable in the decision-making processes of the firm. Heravi et al. (2015) evaluated the level of stakeholder involvement during project planning processes, specifically for building projects. While levels of

involvement were high, the researchers asserted the need for greater involvement of stakeholders in the planning process to inform successful execution later.

Executing. Project management execution or implementation can make for the success or failure of the PM strategy in use. Success can be encouraged by standardized practice of the set plans and strategies usually employed by project managers (Badewi, 2016). However, challenges may still arise, given the gap between research, strategy, and practice (Maylor & Söderlund, 2016; Sánchez-Gordón & O'Connor, 2016). Clenden (2017) similarly examined how unplanned changes emerge while implementing project plans, specifically regarding information systems, causing potential challenges and hindrances to successful implementation. The conclusions showed that the complex responsive processes view gave extra insight in what was happening. In a related study, Plichta and Szominski (2016) discussed models of IT project management implementation and maintenance. The researchers discussed the need for implementation of such models to determine the success or failure of the model in conducting project management.

Monitoring and controlling. The success of project management can be used to evaluate the effects of the implementation of project plans. Post execution/implementation, project management must be monitored and controlled to ensure project success, which includes understanding how PM is affecting performance (Cristina, 2016). Too and Weaver (2014) provided a conceptual framework for monitoring project management. Their framework had four main components: portfolio management, project sponsorship, the PMO, and projects and program support. These

factors can assist project leaders in monitoring and controlling project management in their firms, which can ensure successful closing.

Closing. Closing refers to the final outcomes of project management (Cristina, 2016). Wang, Yao, Wu, and Chen (2017) sought to determine critical success factors of project management practice that inform successful closing. These factors included project management action, project procedures, human factors, external issues, and project related factors, and through project success, can inform firm growth (Wang et al., 2017). The research by Wang et al. (2017) suggested these particular factors particularly help solidify the outcomes of the project in a well-rounded way.

Project Management Triangle

The project management triangle is also known as the triple constraint or iron triangle and consists of three elements: cost, schedule, and performance (Pollack, Helm, & Adler, 2018). Dating back to the 1950s, the program management triangle has been a tool that project leaders use to identify project constraints and manage them appropriately (Pollack et al., 2018). Stoshikj, Kryvinska, and Strauss (2016) asserted that the project management triangle is an effective tool used to successfully balance the three main elements, and in so doing may contribute to project success. Beyond the triangle, there are six project constraints according to PMI that promote effective project management. These constraints are risk, scope, resources, schedule, quality, and cost.

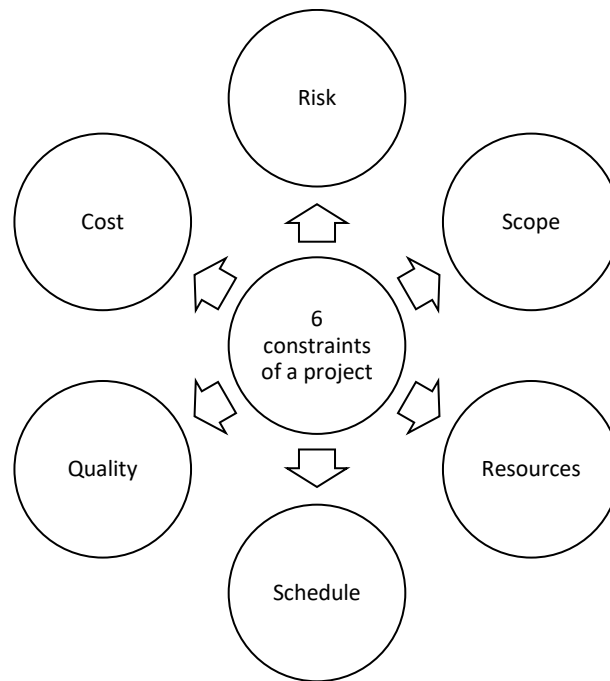


Figure 1: Constraints.

Risk: What can go wrong, and things that can be done to address it? Scope: What specifically are the outcomes expected? Schedule: When should the output be delivered? Resources: What and who is required to do the work? Quality: In what ways do the outcome align with expectations? Cost: How much money is needed and available to achieve this outcome?

Project Leader

A project leader guides the team through project completion (Pollack et al., 2018). Project leaders are responsible for overseeing the full project lifecycle and each event within the project (Pollack et al., 2018). Project leaders identify, assign, and delegate individual tasks to all team members to ensure efficiency and ultimately, the overall effectiveness of the project (Pollack et al., 2018). Project leaders take on the following roles within project management: (a) leadership, (b) decision making, (c) knowledge, (d)

planning, (e) influencing, (f) negotiation, (g) meeting coordination, and (h) communication (Pollack et al., 2018). Each individual role the project leader plays while managing a project is critical.

Stakeholders

Project stakeholders share an interest in each project. Key stakeholders may either be internal or external to a specific organization or maintain a shared interest in the successful completion of a project (Stoshikj et al., 2016). Key stakeholders typically include customers, the project manager or project leader, project team members, project sponsor, executives, and resource managers (Stoshikj et al., 2016). In short, project stakeholders are any individuals who have a personal stake in ensuring the successful completion of a project (Stoshikj et al., 2016). Ensuring proper stakeholder engagement by project leaders is critical to the success of PPM (Stoshikj et al., 2016). Gaining buy-in from key stakeholders helps ensure project success (Stoshikj et al., 2016). Ensuring a successful implementation of PPM is necessary when project leaders dedicate appropriate resources to individual project tasks.

Project Management Office

There must be an office that specifically focuses on the project management in an organization. A project management office (PMO) is a group or department within a business that defines the standards for project management within an organization (PMI, 2013). A primary function of the PMO is to standardize documentation and establish metrics for project management and execution (PMI, 2013). It is also important for the PMOs to implement feasible processes, policies and practices. PMOs are associated with

all activities relating to PPM and are the central hub for projects within the organization. PMOs help standardize project management activities beyond a single project manager and assist project leaders with maintaining consistency across multiple projects (PMI, 2013). In an organization, PMOs further impact projects through the planning and staffing them with realistic expectations to ensure project success (PMI, 2013). Further, PMOs are tasked with the planning, coordination, and execution of multiple projects within the confines of cost, schedule, and performance.

Organizational structures must be considered in dealing with the standardization of the process in project management. Furthermore, PMOs are organizational structures that standardize processes within organization through knowledge management (PMI, 2013). Project leaders within PMOs must ensure they appropriately align business strategies to best realize value creation through successful project completion. PMO leaders must implement and rely upon best strategies to improve the greater good of the organization.

Managing project portfolios is complex in the context of project-based firms. Alexandrova, Stankova, and Gelemenov (2015) examined the role of project offices for PPM to assist in managing these complex scenarios. The complex scenarios can be dealt with by the project managers when they are aware of the important goals of the project. The researchers found that PMOs must be in place in order to successfully head project management in firms (Alexandrova et al., 2015).

Strategic planning and governance are the pivotal functions of a PMO. Project leaders must focus on strategic planning and governance to best determine potential

projects and appropriate alignment of resources. It is, therefore, important that these leaders also ensure they select candidate projects that best align with organizational strategic goals. In addition to strategic planning, project leaders within PMOs must ensure proper governance by setting policies, regulations, processes, and procedures that outline responsibilities to ensure project success (PMI, 2013).

Project management offices have the ability to take on PPM but are oftentimes prematurely exposed due to the difficulty of measuring their value. Bredillet, Tywoniak, and Tootoonchy (2018) studied the dynamics of PMO and portfolio management co-evolution and created a conceptual model that was used in a single-case study. The researchers suggested that further research is required regarding how the participants of a multiple case study perceive the role of the project management office in PPM. It bears noting that the role of project managers plays on a wide range of duties depending on the tasks to be performed. The proposed study follows this suggestion by sampling leaders in project management offices in a multiple case study.

Project Management Leadership

Project managers should be able to carefully make decisions that provide the best overall value to customers. In doing so, they should also be able to know the overall goal of the project and the stakes of the customers. PPM provides business leaders with the ability to assess risk and manage efforts properly while maintaining communication with leadership and all key stakeholders (Levin & Wyzalk, 2015). Challenges connected to dynamically evolving technology within complex software and hardware development projects present significant demands for information technology business leaders

(Finkenstadt & Hawkins, 2016). Business leaders must understand the needs and wishes of all stakeholders as they may be different for each individual effort (Freeman, 2016)

Effective business leaders are those who can prioritize and identify key milestones for all project-related efforts to ensure efficient management of all associated tasks. The leaders of organizations must employ effective strategic planning, which is an organizational management tool that sets priorities, manages resources, improves daily operations, and ensures employees along with all key stakeholders work together to achieve organizational goals (Finkenstadt & Hawkins, 2016). Successful strategic planning coupled with PPM tools ensure business leaders have an opportunity to realize great success.

Sharing a common culture within an organization including language and mindset are also critical to successful project management organizations. Project leaders should establish an organizational mindset by informing, communicating, knowledge sharing, and training employees utilizing processes, procedures, and best practices. Culture also helps develop a mutual understanding when defining milestones, metrics, and key performance indicators to ensure uniformity among all key stakeholders (Finkenstadt & Hawkins, 2016). Through a shared culture, project leaders are successfully able to manage projects and serve as the champions of project management within their respective PMOs (Finkenstadt & Hawkins, 2016).

It is essential for the success of project management for project leaders to be able to determine the correct projects. Aarseth, Ahola, Aaltonen, Økland, and Andersen (2017) argued the importance of recognizing and selecting projects that will sustain value

to both an organization and its customers. PPM and prioritizing efforts within a project ensure adequate project management and increase customer value (Kohl, 2016; Levin & Wyzalk, 2015). Project leaders must remain adaptive and flexible within dynamic and competitive marketplaces.

It is noteworthy that each portfolio of a project discusses the primary points of a project. Hornstein (2015) examined the importance of the PPM process, and how to successfully train new project leaders throughout the implementation of daily business processes. Incorporating change into the project management process through organizational change management is critical to ensuring the implementation of the most current project management tools and techniques (Hornstein, 2015). Hornstein (2015) divided the PPM process into five process groups, which include initiating, planning, executing, monitoring and controlling, and closing. These five steps must be focused upon in order to ensure that all the relevant parts of project management are properly addressed. There is, therefore, a direct correlation to PPM as it relates to the current research study.

A good project manager exhibits great skills in project management of different portfolios (Kaiser et al., 2015). PPM as a project management methodology may provide techniques to improve the project management of certain acquisition efforts (Kaiser et al., 2015). There are direct linkages between project management and strategy implementation as methods to adequately manage project efforts.

Examining the different views of project managers could prove beneficial in helping other managers handle projects better. The perspectives of project managers can

influence the way an organization is led. Senaratne and Ruwanpura (2016) and Andersen (2016) examined project managers' perspectives of project management regarding different orientations such as communication or task completion. For example, a task perspective for a project manager would entail that they are focused on finishing on time and meeting all the requirements of the project. Additionally, this perspective is about getting things done in an orderly and accurate way. If these demands are not met, tension will be tangible. Questions that might be asked from a task orientation perspective are: Was it on time? Or is it correct? An organizational perspective would entail a focus on value creation for the organization. Therefore, as opposed to timeliness and accuracy, this approach is more about the amount of value added to the people and/or the company. Value, in this case is oftentimes concerned with bottom line results. Therefore, questions that are framed by an organizational perspective might be: Did it make us money? Did it add value?

Project success. The performance of an organization can be determined by the strength of project managers. In terms of determining project success, project leaders must assess the immediate performance of a project against the confines of cost, schedule, and performance (PMI, 2013). Project managers must be able to assess the different needs of a project to ensure project success. Often referred to as the triple constraint or iron triangle, leaders must ensure they deliver products and services within the agreed upon constraints.

In addition to the iron triangle of cost, schedule, and performance parameters, project leaders must identify a project scope before beginning an effort (Finkenstadt &

Hawkins, 2016). Though scope is typically less defined than the triple constraints, it is necessary to establish the extent to which the deliverables are completed against all intended activities (Hornstein, 2015). Completing the project deliverable to scope ensures project success (Finkenstadt & Hawkins, 2016).

