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Successful Management Strategies for Addressing Information Technology Project Scope Changes

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Walden University

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Walden University

College of Management and Technology

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James Wesley Artemus III

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2021

Abstract

Successful Management Strategies for Addressing Information Technology Project Scope

Changes

by

James Wesley Artemus III

MBA, Kennesaw State University, 2010

BA, Livingstone College, 1984

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Walden University

December 2021

Abstract

Inadequate scope management strategies fail to prevent project failures. Information technology (IT) project leaders who lack strategies to prevent project failures negatively impact their business goals and delivery schedule. Grounded in the theory of constraints, the purpose of this qualitative single case study was to explore strategies IT project leaders use to manage project scope and prevent project failures. Data were collected through semistructured interviews and a review of company documents from 3 participants in a small IT consulting company. Data were analyzed using thematic analysis. Three themes emerged: understanding project scope changes, performance techniques, and communication. A key recommendation is that IT project leaders should use project performance techniques and communicate with stakeholders when identifying strategies to prevent project failures. Implications for positive social change include creating more local IT job opportunities, improving employee compensation, and investing in local communities.

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Dedication

I dedicate this doctoral study and give all honor and glory to God. Without his divine mercy and love, I would not have had the ability to endure this journey. I would also like to dedicate this study to my wife Maria; our children, James IV, Andrea, Desiree, and Sierra; grandchildren, Aiden and Princeton; my brother, Felix and his family; my mother, Alma, my deceased father James Jr.; my mother-in-law Maria, my deceased father-in-law Sixto, and my entire family. I pray that I have made you all proud.

I want to express my gratitude to my wife, Maria. Maria, you have always been by my side supporting and encouraging me to keep going. Without your love, support, prayers, and understanding, I could not have made this journey alone. My children and grandchildren, and your love and encouragement motivated me when times were tough.

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To my family, friends, and colleagues: I thank you for your support and inspiration during this journey. I want to thank my wife, Maria. I am grateful for your love, for believing in me, and for allowing me to achieve my dream. I want to thank my kids, James IV, Andrea, Desiree, and Sierra. I am grateful for your love and support. I encourage you to follow your dreams and continue to trust God will make a way. I want to thank my grandchildren, Aiden and Princeton. I am grateful for your love for papa. Finally, I want to thank God for giving me strength, guidance, and love throughout this journey. Without him, achieving this dream would not have been possible.

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Section 1: Foundation of the Study

Background of the Problem

Companies in the United States (US) spend \$250 billion yearly on information technology (IT) projects (The Standish Group, 2015). Atlanta, Georgia is one of the largest IT markets and ranks third among the fastest-growing large cities in the US (Georgia Power Community and Economic Development, 2019). Project management projects were deficient in the features and functions identified in their scope design (The Standish Group, 2015). IT project leaders' strategies in this study will influence the success of IT projects and have a beneficial economic impact on the state of Georgia.

Use of an inefficient scope change process by project managers can lead to negative business results. K. Liu et al. (2020) suggested that inadequate strategies were the leading cause of system performance challenges, and productive approaches reduced project complexities and failures. Critical components in terms of determining the impact of change are feedback and results (McLean et al., 2017).

Project managers approach project scope change through certification, tools, techniques, and experience. IT project leaders measure success when integrating project management and the constraints of scope, time, cost, quality, resources, and risk (Project Management Institute [PMI], 2017). The project management of scope aligns with the theory of constraints. The Project Management Institute (PMI) provides project managers with a framework for managing scope changes through a defined process. The process consists of documented changes, monitored project performance, and approval by a

change control board (CCB). If there is no defined scope change system, the project team will typically create an undefined process for handling changes to the scope.

Problem Statement

In 2018, business leaders invested \$3.6 billion in IT projects (Gartner, 2019), yet they continue to experience project failures (Gupta et al., 2019). IT leaders reported 70% to 80% of their project failures directly affect their schedule and exceed their budget (Mukerjee & Prasad, 2017). A contributing constraint of project failures with effects on budget and schedule is managing change against the baseline scope (Hassan et al., 2018). The general business problem is that some IT leaders continue to report project failures despite use of traditional, agile, and extreme methodologies because of unplanned scope changes. The specific business problem is some IT project leaders do not have strategies to prevent project failures caused by project scope changes.

Purpose Statement

The purpose of this qualitative single case study was to explore strategies some IT project leaders use to prevent project failures caused by project scope changes. The population targeted for this study are three IT project leaders from one IT management consulting company located in Atlanta, Georgia. Leaders using findings from this study may affect positive social change by contributing to economic development in Georgia. Identifying strategies used by successful IT project leaders may increase the success rate of IT projects resulting in reduction of project expenses and profit increases. Effective IT

project leaders could provide improvements to employee compensation and employment stability and contribute to the local economy.

Nature of the Study

There are three research methodologies: qualitative, quantitative, and mixed methods (Newman & Covrig, 2013). Qualitative research is the exploration and identification of individuals' experiences (Queirós et al., 2017). Quantitative researchers use numbers to measure variables and statistical procedures to determine relationships between hypotheses (Queirós et al., 2017). The quantitative researcher assigns numbers and conducts for statistical analysis (Queirós et al., 2017). With the mixed methods approach, researchers combine both qualitative and quantitative research in the same study (Reio & Werner, 2017). There are no variables to measure or statistical procedures to determine strength between relationships. Therefore both mixed method and quantitative designs were not appropriate for the study. Using a qualitative methodology allowed me to explore strategies used by some IT project leaders to prevent project failures resulting from project scope changes.

Yin (2014) suggested a single case study over instead of a multiple case study design to explore the depth of a shared or unique case. A single case study design is an appropriate selection for this study over other qualitative research designs such as ethnographic and phenomenology because I wanted to explore the strategies some IT leaders in one company use to manage project scope changes to prevent new product and service project failures. Researchers use an ethnographic design to explore the culture of

participants (Ihlebak, 2020). Ethnography is not an appropriate option because I was not seeking to study a culture. Using a phenomenological study allows researchers to explore individuals' experiences involving living with a phenomenon (Pooler, 2014). A phenomenological study design was not suitable for this study because I did not intend to explore individuals' experiences regarding living with a phenomenon.

Research Question

What strategies do some IT project leaders use to prevent project failures resulting from project scope changes?

Interview Questions

The following are the interview questions for this study. Question 1 is an initial probe question, Questions 2–5 are concept questions, and Question 6 is a wrap-up question.

1. What project management strategies did you use to identify project scope changes in preventing project failures?
2. What techniques have you used to focus on the project performance to prevent project failures resulting from project scope changes?
3. What process improvements have you used to prevent project failures resulting from project scope changes?
4. What management strategies do you use to manage the constraints of scope, schedule, and budget?
5. What strategies do you use to prevent project failures from project scope changes?

6. What other strategies would you like to share that I have not asked about?

Conceptual Framework

The conceptual framework for this qualitative research study is the theory of constraints (TOC). Goldratt developed the theory of constraints in the 1980s (Goldratt & Cox, 1984). In a TOC approach, the IT leader's goal is to identify and continuously improve bottlenecks resulting in an increase in throughput. Project scope changes are an example of a constraint that can affect project leaders' ability to prevent project failures.

The principal implementation steps for the TOC are (a) identifying the constraint, (b) determining how to maximize the constraint, (c) lowering everything around the constraint, (d) focusing on the constraint, and (e) applying process improvement. Naor and Coman (2017) defined constraints as capacity compared to demand, demand compared to function, and policy that impacts capacity towards the system. The TOC applies to the research study because the TOC principles will enable me to explore the strategies some IT project leaders use in managing project scope changes to prevent project failures.