There are many factors that can contribute to project success or failure. Costantino, Di Gravio, and Nonino (2015) examined project selection in PPM and sought to study critical success factors. The authors noted that while there is much research regarding how to detect and analyze success factors, there is a need for research examining exactly how these factors impact PPM (Costantino et al., 2015). The researchers identified some factors that impact success or failure in the literature. These factors included definition of targets, measurability of targets, resource allocation, clarity of customer and company requirements, adapting to evolving markets, planning, and implementation of project management. These factors are important points of focus regarding PPM.

Project failure. There are numerous factors that can lead to project failure. Project failure may occur in any organization and to any project for a variety of causes. Though project failure is sometimes beyond the control of project leaders, failure is sometimes avoidable. One main cause of project failure is when project leaders lack attention to critical performance factors. According to PMI (2013), there are seven project performance factors that are critical to program success: (a) focusing on business value, not technical detail; (b) establishing clear accountability for measured results; (c) consistent processes for managing checkpoints; (d) maintaining a consistent methodology

for planning and executing projects; (e) ensuring customer communication from the beginning of the project and throughout the project lifecycle; (f) managing and motivating people to ensure optimal performance throughout project lifecycle; and, (g) providing all project team members with the necessary resources to achieve project success

Project leaders who must recover from a project failure face a significant challenge. Carefully analyzing and identifying potential causes of failure of an IT project is invaluable to project leaders as they try to salvage a given project. When project leaders identify a potential project failure, they may take several steps toward recovering the project (Biro, Sametinger, & Seker, 2018). Once project leaders confirm that a project is at risk, they can present their findings to key project stakeholders. The project stakeholders have the responsibility of determining whether to save the project. A failing project may not move forward if the needs of the organization have changed, market conditions have changed, or significantly changing technological needs arise that render the original approach as no longer valid.

Risk Management

Project risks should be assessed by the project managers. Risk management within the software industry involves being able to assess and identify different risks. Project risks are unknown events that may occur throughout a project lifecycle (Biro et al., 2018). Based on assessment of the effectiveness of organizational project management, risk management is a critical component to project management (Tupa, Simota, & Steiner, 2017). It is the forecasting and evaluation of financial risks along

with the identification of courses of action that minimized impact of risks can be assured (Biro et al., 2018). Effective project leaders should address risk management using different mechanisms to identify the risk, analyze it, evaluate it and be able to mitigate it.

Identifying risk is the first step in proactive risk management. Project leaders who identify risks early have a greater ability to manage the risk and identify mitigation plans to reduce negative impacts to a project (Biro et al., 2018). The risk analysis phase is when project leaders identify and manage potential problems that have the potential to undermine organizational business processes or initiatives (Biro et al., 2018). Project leaders perform risk evaluation to determine the significance of the risks to the overall success of a project. Project leaders may use a ranking system to determine which risks have a greater threat to negatively impact the project (Biro et al., 2018).

To reduce negative impact, project leaders can identify potential options and courses of action to mitigate the risks before implementing a plan. Project leaders must address the highest-level risks with a sense of urgency to maintain project success (Biro et al., 2018). Once project leaders assign values to each risk and a path forward to reduce potential negative impacts, they must monitor and review the risks by performing routine surveillance. Project leaders should create and implement a risk process checklist to ensure proper oversight and management of identified risks (Biro et al., 2018). Implementation of the risk process checklists should occur at the earliest possible to stage of risk identification to mitigate potential negative consequences to the project.

The different methodologies for risk management need to consider project-strategy alignment and results management, as these areas can often be neglected (Weber,

2018). Reportedly, soft skills are also beneficial in processes of risk management (de Carvalho et al., 2015; Zuo, Zhao, Nguyen, Ma, & Gao, 2018). Ultimately, successful risk management entails the evaluation of risks (Dludhlu, Pretorius, & van Wyngaard, 2017; Weber, 2018). Evaluating risks early in a project life cycle is necessary to maintain cost and schedule constraints.

Project Portfolio Management Tools

Scrum methodology is one PPM tool that assists project managers and business leaders with managing development efforts, while improving competitive advantage. Another PPM methodology is called Agile, which seeks to improve development efforts that enhance customer satisfaction. At the same time, agile is also focused on maintaining a high level of collaboration among all key stakeholders (Dingsøy, Moe, Fægri, & Seim, 2018).

Proponents describe that agile methodology is an umbrella term that involves an iterative and incremental software development process for managing information technology projects (Dingsøy et al., 2018). Data warehouse and business intelligence solutions are valuable strategic assets for project leaders when making value-driven organizational decisions (Aniche & Silveira, 2011). The agile methodology uses the available resources, including technology in order to facilitate project management. The value addition of incorporating agile development methodologies, primarily scrum methodology into complex projects and efforts requiring strict managerial oversight assists project leaders in ensuring project success (Aniche & Silveira, 2011). Project leaders must understand the importance of agile development testing endeavors and how

to improve upon providing best value to consumers, which produce an increase in organizational efficiencies.

Agile methodology specifically refers to the management of software development processes. Many studies have been conducted on project management using an agile methodology (Hoda & Murugesan, 2016; Rasnacis & Berzisa, 2017; Suetin, Vikhodtseva, Nikitin, Lyalin, & Brikoshina, 2016; Tomanek, Cermak, & Smutney, 2015). Tomanek et al. (2015) developed a conceptual framework for web development projects that was based upon PM principles and agile methodology. The researchers suggested that agile methodology increasingly be used, given its provision of flexibility. Suetin et al. (2016) implemented agile project management in software engineering companies and, like Tomanek et al. (2015), suggested its use as they found agile methodology to improve quality. Agile assists project leaders and team members in responding to changes through an iterative process known as sprints.

Scrum Methodology

Different methodologies are important in the field of project management. Scrum methodology is a subset of agile methodology (Aniche & Silveira, 2011). Incorporating scrum methodology and agile development may improve the cost effectiveness of information technology organizations. Establishing a critical chain methodology is an approach that project leaders can take to maximize value to consumers while reducing lead times for software deliverables (Zhang, Song, & Díaz, 2016). Scrum processes help project leaders adjust smoothly and efficiently to rapidly changing requirements. The theory of scrum methodology most notably emphasizes a collaborative, functioning

software, team self-management, and the flexibility to adapt to emerging business realities (Ciric, Lalic, Gracanin, Palcic, & Zivlak, 2018; Mollahoseini Ardakani, Hashemi, & Razzazi, 2018). Within scrum methodology, there are three roles, the Product Owner, Scrum Master, and a Team. A brief description of each of these three roles is below.

Project leaders may use the Critical Path Methodology as a step-by-step project management technique to manage processes effectively planning based upon whether tasks are critical or non-critical tasks. The goal of the Critical Path Methodology is to prevent potential bottlenecks and time delays. Project integration management focuses on coordinating all elements of a project to ensure on-time completion and key stakeholder satisfaction (Demirkesen & Ozorhon, 2017). Using various methodologies, project management information systems can be useful in every phase of project management (Eroshkin, Koryagin, Kovkov, Panov, & Sukhorukov, 2017; Varajao, Colomo-Palacios, & Silva, 2017).

Project Portfolio Management Taxonomy. To better illustrate the theories, it is helpful to show the propositions of the different methodologies in a figure. The figure below provides a PPM taxonomy of tools that may provide value to project leaders. Figure 2 shows the PPM methodology, the relevant authors and the key components of the theories they proposed.

Project Portfolio Management	Year Introduced	Author/Theorist	Key Components of Theory
Scrum Methodology	1993	Jeff Sutherland	<ul style="list-style-type: none"> • Sprint cycles to provide planning • Collaborative team effort with end users and key stakeholders • Daily scrum update to provide current status
Critical Path Methodology	late 1950s	Morgan R. Waker and James Kelley Jr.	<ul style="list-style-type: none"> • Identifying critical and non-critical tasks • Reducing delays and eliminating bottlenecks • Develop project charters to process plan
Agile Methodology	2001	Seventeen software developers including Jeff Sutherland, Ken Schwaber, Jim Highsmith, Alistair Cockburn, and Bob Martin	<ul style="list-style-type: none"> • Creating efficient value streams • Collaborative efforts • Self-organizing • Lean processes • Iterative, incremental and innovative

Figure 2: Project portfolio management methodology.

Sprints

The approval of the collective group that approves a policy is important to make sure that each member understands the importance of certain tasks. Sprint cycles in agile development are periods of time during which specific work is completed and ready for the collective group to review (Arumugam & Vaidyanathan, 2020). Sprint cycle entails the projection of specific work and the planning of the different steps on how to make the project happen. At the beginning of a sprint, a planning meeting occurs to ensure the product owner conveys the overarching goals of the project. The development team then determines how much work they can realistically accomplish in between each sprint review meeting. In information technology, specifically software development efforts,

sprints traditionally last between three weeks and 30 days. Sprints are on a continuous basis based upon the identified time.

Product owner. The scrum product owner is the project's key stakeholder who maintains the vision of the desired end state of a given project. Product owners are usually the super user of a given system and maintain a sound understanding of the users, market, and potential competition (Liu, Ho, Chang, & Tsai, 2019). Under the methodology, the product owner should be able to properly communicate the features of the product to ensure that other actors who work within the system are properly equipped with the necessary information and skills. Maintaining solid communication with all key stakeholders is a critical component to the success of a project owner. Therefore, communication should be a priority for the project leaders.

Scrum master. The scrum master is the facilitator for an agile development team. The scrum master should be able to lead the team and direct different solutions when it comes to decisions on how to lead a software development project. The scrum master is responsible for managing the processes for how information is exchanged across project management teams (Sauer, 2018). The exchange of information should be prioritized to make sure that the members are freely able to give their views to the entire group. Additional responsibilities of the scrum master include leading a given organization in its adaptation of the scrum methodology, planning all scrum meetings, and assisting all key stakeholders with understanding empirical product development (Sauer, 2018).

Team. The scrum team is a group of individuals who work together to accomplish the desired goals of a project. All designated team members must share a mutual understanding of the goals. The mutual understanding of goal will allow the team members to be united at work. The entire team must be equipped with the knowledge of the overall purpose of the team and the common goal of the completed project. Team members apply similar norms and rules and share a common respect for one another throughout the project lifecycle (Sauer, 2018). Collectively, all team members are responsible and are accountable for the successful delivery of the project. Ideally, scrum team members are co-located to avoid potential communication shortfalls.

Critical Path Methodology

The critical path methodology is a step-by-step project management technique that assists project leaders in identifying the critical and noncritical tasks of a project (Fleming & Koppelman, 2016). Project leaders use critical path schedules to identify activities that must be completed on time to achieve overall project success. Prioritized tasks are said to be on the critical path (Fleming & Koppelman, 2016). Critical path schedules also show potential tasks that may create an impact to the overall project schedule. The schedules further provide project leaders with an illustration of the earliest and latest dates that activities can be completed to maintain success of the project. Overall, critical path methodology can be beneficial for improved quality (Cassanelli, Fernandez-Sanchez, & Guiridlian, 2016).

Knowledge Management

It is essential to focus on maximizing resources through the use of knowledge management. The field of knowledge management is the efficient handling of information and resources within an organization (Zhang, 2017). Project leaders implement knowledge management to capture and distribute information for the purpose of uniformity within an organization. Successful project leaders apply effective knowledge management. The main goal of knowledge management is to ensure knowledge assets and resources add value creation and a shared understanding of the project goals (Zhang, 2017).

Project Management Maturity

Project management maturity theory (PMM) is a process-oriented approach to project management. Project leaders implement PMM to gain various levels of maturation progression. Project leaders implement PPM as a progressive development for a decision-making process (Killen, 2017). PPM levels indicate improvements in the areas of cost, schedule, and performance for successful projects (Demirkesen & Ozorhon, 2017; Jenner, 2016). Overall, increased project management maturity is related to project success (Anantatmula & Rad, 2018; Yen, Peng, & Gee, 2016). Ideal levels of maturity may be determined by several factors, including the complexity of companies' projects (Anantatmula & Rad, 2018; Kerzner, 2019).