Operational Definitions

Defined scope change process: Documented scope changes, monitored project performance, and approval by a CCB (PMI, 2017). If there is no defined scope change system, the project team will typically need to create a process for handling changes to the scope.

Earned value management: A performance measurement technique used to measure project performance against constraints and progress (PMI, 2017).

Integrated change control: The process of managing all scope changes against project deliverables, project plan and risks (PMI, 2017).

Project constraints: An influence that limits progress and execution. Project constraints include scope, quality, schedule, budget, resources, and risk (PMI, 2017).

Project integration: The concept of processes interacting or assimilating with ongoing operations, organizations, or strategic planning (PMI, 2017).

Project scope management: Project scope management is the process that involves defining and controlling project requirements throughout the project management lifecycle (PMI, 2017).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are details that are considered reasonably accurate but cannot be verified (Armstrong, 2019). One assumption was that project methodologies practices, techniques, and procedures used by experienced project managers in project success help them succeed. Another assumption was that participants provided honest responses during interviews.

Limitations

Limitations are probable challenges that may limit my study. M. A. Wilson et al. (2020) explained that limitations in terms of reaching data saturation can affect the study.

The primary limitations of my research were time constraints, number of participants that I interviewed, and data collected via phone, follow-up interviews, email, and documents. Telephonic interviews limited my ability to interpret physical expressions and behaviors. I was not limited by phone because of the availability of conducting virtual interviews as visual and audio communication was clear and understandable.

Delimitations

Delimitations are boundaries used in research that narrow the scope of a study (Milandru, 2017). The boundaries in the study include the geographical location of IT business leaders in small IT management consultancy firms within the Atlanta, Georgia area. The study included interviewing three senior IT business leaders who successfully applied strategies to prevent project failures resulting from project scope changes. I did not include in the study business leaders who are not in IT because they are not familiar with IT projects and may not have strategies prevent IT project failures.

Significance of the Study

Contribution to Business Practice

This study may contain strategies for managing project scope changes to prevent project failures. Also, findings might contribute to business practices by helping IT project leaders identify and explore successful strategies and practices for managing project scope changes in small IT management consulting firms that minimize project failure rates. Improving the management of scope changes through other tools and

techniques may increase project success and the process of continuous improvement (Ivan et al., 2019).

Implications for Social Change

The reduction of project failures is indicative of IT project leaders meeting project schedules and thus minimizing the risk of exceeding their budgets. Therefore, the implication for positive social change is the application of best practice strategies, which could improve profitability by preventing project failures and increasing employment opportunities and local economic growth. Corporate investments are vital components of the community and create stakeholder value (Andrews et al., 2017).

A Review of the Professional and Academic Literature

This section includes the literature review opening narrative and application to the applied business problem. The opening narrative contains a brief description of sources related to the study, an explanation of the organization of the literature review, strategies for searching literature, and a summary of sources.

Opening Narrative

The purpose of the qualitative single case study is to explore what strategies some IT project leaders use to prevent project failures caused by project scope changes. The focus is on IT project leaders from an IT management consulting company located in Atlanta, Georgia. IT project leaders have used project management methods to manage project scope changes (IBISWorld, 2020). Project management methodologies can be used to manage scope change processes. The project management methodology relevant

to the study is traditional and agile. The use of these methodologies may attribute to the lack of understanding and experience in the change process. This section comprises the literature review opening narrative and application to the applied business problem.

Organization of the Review

This literature review includes the conceptual framework, project management methodologies, factors that affect IT project success and failures, IT, budget decisions, schedule decisions, and reasons for scope changes. I provide a critical analysis and synthesis of Goldratt's TOC, which is the conceptual framework for this study. The TOC is a methodology for identifying the weakest area and improving performance (Şimşit et al., 2014). I also addressed project management methodologies IT managers use. Project management methodologies are systems and techniques used by IT project leaders to deliver project objectives (Pace, 2019).

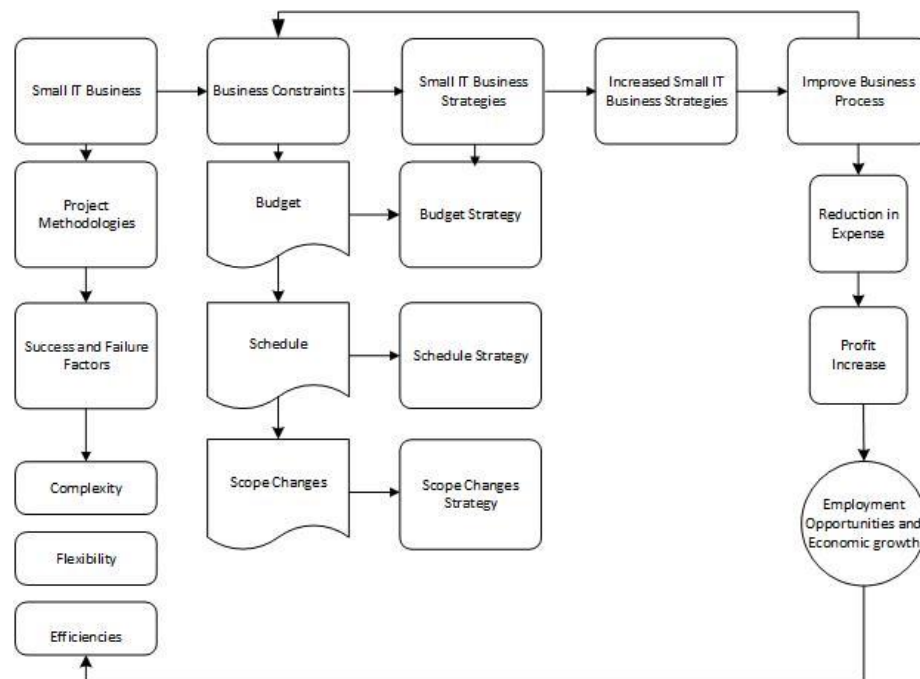
I addressed factors that affect project success and failures in IT projects. IT leaders report project failures because of unplanned scope changes, analysis of risk, and mitigation of common risk factors (Guanci & Bjork, 2019; Nelson & Morris, 2014). The factors influencing IT project success are complexity, flexibility, and efficiencies (Durmic, 2020).

I also addressed challenges of IT project portfolio management on project success. Marcondes et al. (2019) found that IT project portfolio selection directly affected project success. When selecting a project portfolio, IT project leaders face disruptions in terms of costs, time, and scope (Khan et al., 2017).

Constraints that may contribute to project success are budget decisions, schedule decisions, and reasons for scope changes (Ribeiro et al., 2018; Sohu et al., 2018; Sweis et al., 2019). Figure 1 shows a model of themes in the literature relating to the purpose of the study.

Figure 1

IT Project Leader Strategic Model Outlining Themes in Literature Corresponding to the Purpose of the Study



Strategy for Searching the Literature

Multiple sources were used to search for relevant literature on identifying on-time and on-budget strategies, including peer-reviewed articles and journals, corporate and government reports, professional web sites, and dissertations. I used the Walden

University Online Library, Academic Search Complete, ProQuest, ScienceDirect, Emerald Management Journals, Business Source Complete, and SAGE Journals. I used Ulrich's Periodical Directory to validate peer-reviewed articles. I also used Crossref to locate digital object indicators (DOIs) for each article. I looked at Project Management Institute (PMI.org), the agile manifesto (agilemanifesto.org), and The Standish Group (standishgroup.com) websites. Keywords were: *project scope change, constraints, stakeholder management, IT project manager competencies, IT project success, project failures IT strategy, strategic planning, five focusing steps, leadership, complexity, uncertainty, simulation, project scheduling game, new product development, scope management, theory of constraints, traditional, agile methodologies, cost of failure, successful project managers, successful implementation strategies, qualitative research, and case study research*. In my study, I reviewed 209 sources, 182 of which were published between 2017 and 2021.

TOC

I used the TOC to explore the strategies some IT project leaders use to prevent project failures caused by project scope changes. Goldratt developed the TOC in 1984 to explain improvements in performance by identifying the weakest part of a process to reach a goal (Goldratt & Cox, 1984; Şimşit et al., 2014). The essential implementation steps for TOC are (a) identifying the constraint, (b) focusing on the constraint, and (c) applying process improvement. Naor and Coman (2017) defined constraints as capacity compared to demand, demand, capacity, and policy that impact the system (Goldratt &

Cox, 1984). In alignment with the theory of constraints, the project constraints that may contribute to project success are budget, schedule, and scope changes. These constraints can also result in project failure in terms of achieving goals. The goal of the IT project leader is to improve throughput and improve the obstacles in the process. Project leaders in IT management consulting companies in Atlanta, Georgia can use the TOC to identify challenges and strategies in terms of scope changes. TOC, as a conceptual framework provides a basis for the study because project leaders can use the TOC to identify strategies to prevent project failures caused by project scope changes.

The TOC approach is to improve the performance of a process by focusing on the constraint. Ribeiro et al. (2018) recognized performance improvements as increasing productivity while reducing inventory and expenses. A successful project will generate revenue; the estimates based on the scope are considered inventory, and costs to complete the project are expenses. Aguilar-Escobar et al. (2018) explained the TOC as five phases to identify and manage constraints:

1. Identify the constraint as any areas, processes, or elements.
2. Decide how to eliminate waste or loss of time.
3. Subordinate all other areas, processes, or elements similar to step 2.
4. Elevate the constraint by investing more in the bottleneck.
5. If there is a broken step or a constraint is eliminated, repeat Step 1.

Project leaders identify constraints by analyzing limitations and critical success factors of projects during the initiation or planning phase (Hassan et al., 2018). The

general business problem is that some IT leaders continue to report project failures despite using various project methodologies because of unplanned scope changes. The specific business problem is some IT project leaders do not have strategies to prevent project failures caused by project scope changes. Factors that affect project scope change success are complexity, flexibility, and efficiency. Constraints for project leaders include lack of strategies in terms of budgeting, scheduling, and scope changes. Project leaders decide how to eliminate waste in constraints through continuous improvements in project strategies and linking to corporate strategies (Kermanshachi et al., 2020). Project leaders exploit constraints through project strategies. Aaltonen et al. (2019) identified constraints to the limitation of each project type.

Project leaders subordinate constraints by adjusting the level of detail of the scope to allow the constraint to operate at peak performance (Hassan et al., 2018). Aaltonen et al. (2019) indicated that project leaders subordinate project strategies to the organizational strategy. Jimenez (2018) further affirmed that project leaders evaluate the relationship between the organizational strategy and the goal of the project in the United States.

In the event business strategies decrease, project leaders must elevate the capacity of the constraint (Aguilar-Escobar et al., 2018). Ilavarasan et al. (2018) stated to reach elevation involves making strategic decisions. Strategic decisions involve gathering qualitative data to elevate capacity (Galli, 2018). Elevating the constraint involves increasing the level of project details to increase performance (Goldratt & Cox, 1984). If

the preceding steps change the constraint, repeat step one, and continue improving new constraints (Ilavarasan et al., 2018).

Consequently, if IT project leaders apply these processes, they may increase success in terms of preventing project failures caused by project scope changes. Aguilar-Escobar et al. (2018) utilized a TOC approach to enhance the business process. Aguilar-Escobar et al. acknowledged that efficiency in managing process is essential when measuring achievements. Aguilar-Escobar et al. examined the implementation of TOC and concluded that bottlenecks in business processes directly impact continuous improvements.

Independent firms often perceive scope changes to a project as a challenge. IT project leaders invest in projects expecting a return on their investments. Ribeiro et al. (2018) argued that TOC can increase speed and improve quality and that we need to be careful about how performance is measured. Kaijun et al. (2017) applied TOC to overcome challenges in scope change and concluded that TOC could be used to maximize performance and ongoing improvements. McCann (2013) conducted a qualitative phenomenology study to describe the experiences IT project managers use to manage IT projects and explained that scope change resulted in the reassessment of both the schedule and budget. Abrantes and Figueiredo (2015) applied the TOC method to identify scope changes and constraints in a semiconductor development company as they implement a new project management methodology. Abrantes and Figueiredo concluded that the TOC method provided critical awareness of the complexities and vigor in the

technology company's constraints. Abrantes and Figueiredo recommended a multiple project management methodology and tool to identify and overcome constraints. Figure 2 represents the model used to identify and continuously improve the business constraint of the study.

In exploring strategies project leaders use to prevent project failures in IT, I used the TOC as the framework in my research. The IT project leader's goal is to improve throughput by identifying and overcoming obstacles in the process. TOC is similar to a chain with the weakest link limiting the ability to achieve project success. I have identified three other theories that are popular within the project management discipline: (a) general systems theory, (b) stakeholder theory, and (c) actor–network theory.

General Systems Theory

von Bertalanffy (1972) developed general systems theory on the premise of biological systems and that every organization was part of a system. von Bertalanffy argued that systems are viewed as a whole and not their parts. The general systems theory has less to do with individual constraints and more with expected outcomes. von Bertalanffy further concluded that organizations are complex and require the development of management systems. The development of management systems gave rise to project management and a means to understand project systems (Johnson et al., 1964). Scholars used general systems theory to explain the transference from simple and complex projects and decision planning (Daniel & Daniel, 2018; Sellers et al., 2020; Tanner & Dauane, 2017).

Stakeholder Theory

Freeman developed the stakeholder theory in 1984 on the basis that individuals or groups within an organization can influence the achievement of its goals (Freeman, 2004). Freeman and Dmytriyev (2017) emphasized that stakeholder's relationships contributed to successful project performance. The stakeholder theory has more to do with individuals and groups but also their relationship to project performance. Freeman and Dmytriyev concluded that organizations require the development of strategies in their relationship with stakeholders. The development of stakeholder strategies contributed to the role of project management in managing project success (Miles, 2017; Zamojska & Susmarski, 2017). Cleland (1986) introduced stakeholder theory to the field of project management and recommended that project managers adopted an interactive relationship to influence project success. In preventing project failures, project managers should identify, manage, and communicate stakeholder requirements. Managing and communicating stakeholder requirements is critical to success in terms of achieving organizational goals.

Actor–Network Theory

Callon and Latour (1981) collaborated on the actor–network theory (ANT) and said all social and nonsocial actors interact within a network. The ANT centers on translation and four phases: (a) *problematization*, where actors are essential within the network; (b) *interessement*, where actors view their benefit within the network; (c) *enrolment*, where actors and networks are successful in translation; and (d) *mobilization*,

where actors can speak with authority (Floricel et al., 2018). Researchers used ANT to manage project complexities, decisions and identify actors and network relationships (Zamojska & Susmarski, 2017). Additionally, scholars and practitioners use ANT to build project representation, outline the order of translation, and authenticate projects within a dynamic environment (Floricel et al., 2018).