Another theory regarding PMM is the capability maturity model (Titov, Bubnov, Guseva, Lyalin, & Brikoshina, 2016). The capability maturity model (CMM) is a methodology used to develop and refine an organization's software development process

(Shin et al., 2016). The capability maturity model calls for continuous process improvement in PM. Kerzner (2019) and Mehairjan, van Hattem, Djairam, and Smit (2016) found that while companies are aware of the benefits of maturity models, they fail to implement such models to improve their maturity and subsequent project success.

The PPM theory as a conceptual framework for the research study is very valuable because it provides an effective framework for productive project management. Additionally, a key methodology for the study such as scrum is also beneficial. The value addition of incorporating scrum methodology into this research is in the fact that it offers strict managerial oversight and assists project leaders in ensuring project success (Aniche & Silveira, 2011). A good example of incorporating managerial oversight is when the scrum master serves as a project team facilitator. The conceptual framework and methodologies of this research therefore have a strong link and necessity regarding PPM.

Alternative Theories and Concepts

In addition to the PPM theory, there are both supporting and contrasting alternative theories and concepts to effectively manage information technology projects. Ensuring recognition in a difference of expert opinions within the current body of knowledge is critical to understanding the broad range of project management theories (Terlizzi, Souza Meirelles, & Moraes, 2016). Any potential alternatives in theory and concepts require additional research and analysis.

Portfolio management. Portfolio management should be considered by business leaders. Kaiser et al. (2015) developed portfolio management as an alternative

supporting theory of PPM. The researchers studied successful PPM to understand the impact of structural alignment. To do this, they looked beyond project selection techniques and examined how strategic changes affected project selection and organizational structure. They furthered their research by creating a theory that suggests that the criteria that is used to select projects inherently influences structure through the information required by that criteria. This research provides a theory and concepts that the proposed study can consider throughout the duration of the study.

Project management technology is also influenced by the ability of leaders to use their knowledge of technology. Another alternative theory is the IT project management methodology (PMM) (Terlizzi et al., 2016). The IT PMM is focused on achieving more predictable rates of project management success through on-time project delivery that is within the budget and meets all project requirements (Terlizzi et al., 2016). Terlizzi et al. (2016) suggested the need for further research regarding the measurement of project success.

The importance of strategic planning strategies cannot be overemphasized. Papke-Shields and Boyer-Wright (2017) focused on strategic planning characteristics and their relationship to project success. In order to analyze this topic, the authors integrated strategic planning characteristics along with a set of adaptive characteristics; this combination resulted to comprehensive model (Papke-Shields & Boyer-Wright, 2017). The researchers found that a rational adaptive approach, a strategic planning characteristic, was positively related to project success. As such, they concluded that

strategic planning characteristics should be incorporated into project management theories and frameworks.

Knowledge management perspective. A second alternative for project leaders to consider is the knowledge management perspective, which is a contrasting theory of PPM. Ahern, Leavy, and Byrne (2014) used a knowledge management perspective to examine project management in two organizations. In the study conducted by Ahern et al. (2014), the researchers analyzed how two specific organizations with complex project management, utilizing the knowledge management perspective in evaluating the organizational ability to attain project goals around the project life cycle. Their findings showed that knowledge management is the managing of incomplete knowledge, given the complexity of some projects and the inability to plan for unknowns (Ahern et al., 2014). The researchers called for distributed knowledge organizing to conduct complex project management successfully.

Knowledge sharing is necessary for successful project management. Projects fail when knowledge sharing and knowledge management are suboptimal (Ahern et al., 2014). Therefore, knowledge management and sharing through the use of maintaining records, documents, archives, and processes is necessary to improve project performance. Project leaders who fail to share knowledge may realize project ineffectiveness. For this reason, knowledge management of projects is necessary to maintain project success.

As economies expand into the information age, knowledge management is an important resource for organizational success. Organizations today face dynamic market competitions and continuous technology advances, creating unique knowledge through

innovation leading to organizational sustainability in the marketplace (North & Kumata, 2018). Successful project leaders circulate knowledge within an organization and deploy the knowledge into new products rapidly. Business leaders who understand the improvement of project success in organizations by integrating knowledge management strategies with project management practices may realize project success.

Systems theory. A second alternative contrasting theory of PPM is the systems theory, which is a method of understanding the dynamics of complex systems.

Information technology efforts are often complex and dynamic. Implementing the systems theory may raise awareness of additional business objectives and lead to designing improved products or services (Badiru, 2019). In the systems theory, project leaders must view both internal and external factors that may influence the success of a project. Project leaders must engage with systems engineering professionals to understand the operational approach for interrelated aspects of a given effort.

Implementing the systems theory in project management to achieve strategic goals may lead to organizational success. Project leaders who acknowledge the relationships between inter-connected components of a given project may achieve project effectiveness (Badiru, 2019). Project leaders should also understand the holistic totality of a project to avoid solutions that are an aggregation of optimized subsystems, but are ineffective overall due to the interactions between those subsystems. As projects have grown more complex, there has arisen a need to develop techniques to manage complexity. Therefore, major projects could benefit from the application of systems thinking.

Projects are complex and dynamic by nature. Project leaders should understand the necessary connections for each project task that uniquely influences the whole system (Badiru, 2019). Changing one element in a given project potentially creates side effects, which is why project leaders should understand how each element fits into the holistic scheme and how changes may impact overall project success. Understanding potential changes and remaining flexible to address those changes improves overall project performance.

Transition

This section has provided an introduction and foundation for the proposed study. The review of the literature has revealed many theories and models used to improve, develop, or conduct PPM. These theories range from standardized and validated frameworks to original models. Section 2 will discuss the methodology and details of the proposed study. Section 3 will provide the details on data analysis and the results of the study.

Section 2: The Project

Section 2 provides a detailed description of the methods and procedures for the proposed study. To orient the reader, the section begins with a restatement of the purpose of this project, followed by discussion of the role of the researcher, and description of the participants. I next elaborate on the rationale for the choice of a qualitative multiple case study that was outlined briefly in Section 1 and explain how I recruited participants with ethical safeguards and protections. This section includes a detailed description of the data collection process, as well as procedures for organizing and analyzing these data. The project description concludes with discussion of procedures I undertook to promote reliability and validity of data and findings and a transition to Section 3.

Purpose Statement

The purpose of this qualitative multiple case study was to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry using portfolio management initiatives. The study population consisted of 5 project leaders from three project management offices in the north eastern region of the United States. This population was selected because they have demonstrated success in managing projects using portfolio management initiatives.

This study may contribute to positive social change when IT project leaders use the results to enhance organizational performance, which improves their ability to extend additional employment opportunities within their local communities. Expanding employment opportunities through improvement of organizational efficiencies may lead to local economic growth and stimulus.

Role of the Researcher

In qualitative studies, the researcher is the primary instrument for data collection and analysis (Clark & Vealé, 2018). Acknowledging the potential for bias to arise as the result of the researcher's own relationship with the topic or participants because of how closely the researcher works with the data is important (King, Horrocks, & Brooks, 2018; Merriam & Tisdell, 2015). Researchers may skew the findings through the processes of data collection and data analysis when they fail to recognize their own biases (King et al., 2018; Merriam & Tisdell, 2015). The data collection process includes encouraging certain responses during interviews and interpreting findings through their own personal lenses in data analysis (King et al., 2018; Merriam & Tisdell, 2015). I acknowledged past experiences that might create bias, and then engaged in a conscious process of bracketing during data analysis to safeguard against such bias in the proposed study. Bracketing refers to setting aside one's own views and expectations to avoid undue imposition of bias on the findings (Gregory, 2019).

My past professional experience has exposed me to the topic of IT project management using portfolio management initiatives although I do not have previous experience with research in this area or the participants. For the past nine years, I have worked as a program manager for the United States army acquisitions. In total, I have 19 years of experience in Army acquisitions as a contract specialist and purchasing agent in addition to serving as a program manager. Through this experience, I became familiar with the execution of complex IT projects and gained a deep appreciation for the challenges PMO IT project leaders face when managing complex efforts. Because of this

experience, it was important for me to conduct data collection and analysis without preconceptions as to what I found. By bracketing my own perspectives, I was able to acknowledge the IT project management strategies conveyed via the actual data rather than viewing these data as framed by my professional experiences.

Following specific interview procedures also helps researchers to avoid introducing bias during the data collection process and developing interview questions that avoid leading participants' responses protects against undue imposition of researcher bias on the data (Schnall, Wolkin, & Nakata, 2018). Specifically, I created open-ended interview questions, which I developed to avoid phrasing that might lead the participant to respond in any manner. The researcher utilized an interview protocol (Appendix A), which is a guide that provides a list of open-ended interview questions. The interview protocol (Appendix A) ensured that I maintained the same specific lines of inquiry with each participant interviewed. Additionally, the interview protocol outlined the specific topics and subject areas, which the researcher was free to explore, probe, and ask questions to clarify that topic of the study (Patton, 2015). The interview protocol acts as a checklist during the interview process to cover all relevant topics during the session.

Another aspect of my role as the researcher in this study pertained to ethical considerations as outlined in *The Belmont Report*. Respect for persons refers to honoring participants' autonomy and avoiding deception (U.S. Department of Health & Human Services [USDHHS], 2018). I adhered to *The Belmont Report* requirement by explaining the study clearly and assuring participants that participation is voluntary during the informed consent process. Power imbalance between participants and the researcher

might also cause harms that violate the beneficence dimension of The Belmont Report (USDHHS, 2018). I did not have a previous relationship with participants that might create a power differential. Finally, justice refers to avoidance of exploitation (USDHHS, 2018). There is no aspect of this study that was exploitative of participants.

Participants

To be eligible for participation, individuals must be PMO project leaders who have applied successful strategies for IT project management and who are currently working within three PMOs located in the north eastern United States. The criteria that individuals must be PMO project leaders who have applied successful strategies for IT project management and who are currently working within three PMOs located in the north eastern US, is aligned with the study's problem and purpose. Individuals with a record of success with PMO IT project management will have the necessary experience to share rich data that answers the research question. The participant criteria is consistent with the purposive sampling approach. Researchers commonly use the purposive sampling approach in qualitative studies to ensure that participants have the relevant background to answer the research questions (Etikan & Bala, 2017). I gained access to participants through publicly available information. I emailed potential participants at PMOs to share information about the study's purpose, procedures, and target population. I sent an email to potential participants to evaluate their qualifications for participation in the study.

Once I gained access to participants, I developed a working relationship with them by sending an introductory email that included the informed consent form. In this

email, I also invited potential participants to call or email me with any questions they might have about the study before scheduling the interview. As the researcher, developing a working relationship helped to demonstrate transparency about a study's topic, aims, and procedures, which is helpful in demonstrating respect for persons (Iphofen & Tolich, 2018) and building a positive and trusting working relationship with participants.

Research Method and Design

There are three types of research methods: qualitative, quantitative, and mixed methods (Yin, 2018). Researchers must select a research method most suitable for answering the research question and a research design that is tailored to their studies' aims (Park & Park, 2016). The purpose of this section is to explain the rationale for selecting a qualitative multiple case study approach for exploring strategies that IT project leaders use to successfully manage their efforts.

Research Method

In the proposed study, I used a qualitative method to explore PMO IT project leaders' strategies for successfully managing projects in the IT industry using portfolio management initiatives. Qualitative, quantitative, and mixed methods all have specific strengths and weaknesses (Creswell & Creswell, 2017). The qualitative method was the optimal choice given the proposed study's aims. Employing a qualitative method creates a greater degree of flexibility during data collection compared with quantitative methods (King et al., 2018). Qualitative research was useful in exploring participants' first-hand experiences and perspectives on project management strategies (King et al., 2018).

Using open-ended questions to collect data from participants also yields more variety in terms of perspectives and opinions (King et al., 2018). Use of open-ended questions is consistent with my aims of gathering a range of viewpoints related to IT project management. In contrast, the closed-choice instruments used in quantitative studies limit the range of responses from participants (Yates & Leggett, 2016). Using closed-choice instruments as a form of data collection allows for statistical analysis related to relationships between predefined variables (Yates & Leggett, 2016). Statistical analysis of relationships between variables is a strength of quantitative methods that is not pertinent in the present study. Mixed methods studies similarly involve statistical analysis of quantified variables, which is blended with qualitative data analysis (Creswell & Creswell, 2017). Mixed methods research is useful when the research problem and questions have both qualitative and quantitative dimensions (Creswell & Creswell, 2017). However, the present study's focus did not include quantitative aspects, which means that a mixed methods approach is not appropriate.

Research Design

There are several available research designs for guiding the analysis of qualitative research. These research designs vary such as phenomenology, case study, and ethnography, which were all considered prior to finally selecting case study design for its alignment with the research question. I used a multiple case study design. The case study design is useful when researchers wish to explore complex processes as these occur in natural settings (Renz et al., 2018; Yin, 2018). Furthermore, the case study design is appropriate in studies of complex processes within bounded settings or groups (Yin,

2018). These basic aspects of the case study design are consistent with this study's focus on strategies for successful IT project management, as I am interested in exploring how PMO project leaders implement these complex strategies in everyday project management settings. PMOs that implement IT projects can be conceptualized as a bounded group, which aligns with case study design.

Additionally, researchers use the multiple case study design to evaluate the similarities and differences relative to the research questions across separate contexts that exist within the bounded group (Yin, 2018). This was useful in the proposed study as it allowed for comparing IT project management strategies across three distinct PMO settings to assess how these converge or diverge. The opportunities to augment and validate the information gathered are greater in multiple cases than in single cases because the information is from various sources and perspectives (Ridder, 2017).

In deciding that the multiple case study design was the most appropriate for this study, I considered and discarded other research designs within the qualitative paradigm. Phenomenology was a possibility because it involves gathering participants' perspectives based on their lived experiences (Alase, 2017; Moustakas, 1994). However, phenomenology also involves learning about how participants interpret or make sense of these experiences (Alase, 2017; Moustakas, 1994). It was not my aim to explore how IT project leaders interpret their experiences of project management, which makes phenomenology inappropriate for the proposed study.

Another option was the narrative design, but this approach is most useful in studies that require analysis of participants' life stories to answer the research questions

(Bass & Milosevic, 2018). Gathering this extent of data from participants is not necessary for understanding their perspectives on IT project management strategies; therefore, I did not choose the narrative design for this research.

Finally, ethnography is useful for understanding cultural aspects of participants' experiences (Bartholomew & Brown, 2019). Understanding cultural aspects of participants' experiences is not consistent with the aims of the proposed study.

Therefore, I chose to not use an ethnographic design. The multiple case study design is appropriate to explore and understand strategies that project leaders within IT industry PMOs use to manage projects successfully using portfolio management initiatives.

Gaining sufficient data to fully answer the research questions is important in all research, and data saturation is a common measure of data adequacy in qualitative studies (Hennink, Kaiser, Marconi, 2017). Data saturation refers to the state at which adding new participants does not result in new data, codes, or themes (Hennink et al., 2017; Merriam & Tisdell, 2015). Hennink et al. (2017) also stated that the capacity to replicate the study indicates data saturation. Determination of an adequate sample size in qualitative studies requires judgment on the part of the researcher, and can range from as few as five participants (Boddy, 2016; Malterud, Siersma, & Guassora, 2016). In the present study, given the depth and breadth of the interviews as planned along with the level of project management experience participants will have to draw upon, I estimated that five participants was sufficient to arrive at data saturation.

Population and Sampling

The population consisted of five project leaders from three project management offices in the north eastern region of the United States. This population was selected because they have demonstrated success in managing projects using portfolio management initiatives. Because the purpose of this study was to discover successful strategies for PMO IT project management, the population included project leaders in the three PMOs who have a documented history of success.

From this population, I drew a sample of five participants using a purposive sampling approach. Purposive sampling is commonly used in qualitative research (Etikan & Bala, 2017). Purposive sampling is defined as the deliberate selection of participants who have the necessary attributes, background, and experiences to fully answer the research questions (Etikan & Bala, 2017). The criterion for selecting potential participants is a current role as PMO project leader who have applied successful strategies for IT project management, and with a current working location within three PMOs located in the north eastern US. The participants were individuals with a record of success with PMO IT project management to ensure that they had the necessary experience to share rich data that answered the research question. These participants had a better understanding of the problem and the research question, according to their viewpoints, experiences, and success. Ensuring that the sample only included those PMO project leaders with successful strategies for IT project management lead to richer data that more thoroughly addressed the study's research question.

Careful selection of participants through the use of purposive sampling contributes to data saturation, as does use of a sufficient sample size (Etikan & Bala, 2017). When the addition of new participants does not result in new data, codes, or themes, this indicates data saturation (Merriam & Tisdell, 2015; Renz et al., 2018). The capability to replicate the study is another indicator of data saturation (Hennink et al., 2017; Renz et al., 2018).

In this multiple case study, I drew data from PMO IT project leaders who have experiences of successful strategy implementation. I anticipated that with this richness in professional experience in the sample, five participants sufficed to yield data saturation. I used member-checking to ensure maximum level of reliability and validity. Member checking is a qualitative technique that researchers use to establish credibility in trustworthiness in the collection of data (Marshall & Rossman, 2016). The interview protocol of this study is located in Appendix A.

The criteria I used to select research participants is that they must be (a) at least 18 years old, (b) and be a project leader who has applied successful strategies for IT project management and who are currently working within three PMOs located in the north eastern United States. After identifying potential participants, I sent an email invitation explaining the study and requesting participation. I allowed each participant to choose a location that is comfortable, convenient, and quiet to allow for digital recording of the interview.

Ethical Research

I followed specific procedures to safeguard participants from harm from initial contact with participants through data collection, analysis, and reporting of findings. Before beginning any initial communications to recruit PMO IT project leaders to participate, I waited for full Walden University Institutional Review Board (IRB) approval to ensure that all ethical protections were adequate. The Walden IRB approval number for this study was 07-22-20-0667547.

Ethical conduct of research involves provision of informed consent to participants and assurances that participation is voluntary (Iphofen & Tolich, 2018). In my first contact with each IT project leader who chooses to participate, I provided the informed consent form that explains the potential risks and benefits of participating in this study (Merriam, 2009). I also provided a verbal explanation of this information as well to ensure that participants understood the purpose and procedures of the study and that there was no incentive for participation (Hair, Wolfenbarger, Money, Samouel, & Page, 2015). In this informed consent process, I explained that participants could choose to withdraw from the study at any time before, during, or after data collection without penalties (Hair et al., 2015). Participants could communicate verbally and/or through email if they choose to withdraw participation (Hair et al., 2015). There was no incentives to the participants for participating in current study (Engward & Davis, 2015).

The informed consent process also included explanation of procedures to protect confidentiality for participants (Iphofen & Tolich, 2018). I kept all participant data confidential and I identified participants with pseudonyms (such as P1, P2, P3, P4, and

P5) in place of actual names (Doody & Noonan, 2013; Merriam, 2009). Any information that participants shared that might be identifiable (including coworkers' names, company names) in the findings was altered to preserve confidentiality or omitted if this was not possible (Doody & Noonan, 2013). For example, if participants referred to themselves by name, referred to coworkers by name, or referred to their organizations by name, the information was either omitted from or presented using pseudonyms in the findings report. I omitted any potentially identifiable work-related information that participants shared specific to their positions from the findings of this study, or I used pseudonyms in the findings report to maintain confidentiality. Descriptive information regarding participants was kept confidential by using pseudonyms in the findings report. In cases where I was uncertain, I requested the participant's perspectives on where the questionable information would indeed be identifiable by others. Data storage practices also ensured confidentiality and involved password protecting any electronic files and locking any hard copy data or materials in a file cabinet. I will store data to these security standards for five years at my home. I will then destroy all hard copy data by shredding to ensure the participants confidentiality. Additionally, I will permanently delete all electronic copy of data. I started data collection after receiving IRB approval number 07-22-20-0667547 from the Walden IRB to protect participant rights.

Data Collection Instruments

In qualitative studies, the researcher is considered the primary instrument for data collection (Clark & Vealé, 2018; Merriam & Tisdell, 2015). Therefore, I recognize that I functioned as an instrument of data collection in the proposed study. Case studies require

multiple sources of data to facilitate triangulation (Renz, Carrington, & Badger, 2018; Yin, 2018). In accordance with this requirement I collected data via semistructured individual interviews and review of documents. Semistructured interviews include a collection of questions that researchers ask in every interview, but also allow for intermittent probe questions to elicit richer responses (Pathak & Intratat, 2016). Unlike structured interviews, the semistructured approach allows the researcher to ask probing questions between the core questions to encourage participants to share more information on topics they raise (Pathak & Intratat, 2016).

Flexibility in the semistructured interview yields data that have more depth and variety compared with a structured interview (Pathak & Intratat, 2016). Conversely, asking the same set of core questions across all interviews lends greater consistency in the data when compared with the unstructured approach to interviewing (Pathak & Intratat, 2016). Following the semistructured interview protocol (Appendix A), ensured that I addressed all key dimensions of the research question while also allowing participants to share additional related insights on IT project management strategies.

Documents provided an additional source of data. When including documents as data, researchers must verify that these documents are pertinent to the study's research questions (Yin, 2018). Documents appropriate for inclusion as data in the proposed study include company policies, procedures, instructional guidelines, or training materials related to IT project management strategies. I reviewed all documents provided to identify any data that had relevance to the research question. Use of document review protocol is helpful in guiding data extraction from documents that are pertinent to the

research questions (Amankwaa, 2016). I used such a protocol to guide document data extraction.

When developing instruments for qualitative research, it is important to complete processes that support reliability and validity of the instruments (Castillo-Montoya, 2016; Pathak & Intratat, 2016). I used member checking as a technique to support reliability and validity of the data collection instruments in the study. Member checking entails the researcher reviewing interpretations of the responses for feedback and verification from the participant to verify accuracy (Thomas, 2017). I shared a brief summary of the findings with each research participant. Sharing a brief summary to each participant ensures that the data correctly reflect the participants' perspectives (Hancock & Algozzine, 2017). Using both interviews and company documents allowed for data triangulation, which supports dependability via evaluation of the degree of convergence across sources of data (Yin, 2018).

Data Collection Technique

The three primary data collection techniques are (a) semi-structured interviews, (b) document analysis, and (c) email correspondence with research participants to ensure data triangulation. Yin (2018) described three main characteristics of a qualitative research interview, which are to ensure the collection of rich and detailed information via personal experiences, the interviewer avoiding providing specific answer categories and encourages open-ended discussions, and the interviewer may deviate from scripted questions to ensure flexibility in the discussion with each participant. To address the research question, I collected data via semi-structured interviews and document review. I

interviewed 5 PMO project leaders who had applied successful strategies for IT project management and reviewed documents from each of the three PMOs who are pertinent to IT project management strategies. Collecting data from PMO project leaders who had applied successful strategies for IT project management allowed me to answer the overarching research question for the study: What strategies do project leaders within PMOs use to manage IT projects successfully using portfolio management initiatives?

Following the informed consent process, I obtained the participants' signatures on the informed consent forms. Also, I scheduled meetings with each participant with the time and date of their choice (Merriam, 2014). Due to the current coronavirus worldwide pandemic, the interviews were conducted through the videoconferencing application called Zoom. Audio recording is a data collection technique that was used with obtained consent from the participants (Creswell, 2009). Permission to audio-record interviews was included as part of the informed consent form, and I used a hand-held digital device to record each interview (Creswell, 2009).

Upon receiving IRB approval from Walden University to make initial contact with each potential research study participant, I used publicly available information to identify potential participants. I contacted them by emailing an invitation to participate and provided the Informed Consent form (Appendix B). I followed the semistructured interview protocol in Appendix A. The researcher may remain flexible to choose alternating questions if the researcher finds a more appropriate interview flow with each participant. To obtain documents for review, I asked the participants approval to provide company documents they had authority to share. I followed the interview protocol

(Appendix A) to ensure consistent data extraction from these documents. It is the responsibility of the researcher to maintain adherence to the study protocol (Thomas, 2017).