Project Management Methodologies

Companies in the US spend \$250 billion on IT projects and experience difficulties managing scope changes (The Standish Group, 2015). Despite the fact investments in IT projects, project leaders faced failures impacting 61% of their schedules and exceeding 40% of their budgets (Nelson & Morris, 2014). Owusu-Manu et al. (2017) found that IT project leaders employ various project management methodologies to improve project success. Project management methodologies are standardized methods and related tools and techniques design to guide the project manager in delivering a successful project. The popular project management methodologies used in this study are traditional and agile. By using a project management methodology, Ahimbisibwe et al. (2017) provided a framework through an IT project leader's view. IT project leaders use opinions to allow them to select the benefits of project management methodologies. In previous studies, IT project leaders show bias towards traditional and agile methodologies (Owusu-Manu et al., 2017).

IT project leaders that lack the knowledge to implement project methodologies, adaptive strategies, or assistance from other project managers may find a decrease in

project success (Foote & Halawi, 2018). Papke-Shields and Boyer-Wright (2017) examined the relevance of project management methodologies and adaptive strategies used in managing project success by IT project managers. The project managers used adaptive strategies with both cost and agile methodologies (Papke-Shields & Boyer-Wright, 2017). The adaptive strategies traditional methodology pertains to standardization in guidelines, processes, and documentation related to cost and time. This relationship can indicate a significant limitation compared to project success (Papke-Shields & Boyer-Wright, 2017). Papke-Shields and Boyer-Wright explained that even though traditional and agile methods differ in how they impact cost and time, the adaptive strategies are guidelines for managing the success of a project. A traditional methodology is based on a project plan, is predictable, and utilizes a linear process (Azevedo et al., 2017). Researchers use an agile methodology to focus on customer value, accommodates change, and provide a circular process (Dima & Maassen, 2018). Scope changes in a traditional approach directly impact the schedule and cost (J. Zhang et al., 2020). Project leaders must define and control the project scope (Fageha & Aibinu, 2017).

Project Scope

The PMI considers project scope a critical constraint because of the impact on the business and customers (Serrador et al., 2018). Project leaders use project scope to deliver a product or service to ensure the success of the project requirements and satisfy a business need (PMI, 2017). Project leaders outline the scope of the project during the

initial phase of the project. The scope in a traditional project would include constraints and risks and determine the course of action, whereas an agile framework scope would be defined in the project vision (Cieciora et al., 2018). A poorly defined scope would affect performance indicators, such as cost and schedule (Hidding & Nicholas, 2017). In a recent qualitative study, one of the reasons for project failure was the poor management of project scope (Sharma et al., 2017). Validating the project requirements is instrumental in defining the project (Akbar et al., 2020).

Tools and techniques such as progressive elaboration, templates, and expert judgment are used to control the impact toward a baseline change in scope, schedule, and cost (PMI, 2017). The project management book of knowledge (PMBOK) describes these controls as scope change systems and performance measurements (PMI, 2017). The scope control process includes approved change requests and defines the scope and modifications to cost and schedule (PMI, 2017). The earned value analysis is used to measure performance, whereas the variance analysis tool is used to measure the difference between plan and actuals (PMI, 2017).

A formal change control system must control and track changes to scope efficiently (Guo et al., 2019). Although agile supports changes in an iterative process, changes are monitored by a team member that represents the business owner. Traditional project management controls change through a change control board (Akbar et al., 2020).

Managing the project scope is one of the fundamental knowledge areas in the PMBOK (PMI, 2017). The purpose of a plan to manage project scope is to monitor the

project scope and project constraints (Derenskaya, 2018). The project scope is divided into tasks, budget, and schedule to complete the project. The work breakdown structure (WBS) provides a hierarchical view of the project scope (PMI, 2017). Tasks are decomposed into work packages and grouped into a WBS (PMI, 2017). Work packages are managed and estimated to provide cost, work stages, and durations (Calabrese et al., 2019). The work packages or WBS is iteratively refined as more information is known. Refining the project scope is a progressive elaboration concept that involves continuous improvement (Brady et al., 2018). Progressive elaboration is a shared concept between agile and traditional project management (Apaolaza et al., 2020). Baselineing the plan is the most accepted practice in scope planning (Tereso et al., 2019).

Stakeholder's engagement throughout scope planning is essential. The stakeholder must trust that their expectations of the project will be met. Transparency is one of the significant cornerstones that lead to trust (Francisco de Oliveira et al., 2019). The lack of transparency interferes with planning and controlling project scope (Brady et al., 2018). Agile includes stakeholder transparency as the project evolves, whereas stakeholder engagement occurs before and after the project starts in a traditional method (McCann, 2013; Saunders, 2018).

The PMBOK outlines the scoping process and the revisions to the tasks within the scope management plan in the event of a scope change (Derenskaya, 2018). The scoping process includes planning, monitoring, and controlling the scope. The scope planning process consists of progressive elaboration and approval of the project scope (PMI,

2017). There are many challenges to scope planning, and scope uncertainty is defined as one of the significant issues (Pellerin & Perrier, 2019). Uncertainty is the risk of unknown factors during the planning of the project (Zwikael & Meredith, 2019). Although identifying known risk can be determined and mitigated, unknown risk can have a positive or negative impact on project scope (McCann, 2013; Saunders, 2018).

Monitoring and controlling changes must occur regularly to identify performance variances. Performance variance is the measurement of plan cost, schedule, and scope compared against actual cost, schedule, and scope. Earned value is a variance method used to monitor the cost, schedule, and scope (Pellerin & Perrier, 2019). The earned value analysis may determine a variance because of a change to the planned scope. Preventive or corrective activity may be required to ensure the project aligns with the planned scope (Martens & Vanhoucke, 2019; Pellerin & Perrier, 2019)

The integrated change process is used to align the project and includes a formal acceptance or denial of changes prior to a revised scope plan (Guo et al., 2019; McCann, 2013). Progress reports and meetings should be regularly scheduled to perform the changes to the project scope plan (Burga & Rezania, 2017). Although the project scope plan contains revisions to the tasks, changes should also occur to the schedule and cost (McCann, 2013; Pedersen, 2013; Shirazi et al., 2017). McCann (2013) indicated change is rarely a part of the project scope plan and is seldom collected.

Project Management Strategies

Previous researchers have documented factors contributing to the impact scope change has to project success (McCann, 2013; Pace, 2017; Saunders, 2018).

Organizations are faced with many challenges to meet market demands and sustaining costs. Project leaders equipped with the right project methodology and strategy will prevent project failure resulting from project scope changes (Saunders, 2018; Stoica et al., 2019). Project management methodologies consist of traditional or waterfall and agile. Royce presented the waterfall approach in the 1970s. In a waterfall approach, the IT leader's goal is to complete each phase before starting the next one. Thus, project scope changes discovered after the execution phase can affect project leaders' ability to prevent project failures. The agile project methodology is iterative and flexible to project scope changes (Ciric et al., 2019; Cruz et al., 2020).

Project management strategies provide an instrument for aligning the business strategy and continuous flow of operational or development value (Ahimbisibwe et al., 2017). Project management strategies that align with the business strategy focused on people, policy, and process (Okudan & Budayan, 2020). Okudan and Budayan (2020) observed the use of project management rather than strategic management leading to poor scope project planning and control. Traditional project planning is centered on comprehensive requirements, sequential flow of activities, and formal change control (PMI, 2017). Project planning in a traditional model is the largest and most important process. PMBOK outlines the project scope process as the activities required to achieve the business strategy and development value (PMI, 2017). The activities in this process

are baselined, documented, and measured. A formal change request requires a review and approval by a change control committee before revising the baselined plan (Guo et al., 2019). Part of the project leader's roles and responsibilities are to adhere to the scope of change systems and baseline performance measurements (PMI, 2017). Project leaders use WBS to break down the scope into various levels of work packages and preliminary estimates (PMI, 2017). The estimation strategies consist of cost, schedule, and scope. The challenge with the traditional estimation strategy is accounting for the unknown (Pace, 2017).