Data Organization Technique

I first addressed the need for data organization by creating a folder to organize and document the collection of data for each interview (Creswell, 2009). The data for this study consisted of audio-recorded interviews, interview transcripts, and documents. Simultaneously, I kept a master list of PMO sites and participant names that of which corresponded with the pseudonyms that I assigned to each of the PMO sites and participants, respectively (such as P1, P2, P3, P4, and P5). This master list was stored under password protection separately from the data; only I have access to the password. Also, this master list was stored to apply site numbers and pseudonyms to all interview transcripts, interview transcripts, and notes that I took during interviews.

After conducting interviews, the researcher ensured data security by carrying the digital recorder on my person until it could be stored in a locked file cabinet. I transcribed each interview verbatim, resulting in a transcript of each interview that was stored in electronic form. After interviews were transcribed, data security was promoted by deleting the audio file on the digital recorder. Further data security was ensured by shredding any hard copies of documents after scanning. I labeled all notes, interviews, and documents with appropriate site numbers and pseudonyms to support organization of data during the analysis process. I then imported the data into NVivo, a software program used for qualitative and mixed-methods research, before beginning the analysis.

All data was therefore electronic and was securely stored under password protection. I stored the electronic data and soft copy data from the interviews on an external flash drive. I will destroy all physical and electronic data after five years from the date of collection.

Data Analysis

I focused on the key themes of the study by employing a qualitative case study that allowed me to use instruments such as semi-structured interviews with open-ended questions and interview protocol (Appendix A). The in-depth participant interview aided the development and focus of themes coming from the participant responses to the research questions (Jacob & Furgerson, 2012). As previously mentioned, due to the current coronavirus worldwide pandemic, the interviews were conducted through the videoconferencing application called Zoom. The Zoom videoconferencing interviews led to my ability to correlate and analyze key themes in line with the literature and framework of the study. I also used data triangulation as a key aspect of analyzing data. As part of data triangulation, I utilized a thematic analysis using methodological triangulation to cross-validate the data. Thematic analysis, such as the six-step procedure, is a suitable choice for a qualitative multiple case study because it is a flexible technique that allows for theoretical freedom, and the technique is applicable to a variety of data sources, including interviews and document data (Braun, Clarke, Hayfield, & Terry, 2019). For this study, the primary data source were the in-depth interviews with project managers. Participants were asked to provide documents setting out how they usually

manage an IT project, and these documents were used to contextualize the findings and cross-reference what participants said during the interviews.

Thematic analysis yields a collection of codes and themes that researchers can use to triangulate across data sources, and to complete cross-case analysis by examining findings that converge and diverge (Yin, 2018). I treated each of the five interviews as a separate case and used thematic analysis to identify trends in the responses. Therefore, a thematic analysis through methodological triangulation approach was appropriate in the proposed qualitative multiple case study. I read the summaries from each interview multiple times to identify potential themes. I used methodological triangulation in the thematic analysis approach to identify potential themes and strengthen the findings. Methodological triangulation includes the correlation of participant views, space, and project times (Renz et al., 2018), which accompany interview transcripts and notes during each interview. I applied codes to each theme I identified throughout the data analysis process to reach optimal categorization of responses and attain data saturation.

To complete the analysis, I used NVivo, a software program for analysis of data, to move through each step that Braun et al. (2019) outlined to code data and identify themes that emerged from the data and had relevance to the key themes in the literature as discussed in Section 1 and to the study's conceptual framework, PPM theory. Step 1 entailed reviewing all data to develop familiarity with it in a holistic manner, and to identify items that were pertinent. Step 2 entailed generating a set of initial codes, which resulted from applying labels on a line-by-line basis that reflected basic units of meaning. Step 3 entailed grouping together those codes that were similar, which aided the

researcher in identifying themes in the data. Step 4 entailed reviewing the set of potential themes, with an aim of ensuring capture of principal elements of the dataset. Step 5 involved applying names to all themes, and ensuring that these names were clear, understandable, and relevant to the research question. Step 6 was producing the report, which I present in Section 3 of the study.

Reliability and Validity

Reliability

In qualitative research, trustworthiness is the analog to reliability and validity in quantitative studies (Amankwaa, 2016; Merriam & Tisdell, 2015). Dependability is comparable to reliability in qualitative studies, and several procedures can promote dependability (Amankwaa, 2016). Before collecting data, I completed an expert panel review of the semistructured interview protocol (Appendix A) and document review protocol. The completion of an expert panel review supports the quality of the data, enhancing dependability (Castillo-Montoya, 2016).

During the data collection, I closely followed the interview protocol (Appendix A) to ensure consistency across all interviews. Additionally, I evaluated whether I had achieved data saturation after interviewing the five participants, and if I found that new participants would continue to contribute new insights or information to the dataset, I would have continued to build the sample until data saturation is achieved. Both practices, following an interview protocol (Appendix A) and achieving data saturation, contributed to the dependability of the study's findings.

Validity

In qualitative research, credibility refers to data that accurately reflect the perspectives and realities of participants (Amankwaa, 2016). To support credibility in this study, I conducted follow-up interviews through member checking to provide research participants with an opportunity to review the summations of their responses. Member checking in research is a method to provide informant feedback, respondent validation, which helps ensure accuracy of data (Thomas, 2017).

In this study, I utilized strategies to ensure confirmability such as a well-defined and accurate coding, providing adequate evidence to support claims, and ensuring reliability of intercoder. Member checking also supports confirmability, which is the extent to which others can confirm the findings of the study (Thomas, 2017). Another practice that supports confirmability is data triangulation, which is the assessment of the degree of convergence across multiple sources of data (Yin, 2018). Reviewing data from the individual semistructured interviews and document review supported confirmability by permitting triangulation during data analysis.

Transferability is the qualitative equivalent of generalizability and refers to the applicability of findings in one study to different settings or populations (Tracy & Hinrichs, 2017). In qualitative studies, researchers can support transferability by providing thick description of the participants, research setting, and data (Tracy & Hinrichs, 2017). This allows individuals who review the findings to assess the applicability of the study's findings to their own settings or situations (Tracy & Hinrichs, 2017). In completing Section 3 of this study, I provide thick description of the

participants, research settings, and data to support transferability. In the course of providing this thick description, I also ensure that I protect participants' confidentiality by avoiding disclosure of identifiable information and by using code names and pseudonyms for each participant throughout the study.

Transition and Summary

In Section 2, I provide a detailed description of the project, which aims to identify strategies for successful PMO IT project management utilized by project leaders in three PMOs located in the north eastern United States. Data collection consisted of semi-structured interviews and collection of documents from each of the three PMOs that contain relevant information. As appropriate for a qualitative multiple case study, I conducted a thematic analysis with triangulation across data sources and cross-case analysis across the three PMOs. In Section 3, I present the outcomes of this analysis, discuss the implications for professional practice and positive social change, and provide recommendations for future research and action as these emerge from my analysis.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry using portfolio management initiatives. I conducted video conference interviews with five project leaders in the north eastern region of the United States who have demonstrated success at managing software projects. Additional sources of data included organizational documents that the participants were authorized to share to support their interview discussions. This chapter reports on the results of the thematic analysis and discusses the limitations, implications, and recommendations.

Presentation of the Findings

The overarching research question for this study was: What strategies do project leaders within PMOs use to manage IT projects successfully using portfolio management initiatives? A qualitative study with case study design was followed; and data were analyzed thematically, guided by the PPM theory which formed the conceptual framework of this study. PPM is a tool that projects leaders use to compare, contrast, and explore experiences and perceptions of factors that affect participant work leading to the improvement of project success (Kaiser, Arbi, & Ahlemann, 2015). Therefore, the PPM theory was an applicable conceptual framework to this study.

Seven themes were identified: (a) identification of objectives and desired outcomes, (b) appointing the team, (c) planning and strategizing, (d) stimulating teamwork, (e) keeping close communication throughout the project, (f) developing best

practices, and (g) supervision and monitoring. Some themes were further divided into subthemes. The themes and subthemes are thoroughly discussed below. Direct participant quotes are used to support claims. Throughout the discussion, the findings are compared with other peer-reviewed studies from the literature review, including literature added since approval of the proposal.

Identification of Objectives and Desired Outcomes

A first theme related to the correct understanding and identification of the project objectives and desired outcomes. Understanding project objectives and desired outcomes is a strategy that aligns to the conceptual framework of PPM. Project leaders establish project charters to outline specific roles and responsibilities along with project objectives for the key stakeholders (PMI, 2013). Study participants noted that before they can strategize and execute a project, it is crucial to understand the scope of the project and what the expectations, deliverables, and desired outcomes are. Participant 2 said in this respect that “delivering a successful project really comes with a lot of planning up front.” According to this participant “it comes with a lot of trying to truly understand the project, the thing you're delivering, understanding your client and what your client really wants or needs.” Participant 2 explained that “this is not always as simple as just asking them what they want”; a true and in-depth understanding is indeed required. Participant 2 further clarified that “you've got to understand what it is they want, how they're going to use it, how they're going to employ it, and how long they want to keep it” and that “all those things come into play when you're planning an acquisition.” The reason for why having an in-depth understanding is necessary, according to Participant 2, is that “every project

is unique” and that “even projects that are similar still have unique things that make them a little more challenging.” For that reason, it is important to “use all that time before a project gets started to learn as much as you can about all aspects of your project.”

Participant 4 agreed with Participant 2 and opinionated that “the hardest part is finding the problem and getting to the root of the problem and figuring out what it is you're trying to solve.” This participant believed that “once you've spent probably half your time doing that, and you got that nailed down, the rest of it usually becomes fairly easy,” suggesting that once the objectives and desired outcomes are identified and understood, managing a project becomes much easier. In alignment with these findings, Golini et al. (2015) pointed out that before any action can be taken, project leaders need to identify a project’s objectives, scope, purpose, and desired deliverables.

Appointing the Team

A second theme related to the identification of the right people for a particular project. Assembling the right team is a project leader strategy that aligns to the conceptual framework. Ensuring proper stakeholder involvement and key team member participation by project leaders is critical to the success of PPM (McManus, 2007; Stoshikj et al., 2016). Participants mutually agreed that team members are the ones who drive efficiency and project success, and that including individuals with the needed expertise and qualifications is a crucial part of project success. Participant 1 emphasized that “you definitely want qualified people, especially when you're talking about a small team, it's got to be qualified people.” Participant 1 further said:

Over the years, we have found that people really are the backbone of success. You can move mountains with good people. (...) If you've got the right people with the right skill sets, you can do a lot. If you cheap out on people - our office did that. Our office decided that they were going to figure out what was, you know, lowest price. And the difficulty with that is you save money, but you hurt yourself in terms of what the product looks like.

Participant 2 similarly stated that it is crucial to “make sure you have the right people at the right time with the right skill sets to meet your objectives.” Participant 5 added: “You have to start thinking about the whole thing early, from the beginning to the end. And you need to make sure that you're incorporating all the right people at the beginning.” Participant 4 further supported this idea and reported:

The key is people. I mean, you can have all the technology, you can have all the processes lined up, you can have all the money, but if you don't have the right people to execute, then it won't matter. All those other things won't matter. So to me, the key to successful project management, successful project, is having the right people.

Participant 3 emphasized that “I am nothing without my team” and that “putting the right people in the right positions at the right time is paramount to any team's success” because “you can only move as fast as your slowest person, so making sure that everybody has training and the knowledge necessary to do their jobs is crucial.”

Participant 3 elucidated more in detail:

If you've got to drag somebody along through the mud puddles, or you have to deal with personality issues, or counsel people, or manage their performance level, or those kinds of things, then those are the people that really slow progress and turn into a cancer that can really muck up a project or a direction as far as leadership goes.

In alignment with this statement, Participant 5 said that in one of his recent projects he had to “dissuade some people from helping, only because some of them were kind of naysayers and complainers.” The participant explained that he had made the decision to not include certain individuals because “I couldn't have people prejudging an application before it was done, and then bringing the whole group down.” An important note is that this participant did not exclude certain individuals because they had different ideas, but rather because they were deemed not suitable for the particular project. As Golini et al. (2015) noted, appointing an effective and efficient team is a crucial step in the initial stage of a project, and some individuals are very well suited for a certain project, but not for another one. Thus, the decision to include or exclude certain individuals is based on knowledge, skillsets, and attitudes, and not on suppressing others' ideas. Contrariwise, Participant 5 stated that he specifically aimed to include passionate team members who would make a valuable asset and actively engage with the project:

We needed to keep it positive and make sure we were going forward. So I was really careful to make sure that my team consisted of people who actually were passionate and cared and were more positive.