The agile planning approach is adaptive, and requirements are broken down into incrementally working code. Details of the requirements are based on the minimum end-to-end solutions that are ready for user commodities. There are five conventional agile strategies: crystal, dynamic, feature-driven, scrum, and extreme (Ciric et al., 2019). Extreme is used when goals are vague or require clarity, which does not align with my research (Ciric et al., 2019). Dynamic crystal focuses on communication, small team, and non-critical application (Ciric et al., 2019). Feature-driven strategies are used to drive features that are valued by customers (Ciric et al., 2019). PMI is the widely accepted profession in the United States and publishes standards in project management. (Z. Chen et al., 2019). Despite the acceptance of project management as a profession, 83% of project leaders find certification important, and 17% do not find certification important (PMI). Scrum Alliance is the certifying organization supporting agile management since 2001 (Scrum Alliance, 2018). Agile management has increased over the years, with a

number of certifications and implementations in scrum (Pope-Ruark et al., 2019). Scrum is a framework based on agile management principles (Pace, 2017). Project leaders use scrum to organize the work into iterative sprints, whereas traditional project management is organized by linear groups (McCann, 2013; Saunders, 2018). Project managers knowledgeable in agile and traditional project management can choose the best method to manage IT projects (Saunders, 2018).

TOC in Project Management

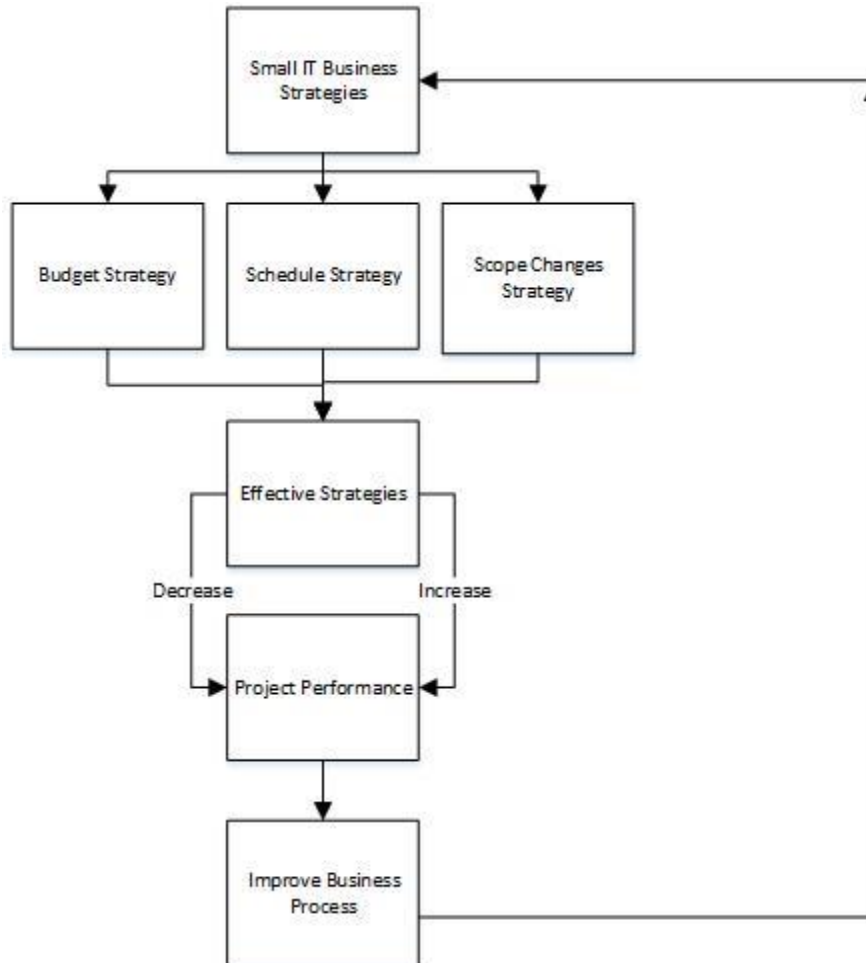
Nelson and Morris (2014) found in their study that IT project leaders lack strategies in their estimation practices. Owusu-Manu et al. (2017) found their consulting study IT project leaders employ various project management methodologies to improve project success. Project management methodologies are standardized methods and related tools and techniques design to guide the project manager in delivering a successful project. The popular project management methodologies used in this study are traditional and agile. By using a project management methodology, Ahimbisibwe et al. (2017) provided a framework through an IT project leader's view. IT project leaders use opinions to allow them to select the benefits of project management methodologies. In previous studies, IT project leaders showed a bias towards traditional and agile methodologies (Owusu-Manu et al., 2017).

IT project managers using adaptive strategies with project management methodologies found a strong relationship to project success (Papke-Shields & Boyer-

Wright, 2017). The prescriptive strategy pertains to standardization in guidelines, processes, and documentation related to cost and time.

Figure 2

IT Project Leader Strategic Model for Improving Business Process



Factors that Affect Project Success and Failures

IT leaders continue to report project failures because of unplanned scope changes (Nelson & Morris, 2014). IT project leaders must analyze risk and mitigate common

factors that affect project success and failures (Guanci & Bjork, 2019). Musawir et al. (2017) suggested common factors increase success and reduce project failure. Musawir et al. identified the following factors (a) complexity, (b) flexibility, and (c) efficiencies.

Complexity

Multiple authors ascribed complexity to factors related to IT project successes and failures (Cicmil & Gaggiotti, 2018; Ellinas et al., 2018; Poveda-Bautista et al., 2018). Poveda-Bautista et al. (2018) indicated that complexities are inherited to IT project success. Ellinas et al. (2018) referred to the characteristics of complexity as the number of elements, dynamism of an element, and the interface between elements and projects. Cicmil and Gaggiotti (2018) indicated that project management strategies are insufficient when including project complexity into the project scope. Ellinas et al., further affirmed that complexity affects the project cost, schedule, and quality, influencing the project goal. Mansouri et al. (2019) argued that the complexity of the project schedule could affect the throughput under the theory of constraints lens.

Flexibility

Amoako-Gyampah et al. (2018) referred to project flexibility as variables that project planning and responding to changes making project strategies difficult. Loch and Sommer (2019) indicated that project flexibility is often disregarded when developing project goals. There is an inverse relationship between project success and project flexibility in managing complex projects (Eriksson et al., 2017). Project flexibility variables imply that they are dynamic, and project leaders must make continuous

adjustments to project plans, schedules, and goals (Sundqvist, 2019). Kuruvilla (2017) stated that continuous adjustments are required in achieving the goal of the theory of constraints.

Efficiencies

Serrador et al. (2018) referred to project efficiency variables as realistic or essential to project success. Chang (2017) indicated variables in project efficiencies often result in competing for limited resources. Ahmed and Abdullahi (2017) identified limited resources and time as complex variables to manage towards project success. Serrador et al. (2018) indicated that there is a correlated relationship between efficiency and success. Turner and Xue (2018) stated the relationship between project efficiency and success is dynamic. Rezvani and Khosravi (2018) indicated project leaders must recognize the dynamics of project efficiencies and improvements necessary to ensure project success.

IT leaders find project failures continue to be costly for IT project management (Silva de Araújo et al., 2018). However, IT project leaders continue to invest millions because of their understanding of post-mortem project reviews (Nelson, 2007). IT leaders with social and business strategies perform effectively in project success (Silva de Araújo et al., 2018). Multiple authors suggested common business strategies increase success and reduce project failure (Pollack et al., 2018; Wauters & Vanhoucke, 2017). Wauters and Vanhoucke (2017) identified the following common business factors: (a) budget, (b) schedule, and (c) scope.