Planning and Strategizing

A third theme related to effective planning and strategizing before executing a project. Planning includes estimating costs, risks, resources, and time frames. Planning is a strategy that aligns with the conceptual framework. Planning includes initiating, planning, implementing, and completion of projects (Artinger & Thomas, 2016).

Participant 2 elucidated in this regard:

Obviously, you have to understand your time frame, how much time you have to deliver something, whether they want it in a week or they want it in a year or longer, if they can delay, or if urgency comes into play. Resourcing in terms of money, in terms of people that you have to be able to devote to the project, so all those things come into play. The key things or requirements, the client you're representing, the time, the resources you have available, the level of risk that the client is willing to accept in a delivery comes into play with that.

With reference to time management, Participant 2 explained:

You estimate the time it's going to take to deliver something. You lay out a schedule of when you think you can realistically do something. You measure in terms of do I meet my gates? You lay out milestones. You do an estimation to see if you can meet those, so how well you're meeting those timelines, metrics.

In relation to costs and resources, he said:

Metrics for costs, you've got to lay out an estimate of how much you think something is going to cost in terms of resources. There has to be resources in terms of money, in terms of equipment, what equipment you may need or

facilities you may need to do that. You have to present those pieces and then measure yourself on how well you're able to meet those objectives of achieving, getting the resources you need in the time that you need it.

Participant 2 continued and added in specific regard to risk management that “risk is always a key part” and that “you have to think through and do some real analysis, as you lay out your project, trying to understand where the risk areas are.” Participant 2 said that questions should be asked such as “What are the impacts of those risks? What are the severities if those things would have happened? What kind of mitigation strategies can you put into place? (...) Is it going to stop the project or what's the impact?” Participant 3 similarly explained:

I think it's the movement and the multitude of different projects, doing different things at different phases in the acquisition cycle to understand and get that wide breadth and the depth that you need to understand what projects require and what challenges you'll face. You could teach a monkey the acquisition cycle and how to do it, it's the nuances of the in-betweens and how fast or rapidly you can deal with an issue, or at least know where to go to get that answer to deal with that issue, to stay on schedule under budget and within the success of the project and deliver what they really want to manage those expectations. I think that's pivotal.

Some participants noted that buy-in from stakeholders is crucial in this phase as without their support, a project may end up failing or not even starting. Participant 3 explained: “If you don't have stakeholder and senior level support, you really can't get anything done, so I think that's the root to all success.” Participant 4 similarly said:

You have to have that top cover level understanding of what it is you want to accomplish and you're all rowing in the same direction. You may all be in the same boat, but if you guys both got oars in the water and go into different directions, the boat wouldn't go anywhere. So it's developing that same rhythm of where you want to go towards the vision you have and then how you want to get there. So that's very key.

In alignment with the results, literature states that project stakeholders share an interest in each project. Key stakeholders may either be internal or external to a specific organization or maintain a shared interest in the successful completion of a project (Stoshikj et al., 2016). Key stakeholders typically include customers, the project manager or project leader, project team members, project sponsor, executives, and resource managers (Pikkarainen et al., 2008; Stoshikj et al., 2016). In short, project stakeholders are any individuals who have a personal stake in ensuring the successful completion of a project (Stoshikj et al., 2016). Ensuring proper stakeholder engagement by project leaders is critical to the success of PPM (McManus, 2007; Stoshikj et al., 2016) and gaining buy-in from key stakeholders helps ensure project success (Pikkarainen et al., 2008; Stoshikj et al., 2016).

Stimulating Teamwork

A fourth theme related to stimulating teamwork as an important strategy to successfully manage IT projects. Stimulating teamwork is a strategy that aligns with the conceptual framework with a key focus on collaboration of stakeholder engagement. Findings suggest that project leaders are successful when maintaining a high level of

collaboration among all key stakeholders (Dingsøy, Moe, Fægri, & Seim, 2018). The theme was further divided into four subthemes: (a) autonomy, (b) support, (c) stimulating team collaboration, and (d) delegation. I discuss the subthemes below.

Autonomy

Four participants believed that it is important as a manager to trust team members and give them autonomy – at least to some extent. Participant 3 said in this respect that “if I got to do your job, I don't need you.” This particular participant invested a lot in training and as a result expected his team members to be able to apply what they had learned in an independent and efficient manner:

I'm big on training. I like to send my folks to training. You can't get enough training. But you also, if you send somebody to training, you have to give them the opportunity to implement what they learned. Oftentimes we go to training and then you come back and nobody cares and they don't let you learn or apply what you've learned.

This participant implied that it is crucial to allow employees to professionally develop themselves. Participant 4 emphasized this idea and said:

Telling people what the vision is, what the goal is, and then their left and right boundaries, and then letting them go do it. Let them go figure it out. (...) Because that way they can grow as a person and professionally too because if I give them the answer all the time, they'll never learn. I'm a firm believer you learn from mistakes. So if you never made a mistake in your life, then you didn't learn anything. (...) [It is important] to develop people to excel at what they want to do,

because that way that keeps them interested too. I could be a dictator to say, "Nope. I want this, this, this, and this, and this and then that's the way we were going to do it." No. I'd rather see how you guys feel, (...) say, "Here's how we did it in the past. Can we improve on that?"

Participant 3 believed that in addition to personal development, giving a certain degree of autonomy to team members is necessary because specific teams – for example, the technical team - are highly specialized in what they do and probably know more than the manager. Therefore, it is important to trust them and give them autonomy; however, there has to be a balance. As Participant 2 said, “it's a balance between leaning on them to truly understand technology and trusting them that they have it right, but knowing when, from a management standpoint, to step in and go, wait a minute, we're not going to do that." More specifically, this participant said:

You're going to have technical folks that are smarter than you. You're going to have some budget folks that are going to do things you've got to depend upon, but it's learning that right level of how much do I need to involve myself in budget? How much do I need to involve myself in the technical piece? How much do I need to involve myself in the risk piece and other aspects? I think that's key. Find your appropriate mix of how you need to play, what role you need to play in this particular project, I think is one of the key things that a program manager needs to look at their project and try to figure out.

Participant 4 similarly highlighted that “I know a little bit about a lot of things, but I'm not the expert” and that “I give them a capability and then train them but after

that, I walk away and it's up to them.” Participant 3 added that “you can either be a hindrance or a help” and that “as a leader, you need to know when to interject and when not to interject.” The participant continued and said to “make it a point to keep a pulse on everybody. Not to micromanage them, but to make sure that they understand that if I am needed, let me be the guy.” Participant 3 further added that giving team members autonomy is also important as they may have valuable ideas that could add to more efficient processes and better outcomes. Thus, instead of following instructions in a robotic way, this participant believed that autonomy could lead to great and innovative contributions from team members. Participant 5 made a similar comment and explained in more detail why every team member’s input is important:

My leadership is to empower everyone, to include everyone, to make them feel like they're an important part of the team. I don't care if they're a contractor. I had a couple of contractors in the last one that I worked on and they just didn't feel like... They're like, "Oh, I'm just a contractor." I'm like, "No, you are a valuable part of my team. And I cannot be successful unless you all are participating. And I don't care if you just think you're just a contractor, you have a skillset and knowledge that I do not have. And I really need your help on this in." And I'm like, "You're the one who's going to be using this application. So in order for it to be a good, usable application, I need your input and I need your involvement." So that was my leadership, was to encourage everyone and empower them to say things and guide me along, (...) they could give me their expert opinion, and then I can voice that to the vendor.

Support

Participants stated that project managers should support their teams and recognize that they are supporting commands, which means that they provide support to a military command structure. Participant 1 explained in this regard that “there are supported and there are supporting commands, and sometimes the challenge is putting your ego aside and recognizing that you are a supporting demand.” The participant continued and stated that it is important to “recognize that you have a specific skill set and are willing to reach out to those that will need that skillset” because “when at times people are not receptive, the challenge is to help people help themselves (...). So I would offer diligence.”

Participant 3 noted that “as a good leader my number one priority is my people” and that “as long as I can take care of my team, remove hurdles and barriers that impede them from doing their jobs, I think it's a much smoother delivery and that sets the conditions for success.” Participant 3 elucidated:

I like to tell people, ‘I work for you’. I remove barriers that are in their way, allow them to do their job, and then take the heat, and want them to, in a military sense, fire once and elevate, and then I'll drop bombs wherever I need to, to clear a path for them.

Participant 3 additionally stated that “I like to praise them” because “I don't think people get enough thank you's in the world” and “I'm nothing without my team.” Participant 3 also found it important to “take care of their physical and mental health.” Participant 4 likewise said that managers should “be open to other people's ideas and be cognizant of

the challenges that they face” because “you may not know that there may be something else that they're experiencing that's beyond their control.” The participant explained:

Most people want to succeed in their business and their job. Most people do. So if they're not, then there's a reason for it. So the reason is to try and see other obstacles you can help them remove, to help them succeed in that thing. (...) If they succeed, then you're going to be successful. So you can sit back there and say, "Okay, they're not doing a good job. I'll just sit here and wait until they do their job." No, you just go and see what's the problem. What's hindering them from doing their job. Then sometimes it's something that you don't have any visibility of so you have to take a more 30,000 foot level approach sometimes and say, "Okay, what's really going on here," and then see where those roadblocks are, and then see where you can help to eliminate those.

Stimulating Team Collaboration

All five participants agreed that success cannot be reached without the input and efforts of every individual team member. Every person involved is responsible for specific tasks and if those tasks are not carried out with diligence and in a timely fashion, others may not be able to fulfill their responsibilities; hence, every team member plays an important part and good team work is essential to ensure successful outcomes.

Participant 2 believed that “team building is a key and leveraging your team has been a success for me.” The participant elucidated:

Involving everyone in the team, even though people have a certain role, it's important sometimes to make sure the whole team understands not all the details of the project but understand generally what we're all trying to accomplish.

Participant 2 added:

Everybody's role is support. Whether you're the janitor or you're the lead technologist, everybody's got a role to play. If the guy who's supposed to bring the water doesn't show up when he's supposed to, it can disrupt all the stuff that's going on. Everyone's got an important role to play and it's key to make people aware of that and recognize folks for what they do.

Participant 5 added:

I think you deliver a successful project by having everybody work together as a team. (...) You have to identify your SMEs in every one of your areas and make sure that all your bases are covered, and you have to make sure that you're talking to them. I have found that some of them sometimes need a little guidance. (...) I just think the more that you are working as a team and that you make sure that everybody in your team is really empowered to do their job, I think you will be successful.

Interestingly, Participant 2 added:

People can really surprise you with their ingenuity and what they understand. If they understand where you're going and what you're trying to accomplish, people can really help you out in ways that you didn't think of. I think leveraging your people, keeping your people informed and understanding their skill sets and what

they have to bring to bear, I think, can be very beneficial to a project when you really use those resources appropriately.

Delegation

A last subtheme in relation to teamwork referred to delegation. Participants said that to encourage good teamwork, it is important for a manager to make sure every team member knows his/her job and expectations, and what they are working towards.

Participant 2 said in this respect that it is necessary for everyone “to understand what's expected of them and what's expected of others as well, what they can expect from their coworkers and stakeholders.” The participant continued:

As a leader, you have to set the stage, right? You have to lay out the guidance and direction from the beginning so that everyone has a clear understanding of what we're trying to accomplish, and they understand their role within that scheme or maneuver, right? This is my job. This is what I have to do to be successful, so make sure people understand that this is the role I need you to do, I think is key, so that people get information and they get it when they need it. You have to make sure you're putting data so they don't have to reach back to you to go, "Okay, what am I doing today?" You've got to lay that out for them as best you can, so they know their role and they can do their work.

Participant 3 agreed and similarly highlighted that it is crucial that “everybody understands the mission (...). Everybody understands what they're there for, what their roles are, and then ultimately they do their job.” This participant, to conclude, stated that as a team member “you don't need to do somebody else's work, but you got to do what

the team expects you to do.” In alignment with these results, Pollack et al. (2018) stated that project leaders identify, assign, and delegate individual tasks to all team members to ensure efficiency and ultimately, the overall effectiveness of the project.

Keeping Close Communication Throughout the Project

Participants mentioned that it is important to regularly communicate with all stakeholders involved – especially as progress may not always be directly visible. Maintaining communication throughout the project aligns to the conceptual framework. Ensuring customer communication from the beginning of the project and throughout the project lifecycle is necessary for project success (PMI, 2013). Participant 4 said, “the key is communicating with the stakeholders often and making sure you understand where they're coming from.” Participant 4 said that communication is crucial to overcome potential barriers and avoid misunderstandings between stakeholders. Participant 5 explained that “unless we're communicating as a group, I'm not going to be able to solve all the problems, but as a group, if we're communicating, we will solve all the problems and we will get to the end state.” In alignment, Participant 1 added that communication can be important, in particular, to educate stakeholders on what is going on and positively influence their decisions:

So the approach is, I think, multifaceted. You are targeting decision makers, but you are also targeting requirement generators. So simple answer is stakeholder management but being multifaceted at different levels. So it's not just immediate person that you're speaking to, but also I would think the folks at levels above them so that you hopefully are able to influence not just the person that's trying to

execute stuff, but somebody that's several levels up. So that strategy wise, they can be implementing things that benefit themselves. So again, it gets back to educating customers. So you're trying to engage customers at multiple levels.

Participant 4 added to this that communication needs to be reciprocal and customers should give feedback on new products by stating:

We like to get feedback on how that works, just like any product that any business would do. What's the feedback on the product that you're delivering? Did it do what we thought it would do? Just like anything else and just like any weapons system in the army or DOD today, you get user feedback and you do the improvement process. "Okay. Well that didn't work. Let's try something else." So that's very key and that's probably half of my time is spent with stakeholder management and stakeholder communications.

Participant 3 said that establishing close relationships is, in addition, necessary so that in the event of bad news there is more of a buffer to overcome such situations because of the good relationship. Participant 3 indeed explained that "bad news doesn't get better with time, so I feel that the more often you talk and the more you foster those relationships and develop that closeness with your partners, the better off you'll be." Interestingly, Participant 3 noted that communication has become easier since the coronavirus worldwide pandemic as it has led to the adoption of virtual communication which turned out to be very effective and efficient:

Believe it or not, the advent of COVID forced us to telework, which allowed us to meet virtually and really prove out that this dynamic really works well and allows you to meet either one-on-one or in a group setting. I think, by default, COVID

allowed us to communicate better, and by doing so I think that allowed me to then pull in my team and manage it more effectively and more efficiently. We've also included our counterparts, our partners, our acquisition partners, and our industry partners. I meet daily, or every other day, with my contractor, my PCO, my contract team. The key to it is communicate, communicate, communicate. That's pretty much what I tell everybody. That's the bottom line for me. That's the best way to manage, in my mind.

Developing Best Practices

A sixth theme related to the development of best practices as a strategy to successfully lead and end IT projects. Utilizing best practices is a strategy that aligns with the conceptual framework. Project leaders should establish an organizational mindset by informing, communicating, knowledge sharing, and training employees utilizing processes, procedures, and establishing best practices (Finkenstadt & Hawkins, 2016). Participants said in this regard that establishing best practices is necessary to maximize efficiency and success. Participant 3 noted that there are sometimes unexpected challenges and these need to be identified and eliminated as soon as possible. Participant 3 explained:

I think enhancing time management and making sure that the team is cohesive and that they have the tools and the processes in place that matter. (...) We vet the processes that matter and use those and get rid of the hindering processes that really stop us. The Army's big for getting in its own way. I think a lot of the processes that I encounter in my day to day are somebody else's process that slow

rolls us, or really stops the execution of dollars. Could be your contracting agency, could be COVID, in this case, is a delay, could be the world around you. There's a lot of factors that come into play with that.

To avoid significant problems, some participants said that it can be useful to start from a certain structure and tailor this according to the specific requirements of the project. Participant 1 explained: “some of the DAU heavy systems engineering processes, that horse blanket, I mean, even PNP, when you look at it, it's all systems engineering and then you tailor those processes to the effort that you're focusing on.”

Participant 2 similarly said:

I think one of the things we try to do is we try to reuse pieces that worked, right, for efficiencies. We have a template for our sample. Those things are living documents in the sense that they grow over time and you can change those. When you get one that works, you try to put that in place as a catalyst standard of okay, this is how we're going to do this. The schedule format we use, we lay out a way that we want our schedule to look and the pieces we want to highlight there and try to reuse those things because those are going to give you efficiencies, so you don't have to recreate the wheel on those things.

In alignment, Participant 4 added that it is important to have an innovative mindset and not automatically choose “the easy way”:

Too often, and this is just human nature, you fall into ruts. Because you do things the same way you think, "Well that works," but sometimes you have to take a step back and say, "Why am I doing it this way? Is there some other ways?" So one of

the project I just left was a prime example of that. So typically an acquisition, as you know, we would find a problem, write a requirement up, put it out for contract, contractor bids on it, and then they go off and do the work. (...) I hired an engineering team to do the engineering and design of the network but then I used, I went and bought, the equipment is TFE first stat. I had them install a core. Then I used soldier labor to install the rest of it. I had just a plethora of different people. (...) That's something that most people would not want to take on, that kind of responsibility of being a system integrator and getting all these different entities together to make the project come together. So that's probably one of the most innovative things that we've done in the last five years.

With regards to these statements, Participant 1 noted the importance of being a lean company:

The advantage we have is we're very lean, which allows us the ability to have those folks that are relevant, the requirement generator, the users, the testers, program management side of the house, interacting with the folks that are building our hardware or software to ensure that we have an ability to get visibility on things before it becomes a path to decision point, if that makes sense, things that obviously you're very familiar with, but we are very lean and that allows us to have those interactions.

Supervision and Monitoring

Participants stated that a good project manager should supervise and monitor every step in the process and should intervene when and where necessary. The

supervision and monitoring theme aligns with the conceptual framework. Findings suggest that project management must be monitored and controlled to ensure project success, which includes understanding how PM is affecting performance (Cristina, 2016). Participant 2 explained in this regard that this is not always easy as it requires a lot of organization and time management from the project leader:

Time management and laying out your time, where you need to be, when you need to be, making sure you're in the optimal place at the optimal time, I guess, is often a challenge, trying to make sure everything happens, even when you're not there, and knowing the places where you need to be there to make something.

Time management and organization, I think, are always challenging.

Participant 4 agreed and added:

It's timing everything. In the IT, in our business we have capabilities. So for voiceover IP, since it's going over an IP and network, it's protocol. I have to have a network installed. Otherwise it doesn't do any good. I can have the greatest voice processor, and systems, and VOIP phones and stuff. But if I don't have a network installed, it ain't going to do anything. Then the network relies on things like outside plan. I got to have fiber optic cable to connect all the buildings together. I have to have generators to make sure that stuff is backed up. I have to have all this other stuff so there's foundations. We call it foundations that build on each other so the foundation is what we call layer one. So you have to have that in. Then the network has to be in layer two, then you can do applications and web interfaces and stuff like that. That's the challenge is to integrate and understand

the relationships of those different capabilities and make sure that they're timed correctly so that everything falls into place.

To avoid potential problems and miscommunication, three participants said to implement sprint cycles. Literature has similarly mentioned the implementation of sprint cycles during IT projects. Sprint cycles in agile development are periods of time during which specific work is completed and ready for the collective group to review (Arumugam & Vaidyanathan, 2020). Sprint cycle entails the projection of specific work and the planning of the different steps on how to make the project happen. At the beginning of a sprint, a planning meeting occurs to ensure the product owner conveys the overarching goals of the project. The development team then determines how much work they can realistically accomplish in between each sprint review meeting. In information technology, specifically software development efforts, sprints traditionally last between three weeks and 30 days. Sprints are on a continuous basis based upon the identified time. Participant 3 said in this regard:

Actually, we just finished a scrum for our capabilities development document for base emergency communication systems. We do work in group IBTs. We do TEMs, technical exchange meetings. We're big right now in the public safety communications arena, where we're meeting constantly with industry partners, with federal, state, local, even County professionals to tie in all of our base emergency communications. So, yeah, IPTs are integral to what we do when we field our product. We start with an IBT, an introduction brief, and then we form the IBT. We do source selections. It's this two-year iteration all the way through

to burn it in test and then we release the product. It takes two years to... You'll see that in our project schedule, all of that's laid out in there. That'll identify how we manage each project in the portfolio.

Participant 1 added:

At this point in time, those are three-week cycles, but we have done them on two weeks and we've done them on four weeks, agile software, best business practices. And only as a product increment in those timeframes, sometimes our product being permitted, something more than, Hey, here's where we're at. And here's the questions we need answered. So a little different, again, getting back to the initial question of people, processes and structure, I would say that you are overlaying a process on something, but is not a rigid template.

Participant 3 noted that part of the supervising and monitoring process is to document performance and encourage people to perform. This participant noted in this regard that “the great thing about us is we're in a paid for performance society. If you don't perform it can affect your pay.” Participant 3 said that “some people don't care about that, but at least it's documented, and it doesn't allow you to move upward and get upward mobility, which is pivotal.” Participant 3 further explained that “a lot of a lot of managers don't take the time to document poor performance, but you have to do it, because if you don't do it, it just passes the buck to somebody else.”

Applications to Professional Practice

The purpose of this subsection is to provide the applications of the findings to professional practice for project leaders. Themes emerging from this study, from both

the semistructured participant interviews and organizational documents that the participants provided, may provide valuable strategies for project leaders to evaluate project success. These themes were: (a) identification of objectives and desired outcomes, (b) appointing the team, (c) planning and strategizing, (d) stimulating teamwork, (e) keeping close communication throughout the project, (f) developing best practices, and (g) supervision and monitoring. The study findings may contribute to business practices because the results helped in identifying methods useful in reaching viable levels of success for IT project leaders. The results of this study could also positively contribute to project leaders' ability to increase revenues, increase market share, and improve both competitiveness and sustainability. For example, the results suggested that stimulating team work is crucial as participants emphasized that team members are the ones who make a project successful or unsuccessful, and the more a team is engaged and works together, the better the end product will be. Implementing teamwork may also improve project leaders' abilities to enhance employee job satisfaction, thus reducing employee turnover in project management organizations constrained by cost, schedule, and performance in the IT industry.

It is critical for leaders to maintain an understanding of how to manage projects with increased efficiency and outcomes to decrease costs. As the results suggested, such efficiency can be reached by proper planning and strategizing before executing the project. The results suggested that PPM implementation may further lead to an overall improvement in project success.

Implications for Social Change

The results from this study may contribute to positive social change when IT project leaders and organizations in general use the results to stimulate social responsibility by realizing cost savings through efficiency, enabling them to contribute to local community projects. Based on the results, organizations and IT project leaders may want to, for example, make sure to invest resources into an effective and efficient team. In this regard, it was mentioned that some organizations and IT project leaders in the past have deliberately not included certain experts because they wanted to cut costs, but that in the long run this turned out to be a poor decision as this led to inefficiency and many mistakes that could have been avoided if “the right people” were included from the beginning. It is crucial for IT businesses to make good decisions in this regard as it contributes to their image and reputation, and can determine the number of projects they will be allocated by clients.

Profitable project management offices can expand employment opportunities, which may in turn stimulate local economic growth, also contributing to positive social change (Levin & Wyzalek, 2015). Failing businesses result in loss of employment, which has negative consequences on household incomes and economic growth for local communities (Fitzgerald & Muske, 2016). The results of this study may improve overall success of a project management office through implementation of tools that strengthen organizational competitive advantage, ensuring leaders can expand on future employment opportunities to stimulate local economic growth.