IT

IT project portfolio is critical to many companies' operations and allows project leaders to manage projects at an organizational level. Companies in the US spend \$250 billion yearly on IT projects (The Standish Group, 2015). Gartner (2019) forecasted global IT spend to exceed \$3.9 trillion by 2020. IT project leaders' earnings and compensation potential in the United States continues to grow. Salary and benefit compensations for the average senior IT professional was \$144,000 per year in the United States with an average compensation by project management professions in agile/scrum master of \$115,000, project portfolio manager of \$112,000 and traditional project manager of \$101,000 (PMI, 2020). Project leaders that hold certifications and experience reported higher compensation than their counterparts. PMI (2020) surveyed 26,000 project management leaders, and participants with a certification reported 20% higher earnings, with Scrum Alliance (2018) professionals annually earning, on average, \$100,000.

Multiple authors conducted studies on project portfolio management strategy used by project leaders on IT projects. Portfolio management is one of the tenants in project management (PMI, 2017), which involves IT project and program investments (Khan et al., 2017). Portfolio management is guided by the company's strategy and resources (Khallaf et al., 2017).

Portfolio Project Selection

Portfolio project selection is one occupant in portfolio management research (Kettunen & Salo, 2017), which involves portfolio value, risk, and constraints (Baqeri et al., 2019). Khan et al. (2017) measured the efficiencies of project portfolio and mapping to company goals. The methods used for measuring project portfolios' performance as new projects are added, portfolio risk, and value increase (González-Varona et al., 2020). Projects have to compete with current workloads for resources. S. Liu and Deng (2017) suggested that as risk and value increase, IT project success decreases. Da Silva Neves and Camanho (2015) found that portfolio projects can be comprised of three common categories: (a) maintenance, (b) innovation, and (c) growth.

Maintenance

Multiple authors attributed maintenance projects as part of IT project portfolios (Da Silva Neves & Camanho, 2015; Karhade et al., 2015; Purnus & Bodea, 2017). Purnus and Bodea (2017) referred to maintenance portfolio characteristics as operational processes and systems. Da Silva Neves and Camanho (2015) argued the importance of aligning operational processes with a company's strategies. Karhade et al. (2015) explained the rationale to accomplish operational systems.

Innovation

Multiple authors attributed innovation projects to transform the business for the future (Da Silva Neves & Camanho, 2015; Karhade et al., 2015; Trad, 2015). Karhade et al. (2015) explored new business opportunities in innovative projects. Trad (2015)

referred to innovation projects as critical to businesses' survival in a globally competitive market.

Growth

Multiple authors attributed growth projects to new products or services that increase revenue or value (Da Silva Neves & Camanho, 2015; Karhade et al., 2015). Growth projects provide advantages in the market and increase efficiencies (Da Silva Neves & Camanho, 2015). Karhade et al. (2015) indicated that growth projects are dynamic and tend to have high-cost variance.

Budget Decisions

Multiple authors identified common strategies used by project leaders on the critical factors that affect cost overruns and impact on budget decisions. Sohu et al. (2018) suggested that critical factors in cost overruns impact budget decisions. Sohu et al. identified the following critical factors: (a) estimations, (b) design changes, and (c) budget decisions.

Estimates

Multiple authors attributed IT project cost overruns to a factor-related estimation (Ahiaga-Dagbui et al., 2017; Moledina et al., 2017; Olaniran, 2017). Estimations are related to the cost-probability (as possible cost outcomes); I reviewed problems related to the project process, managing resources, and mitigating issues. Olaniran (2017) discovered that cost challenges are considered prevalent in projects. Project complexity, resources, tools, and organizational values are a few of the influences to cost plunders

(Olaniran, 2017). Ahiaga-Dagbui et al. (2017) studied the leading approach to cost overruns of infrastructure projects in the public area. The cause of cost overruns is complex and requires an understanding of the overall project process (Ahiaga-Dagbui et al., 2017). Multiple authors (Ahiaga-Dagbui et al., 2017; Moledina et al., 2017) concluded that project leaders resist change in the traditional approach of cost estimations over nontraditional.

Design Changes

Several authors (Gunduz & Maki, 2018; Kumar & Thakkar, 2017; Yap et al., 2017) attributed frequent design changes to the cause of cost overruns. Gunduz and Maki (2018) argued that a change in the design would increase the probability of the project cost, resulting in a cost overrun. Yap et al. (2017) stated the managing design changes is vital in addressing the impacts of cost overruns. Kumar and Thakkar (2017) found that ambiguity and risk in design changes are contributing factors to cost overruns.

Budget Strategy

Multiple authors attribute budget strategy as competencies related to IT project success and failures (Grzesik & Piwowar-Sulej, 2018; Keith et al., 2017; Silva de Araújo et al., 2018). Keith et al. (2017) indicated that project budget strategies are related to IT project success. Silva de Araújo et al. (2018) referred to competencies in budget strategies is necessary for IT project success.

Schedule Decisions

Multiple authors identified strategies used by project leaders on schedule decisions and schedule overruns. Sweis et al. (2019) suggested critical skills in schedule management impacts, schedule decisions, and schedule overruns. Safari et al. (2018) identified skills used by successful project leaders as problem solving and bargaining.

Problem-solving

Multiple authors accredited project schedule delays to causes in problem-solving skills (Alexander et al., 2017; Pehlivan & Oztemir, 2018; Pöyhönen et al., 2017). Problem-solving skills (as an ability to resolve challenges), I reviewed challenges in resolving issues related to constraints and experiences. Alexander et al. (2017) stated that multiple problems become constraints during a sequence of project events, resulting in a schedule overrun. Project management experiences contribute to reoccurring schedule overruns, thus repeating cost and schedule overruns (Pöyhönen et al., 2017). Pehlivan and Oztemir (2018) concurred that project management experience and constraints as factors in schedule overruns. Drigas and Karyotaki (2019) stated that project leaders participate and develop problem-solving skills are predictors of project success.

Bargaining

Multiple authors attributed to cost and schedule overruns to constraints and project leader bargaining skills (Francisco et al., 2019; Nazari & Keypour, 2019; Zhan et al., 2018). Bargaining skills (as an ability to negotiate constraints), I reviewed bargaining techniques related to project constraints. Nazari and Keypour (2019) stated that project

schedules require input, resources, and constraints to prevent schedule overruns. Project leaders bargain techniques consider tasks durations and resource constraints in determining the most extended tasks to complete (Francisco et al., 2019). Zhan et al. (2018) stated that project leaders consider the value of the offer against the goal of the project schedule.

Reasons for Scope Changes

IT leaders reported 61% of their project failures directly affected their schedule, and 40% exceeded their budget (Nelson & Morris, 2014). Some scholars indicated that IT projects experience failures because of scope changes, budget, and schedule changes (McCann, 2013). Scope changes to a project among independent firms are often a challenge. IT project leaders invest in projects expecting a return on their investments. A lack of strategies to get the largest return from a constraint without straining its resources prevents the project from progressing (Ribeiro et al., 2018). Kaijun et al. (2017) applied TOC to overcome challenges in scope change and concluded TOC for maximum performance and ongoing improvements.

Abrantes and Figueiredo (2015) applied the TOC method to identify scope changes and constraints in a semiconductor development company as Abrantes and Figueiredo implemented a new project management methodology. Abrantes and Figueiredo concluded that the use of the TOC method provided critical awareness in the complexities and vigor in the area of technology company's constraints. Abrantes and

Figueiredo (2015) recommended a multiple project management methodology and tool to identify and overcome constraints.

Strategies for Change

IT project leaders use the TOC as a strategy in controlling constraints to improve their business performance (Ahmed, 2019). PMBOK defines this strategy as an integrated change control system. The integrated change control system evaluates all changes and the impact on the project performance. Perrier et al. (2018) argued that change control techniques and strategies are vital to the success of a project. However, the implementation of these techniques may vary on smaller projects (Perrier et al., 2018). Perrier et al. (2018) stated that project leaders skilled with techniques that monitor and control the schedule of a project often increase the duration of activity in support of changes. Project leaders tend to build in contingency time for project activities, which inflates the project duration and results in compromising the integrity of the schedule (Perrier et al., 2018). Perrier et al. (2018) recommended that documenting the scope and linking the scope changes with the parts in an iterative process will allow continuous improvement and acceptance.

Scope

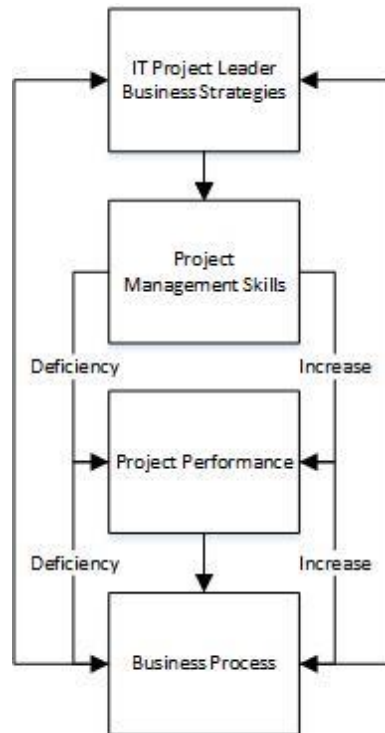
Multiple authors attribute scope strategies as competencies related to IT project success and failures (Epurescu, 2019; Lundqvist, 2018; Silva de Araújo et al., 2018). Figure 3 indicates the model used in the study to compile the IT project leader business strategies. The figure also illustrates how the increase and deficiencies of project

management skills affect success in the business process. Silva de Araújo et al. (2018) described the IT project leader business strategies as developing management skills that allow IT project success. Silva de Araújo et al. determined that IT leaders obtain project success by applying three management skills: (a) project management, (b) business, and (c) leadership. Developing effective business strategies, IT leaders improve their business processes and business strategies (Silva de Araújo et al., 2018).

Lundqvist (2018) researched the critical demands in the success of IT project managers in Vaxjo, Sweden. The participants in the study were IT project managers in the public sector. Lundqvist presented two primary demands as experience and personality. Similarly, Epurescu (2019) studied attributes and proficiencies of management practices by educational organizations in Bucharest, Romania. Epurescu determined that the necessary factors for management practices are (a) planning, (b) scheduling, and (c) controlling.

Figure 3

IT Project Leader Business Strategies for Improved Business Processes



Millers and Sceulovs (2017) studied the strategies and skills used by small IT businesses. Millers and Sceulovs found that project leaders require the development of both scope management and strategic skills in project management. Leaders lack process capabilities and project management skills, indicating a reduced IT score in project success (Millers & Sceulovs, 2017). Millers and Sceulovs concluded that bridging project management skills, process capabilities, and business strategies improve small business performance.

Transition

Section 1 included information concerning why IT project leaders do not have strategies to prevent project failures caused by project scope changes is a business problem. In this section, I also presented the background of the study, research question, interview questions, conceptual framework, operational definitions, assumptions, limitations, and delimitations, and the significance of the study. I also included the literature review, which involved project management methodologies, project management integration and scope management, and influences on project constraints. Section 2 includes research components, role of the researcher, participant selection process, ethical research considerations, research method, research design, data collection, data organization, and data analysis. Section 3 includes findings of the study, applications to professional practice, implications for social change, recommendations for action and further research, reflections, and a conclusion.

Section 2: The Project

Purpose Statement

The purpose of this qualitative single case study is to explore strategies some IT project leaders use to prevent project failures caused by project scope changes. The population targeted for this qualitative case study was three IT project leaders from one IT management consulting company located in Atlanta, Georgia. Leaders using data from this study may affect positive social change by contributing to economic development in Georgia. Identifying strategies used by successful IT project leaders may increase the success rate of IT projects, resulting in a reduction of project expenses and profit increases. Effective IT project leaders could provide improvements in terms of employee compensation and employment stability and contribute to the local economy.

Role of the Researcher

In a qualitative research study, the researcher is a critical instrument in the collection of data (Yates & Leggett, 2016). Yin (2014) presented that the role of the researcher was to collect data through the review of literature, observe participants' behavior in their settings and interview participants on the *what* and *how* of the research topic. The researcher begins by asking questions that are open-ended, listens, and observes interviews for understanding (Kaliber, 2019). The data collection process involved semistructured interviews and company documents from IT consulting companies (Lobe et al., 2020). I was the primary instrument for data collection and interacted with participants during the interview process.

I have a relationship with the research topic and geographic area. I am a project manager and resident of Lawrenceville, Georgia. I have over 20 years of project management experience, with 15 of those years in telecom IT. I do not work for an IT consulting firm, but this topic is of particular interest. I plan to consult with IT consulting firms in the future.

The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979) created *The Belmont Report* and summarized standard practices and guidelines in research involving human subjects. *The Belmont Report* outlined three basic ethics practices of research: (a) respect for persons, (b) beneficence, and (c) justice. I followed these three essential practices and guidelines involving the research of human subjects.

Qualitative researchers require innovative methods to mitigate challenges when conducting research (Caldwell et al., 2020). To mitigate possibilities of bias and viewing data from a personal lens, the researcher should be adaptive towards the data collection procedures and strategies involving purposeful sampling and semistructured interviews (Caldwell et al., 2020; Lobe et al., 2020). Yin (2014) presented the interview protocol as an integral step in the data collected to understand the responses research question. I used the interview protocol outlined in Appendix A. I also conducted semistructured interviews with participants that included open-ended questions. I also analyzed company documents used during the project management process. Using semistructured

interviews, open-ended questions, and the interview protocol encouraged participants to provide thorough responses (McCann, 2013).

Participants

A qualitative study typically expounds on a profound understanding as opposed to its extent in the advancements of research (Boddy, 2019). Because I intended to study the strategies some IT project leaders use to prevent project failures resulting from project scope changes, it is critical the participants align with my research question.

Participants in this single case study were three senior IT project leaders from an IT management consulting company in Atlanta, Georgia. The criteria for selecting participants include (a) participants IT management consulting company, (b) All participants had successful management strategies involving preventing project failures resulting from project scope changes, and(c) used tools and techniques to manage scope changes, and (d) length of the project schedule were less than a year. To ensure I followed proper ethical procedures and avoided human rights violations, I sought approval from the Walden Institutional Review Board (IRB).The IRB approval number was 05-03-21-0479152

I gained access to potential participants through my list of contacts in the LinkedIn project management group. LinkedIn has profiles, experiences, and contact information. Participants were vetted based on a minimum of 2 years of project management experience. I used a snowball sampling technique to recruit participants

through social media and asked participants to refer others with similar experiences (Panahi et al., 2020).

I established a working relationship with participants via email and provided a brief introduction and description of the purpose of the study. IT project leaders who agreed to participate received consent forms before I began each interview. Researchers should safeguard information provided by participants (Carpenter et al., 2018). I safeguarded participants' information by protecting their names and companies they represent.