Recommendations for Action

Based on the study results, it is recommended leaders of IT projects implement the following strategies that may contribute to more successful project execution and ending: (a) identification of objectives and desired outcomes, (b) appointing the team, (c) planning and strategizing, (d) stimulating teamwork, (e) keeping close communication throughout the project, (f) developing best practices, and (g) supervision and monitoring. Through the results of this study, I identified when projects leaders fully understand objectives and desired outcomes of a particular project, they are better able to mitigate any potential issues or risks to the effort. Indeed, when objectives and expected deliverables are truly understood, project leaders can plan more efficiently, and problems are more likely to be successfully avoided. Secondly, I recommend project leaders take their time to put together a team, which requires thorough consideration, as the results of this study suggest that choosing the right people is crucial in reaching project success. I recommend for project leaders to avoid intentionally reducing costs on hiring actions for team members and instead hire the best qualified candidate who will enhance overall performance outcomes for an organization.

I further recommend that project leaders should heavily invest in proper planning and strategizing before project execution, and to include stakeholders in this phase as their buy-in is crucial. It is important that, before the project officially starts, costs, time frames, and procedures are agreed upon, and project leaders identify any potential risks along with a mitigation strategy for each risk. Informing stakeholders and decision makers at project initiation, seeking their approval is necessary for successful project

execution. To avoid potential barriers and obstacles it is important to guide decision makers and influence them in a way that does not harm project efficiency.

Another recommendation is for project leaders to stimulate teamwork. Efficient teamwork is crucial for project success as team members are the ones that make the success of a project. To maximize the success of a project, I recommend project leaders give their team members autonomy; however, there should be a balance and project leaders need to be able to recognize when to step in. The results suggest that granting team members a certain degree of autonomy is important as each team member is highly specialized in a certain area and project leaders should trust their team members that they will make the best decisions. Project leaders should also play a supporting role and do their best to tackle obstacles for their team, rather than letting their team figure everything out for themselves. In addition, I recommend that project leaders should delegate and communicate expectations to their team and encourage transparency; this too could minimize barriers and maximize efficiency.

Keeping close communication with stakeholders throughout the project is another best practice. Based on the results, I argue that regular and open communication with stakeholders is important so that undesirable surprises can be avoided and relationships among stakeholders remain strong throughout the whole project. I also recommend project leaders develop best practices by adopting existing processes and modifying them according to project requirements. It is important, however, that project managers invest in innovation and continuously strive for improvement. Lastly, I recommend project leaders supervise and monitor all actions taken by the team to avoid potential project

errors. Supervising team members requires excellent time management and organization skills. I recognize monitoring team members requires much energy from the project leader; however, to increase project efficiency and success, effective monitoring and supervision are essential.

Recommendations for Further Research

The results of this study will be published in the form of a scientific article. I will also, if the opportunity arises, speak at conferences about the results of this study. Project managers and organizations will have access to the findings via written materials, and I am hopeful that some organizations may invite me to speak and be involved in training sessions. Although the results of this study provide useful insights, it is important to remain critical, and suggest ways through which future researchers can either replicate the study, or build on the results of this research. In this regard, a number of recommendations for future research can be made. A first recommendation pertains to addressing sampling issues. The current study only incorporated PMO project leaders who have applied successful strategies for IT project management and who are currently working within three PMOs located in the northeastern United States. As a result, perceptions and experiences of other populations were left unexplored. To gain more knowledge on the subject, one recommendation is for future researchers to replicate the study and invite other populations to speak about the topic. For example, it could be interesting to interview young, less experienced PMOs, or employees who have worked under a PMO project leader who has successfully implemented such strategies. The

employees' perceptions may further contribute to a better understanding of the phenomenon.

A second recommendation is to incorporate other triangulation methods such as the combination of qualitative methods with quantitative methods. Additional triangulation methods could increase the strength and trustworthiness of results. In line with this, a third recommendation is to make this study quantifiable, referring to the use of quantitative methods such as surveys. Quantitative methods may make it possible to extend results to wider populations; in addition, quantitative researchers could test the results for statistical significance, which is not possible in qualitative studies. Qualitative findings are indeed subject to interpretation; therefore, it is possible that if a different researcher replicated the current study, different themes may emerge, resulting in a different presentation of the results. By quantifying this study, more objective results may be obtained.

A final recommendation is to adjust the interview protocol and focus more on particular areas, for example the role of sprint cycles or autonomy. Although shortly touched upon, sprint cycles and autonomy were not the focus of the study. However, it may be useful to focus more on both sprint cycles and autonomy to fully understand how to improve software development projects. Thus, it is advisable to replicate the study with a focus on these aspects to obtain a more in-depth understanding of the phenomenon.

Reflections

I had an enlightening experience throughout my journey in the Walden University in the DBA program. I learned that patience is a necessary ingredient and critical component to the success of graduating as a Doctor of Business Administration. The race is a marathon, not a sprint, and requires a level of understanding that the process is slow with specific intent to allow growth and learning along the way. Adhering to the rubric is a necessary requirement to successful completion of the program. I have learned that while I have come a long way, I still have room for improvement with scholarly writing. Throughout the process, there were moments in which I struggled; however, I had stellar cohort peers and outstanding faculty who were there with support and encouragement.

Throughout the four years in my Doctoral Study journey, I learned that to achieve success in this program, I must adhere to ethical standards and follow all mandatory processes that the IRB requires to ensure rights and safety of human participants. I learned that proper communication is necessary to set expectations throughout the interview process while maintaining confidentiality of participants. After completing the interviews, I am proud to say that I conducted each interview with integrity and professionalism.

Throughout my journey of completing my study in the Walden DBA program, I gained a deep understanding and appreciation for strategies that project leaders may use to effectively manage software development projects. Before the data collection process, I understood successful project management required attention to detail in the areas of

cost, schedule, and performance. I viewed project success as favorable when project managers met performance parameters in the areas of cost, schedule, and performance. After completion of the research study, I gained an appreciation of other criteria to consider when managing project success, which include stakeholder management, clear communication of requirements and successful expectation management.

Conclusion

The purpose of this qualitative multiple case study was to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry using portfolio management initiatives. The overarching research question for this study was: What strategies do project leaders within PMOs use to manage IT projects successfully using portfolio management initiatives? A qualitative study with case study design was followed, and data were gathered from individual in-depth interviews with five PMO project leaders who have applied successful strategies for IT project management and who are currently working within three PMOs located in the northeastern United States. In addition, documents were gathered. Data were analyzed thematically, guided by the PPM theory which formed the conceptual framework of this study. Seven themes were identified: (a) identification of objectives and desired outcomes, (b) appointing the team, (c) planning and strategizing, (d) stimulating teamwork, (e) keeping close communication throughout the project, (f) developing best practices, and (g) supervision and monitoring.

I identified that when project leaders clearly understand objectives and desired outcomes of a particular project, significant issues may be avoided. Secondly, the results suggested that when project leaders take their time to put together a highly efficient team,

project success increases. Third, I found that project leaders should heavily invest in proper planning and strategizing before project execution, and stakeholders should be included in this phase as their buy-in is crucial. This planning mostly related to costs, time frames, and procedures. A fourth major finding was that when project leaders stimulate teamwork, provide support, delegate and communicate expectation, and give team members a certain degree of autonomy, project success becomes more likely. This is because (a) each team member is highly specialized in a certain area and most likely knows more than the project leader; and (b) when individuals are given autonomy and support, they become more motivated and this will, in its turn, result in high engagement and project success.

A fifth result pertained to regular communication with stakeholders, which was evaluated as crucial. Further, I found that developing best practices was considered a useful strategy and that project leaders should continuously invest in innovative thinking. Lastly, I found that project leaders have to supervise and monitor all actions taken by the team to avoid potential project errors. Employee supervision requires excellent time management and organization skills. Based on the study results, it is recommended project leaders of IT projects implement these strategies as they may contribute to more successful project execution and ending.

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Appendix A: Data Collection Interview Protocol

Case #: _____ Participant#: _____ Participant Initials _____ Date: _____

Example: CASE01_P1_093252019

Introduction:

The purpose of this qualitative multiple case study is to explore strategies some PMO IT project leaders use to manage projects successfully in the IT industry using portfolio management initiatives. This study may contribute to positive social change when IT project leaders use the results to enhance organizational performance, which improves their ability to extend additional employment opportunities within their local communities. Expanding employment opportunities through improvement of organizational efficiencies may lead to local economic growth and stimulus.

Central Research Question:

What strategies do project leaders within PMOs use to manage IT projects successfully using portfolio management initiatives?

Profile Questions:

1. What is your job title?
2. What are your primary responsibilities and job duties?
3. What level of portfolio, program or project management experience do you currently have?
4. How long have you performed in your current position?
5. What other program or project management experience do you have either in your current organization or prior?
6. Do you have any leadership or supervisory responsibilities?
7. What is the total number of employees in your organization/team?
8. Can you provide organizational documents to include process and procedures or examples of project plans or professional training material that supports your responses to this interview?

Interview Questions:

1. How do you deliver a successful project?
2. What metrics does your PMO utilize to help determine project success?
3. What strategies do you utilize to incorporate Project Portfolio Management (PPM) initiatives to improve operational efficiencies within your PMO?
4. How do you manage relationships among key project stakeholders both internal and external to the PMO?
5. What project leader improvement strategies have you used that have contributed to project success?
6. How does the project leader in your organization affect project success?
7. What challenges do you face when implementing PPM processes to achieve project success within the PMO?
8. What leadership strategies do you use to successfully implement PPM into your IT projects?
9. What additional information would you like to share about the way you achieve project success using PPM in your IT projects?

Concluding Question: What additional experiences have you had that would contribute to improving the management of IT projects successfully using portfolio management initiatives?

Thank you for your participation in this study. The next step in this process is for me to transcribe the audio recording of this interview verbatim. I will then type a summary of the interview. May I have your permission to share my interview summary with you for your validation prior to me writing my final report?

Appendix B: Invitation to Participate in a Research Project

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

Project Information Statement

Project Title: Strategies to Improve Project Management of Software Development

Processes

Dear Madam/Sir,

You are invited to take part in a research study exploring strategies to improve project management of software development processes within project management offices. My name is Tiffany N. Fair. I am a doctoral candidate at Walden University. You were identified for this study because of your experience with successful strategies for project management in the information technology industry. I will use the research data collected to explore potential paths to improve project management of software development processes.

Background Information

The purpose of this study is to explore the experiences of project leaders who have experienced success in managing software development projects.

Procedures

If I have your consent to participate in this study, I will ask you to:

- Participate in a video conference interview lasting approximately 45 minutes;
- Email me relevant company documents that you are authorized to share;
- Participate in a second video conference for member checking, that will last approximately 10 minutes

I will audio record the video conference interview.

Voluntary Nature of the Study

This study is completely confidential and voluntary in nature. If you decide to participate in this study, you may change your mind any time throughout the process and during the interview and no longer participate in the study. At any time during or after the study, you may communicate to me via phone or email, to express your desire to withdraw as a research participant. There are no consequences to declining to participate or discontinuing participation in this study.

Risks and Benefits of Study Participation

Participating in this study involves some risk of minor discomforts that you may encounter in daily life, such as becoming upset when expressing your feelings. Participation in this study will not pose risk to your safety or wellbeing.

The study's potential benefit is to contribute positive social change when IT project leaders use the results to stimulate social responsibility by realizing cost savings through efficiency, enabling them to contribute to local community projects.

Compensation

There will not be any compensation or incentives offered for participation in this study.

Confidentiality

All information you provide during the interview and throughout your participation in the study will be confidential in nature. Any report coming out of this study will not share the identities of individual participants. Details that might identify participants, such as the location of the study, will also not be shared. The researcher will not use your personal information for any purpose outside of this research project. I will store the electronic data and soft copy data from the interviews on an external flash drive under password protection. I will destroy all physical and electronic data after five years from the date of collection.

Contacts and Questions

You may ask any questions you have at any time. You may contact me via telephone [REDACTED] or email [REDACTED]. You may also contact the university's Research Participant Advocate if you have questions about your rights as participant at [REDACTED] from within the USA, [REDACTED] from outside the USA. Walden University's approval number for this study is 07-22-20-0667547 and it expires July 21, 2021.

The participant can print or save this consent form for their record.

Obtaining Your Consent

If you feel you understand the study well enough to make a decision about it, please reply to this email with the words *I consent*.

Respectfully,

Tiffany N Fair
 Doctoral Candidate
 Walden University