Research Method and Design

Research Method

Researchers who select a qualitative research method create themes from the collection and analysis of data through interviews (Queirós et al., 2017). Qualitative research involves exploring and identifying social phenomena of participants in their natural settings (Talmi et al., 2018). A quantitative research method involves the measurement of data or hypotheses (Bhuyan & Zhang, 2020). Researchers consider mixed method research when the strength of the study requires a combination of qualitative and quantitative research (Bhuyan & Zhang, 2020). I did not select quantitative or mixed method for this study because the purpose of the study did not require the measurement of data or refutation of hypotheses.

Research Design

There are four conventional qualitative research designs: narrative, phenomenology, ethnography, and case study (Bhuyan & Zhang, 2020). Researchers use a narrative design to analyze the stories of people and society (S. Chen & Schweitzer, 2019), which does not align with my purpose statement. Researchers use a phenomenology design to understand and study the lived experiences of participants (Bustard et al., 2019). A phenomenological design was not appropriate because I was not studying the lived experiences of IT project leaders. The ethnography design is used by researchers to study groups or cultures through participant observations (Ihlebak, 2020). The purpose of my study did not require exploring groups or cultures.

A case study design is appropriate for exploring fields where knowledge regarding a phenomenon is limited (Nicholds et al., 2018). Some researchers use case studies to provide a holistic and real-world view by discussing the social and technical challenges in business (S. Liu et al., 2020). Case study researchers also explore individuals and events over some time. I selected a case study to explore strategies some IT project leaders use to prevent project failures caused by project scope changes. Researchers may choose an exploratory case study based on the purpose of their study (Baxter & Jack, 2008). Qualitative case study researchers also consider conducting single or multiple case studies. Researchers use single case studies to observe participants during a single or extreme event (Haas et al., 2016). Researchers use multiple case studies to compare one case to another (Guritno et al., 2019). I selected a single case study to explore strategies

some IT leaders in one company use to manage project scope changes to prevent new product and service project failures.

McCann (2013) conducted a phenomenological study about the experiences of IT project managers and their management of changes in project scope. McCann achieved data saturation when the number of participants, standard views, and experiences were sufficient. Researchers reach data saturation when data collected does not contain new information (Onwuegbuzie & Weinbaum, 2017). I continued to interview participants and collect data until I no longer obtain any new information to achieve data saturation.

Population and Sampling

The population described in qualitative research refers to participants who portray specific traits and criteria, and a sample is a small example of the population (Boddy, 2019; Stake, 1995). Sampling in qualitative research is a technique in deriving a sample of a population-based on a set of criteria (Billore & Billore, 2020; Moser & Korstjens, 2018). Researchers can choose various sampling techniques to derive the sample size for a single case study. Still, the focus should be on data collection and understanding of the smaller sample size in contrast to a larger sample (Boddy, 2019).

There are two standard sampling methods: probabilistic and nonprobabilistic (V. Wilson, 2017). Probabilistic sampling involves using random samples of the population, with each participant having an equal opportunity to be a part of the sample, and is identified with quantitative studies (Neto et al., 2020). Nonprobabilistic sampling involves nonrandom samples and is associated with a qualitative study (Neto et al., 2020;

V. Wilson, 2017). The probabilistic sampling method identifies four sampling techniques: (a) simple random, (b) systematic, (c) stratified, and (d) clustered (V. Wilson, 2017). Nonprobabilistic sampling methods include five sampling techniques: (a) accidental, (b) quota, (c) snowball, (d) purposive, and (e) self-selected (V. Wilson, 2017).

Researchers can use a purposive sampling strategy to establish criteria before conducting the interview (Croix et al., 2018). Padgett (2017) suggested a sample size of seven to 10 participants when conducting an interview. However, Yin (2014) contended three to five participants would be sufficient in reaching data saturation.

Researchers can use the snowball sampling strategy by soliciting participants through referrals (Panahi et al., 2020). IT project leaders can use a referral criterion to solicit participants in personal networks. Researchers use snowball sampling to maximize the recruitment of participants through social media (Panahi et al., 2020).

The population in this qualitative single case study will include IT project leaders who have successful strategies in preventing project failures caused by project scope changes. The participants include IT project leaders from IT consulting companies located in Atlanta, Georgia, area. I chose the nonprobabilistic snowball sampling method as this method includes purposive sampling techniques for my study.

A snowball and purposive sampling will include members on LinkedIn and PMI which will include three to five IT project leaders from a single IT consulting company. I interviewed each participant that has managed projects in IT. I continued to review and analyze data from the interviews until there is no new information obtained and I reach

data saturation. The summary from the interview will be given to the participants to review their responses and used to verify the accuracy of the interview (Roberts et al., 2019).

Ethical Research

The ethical review requires that I protect the research participants by receiving Walden University IRB permission before starting my research. Ethical researchers require informed consent and outline participant's protection, privacy, and confidentiality (Yin, 2014). Once I received IRB permission, I emailed potential participants that meet the study's criteria a letter of invitation and include a participant consent form. I reviewed the participant consent form with the selected participants and request a signed copy before beginning the interview and agreeing to participate in the study. The participant consent form will include a brief explanation of the study, the inclusion criteria, risks and benefits of being in the study, and contact numbers for follow-up questions or concerns. I asked for permission from the organization for de-identified project change documents related to my research. When I received a participant's consent form, I assigned each participant a unique identifier to protect their privacy. I also informed them their participation is strictly voluntary; they have the right to withdraw at any time in the study by sending me an email requesting a withdrawal. I recorded the interview, and there were no incentives provided for participation in the study. In addition to receiving a participant consent, I concealed the participants' names and the company's name. Researchers should use participant labels to protect the confidentiality and analyze the data collected (Morse,

2018). To help ensure confidentiality, I referred to the company as Company 123 and identify each participant as Participant 1, Participant 2, and Participant 3. I stored the participant's consent forms, recordings, and notes in a locked or password-protected drive. After 5 years, I will destroy these forms, recordings, and notes.

Data Collection Instruments

Erlingsson and Brysiewicz (2017) stated that the researcher in a qualitative study is the primary data collection instrument. Similarly, Houghton et al. (2013) found that the researcher was the primary data collection instrument in a qualitative study. Stewart et al. (2017) emphasized that the researcher in a qualitative study as the primary data collection instrument. I was the primary data collection instrument in this qualitative single case study, collecting data from participants during interviews and obtaining project change documents to gain understanding and meaning. Tan (2019) defined methodological triangulation as the use of multiple sources to enhance the study. Applying Tan's recommendation on the use of multiple sources, I used the data collected during the interviews and documentation for methodological triangulation.

Yin (2014) identified six data collection techniques researchers use in a case study: (a) interviews, (b) documentation, (c) direct observation, (d) archival records, (e) physical records, and (f) participant observation. Doody et al. (2017) defined interviews as a standard method used to collect information and unearth participants' practical experiences. Moser and Korstjens (2018) outlined two interview techniques: semistructured and structured.

Okumus et al. (2017) used semistructured interviews to determine project managers' strategies in IT projects. Similarly, C. Marnewick and Marnewick (2020) found that semistructured interviews helped provide a visual into current practices in controlling IT projects. Moser and Korstjens (2018) claimed that researchers gain depth in the knowledge and meaning of the phenomenon by using a semistructured interview. I used a semistructured interview, digital audio recorder and PC sound recorder application for Windows as a backup, transcribe the participants' experience, knowledge, and how project leaders use successful strategies to prevent project failures of IT projects. I transcribed the interview data and shared my interpretations of the participants' responses to the interview questions with the respective participants through email. To avoid omission and accuracy of relevant data, the researcher should transcribe the interview before the data is analyzed (Azevedo et al., 2017). I followed the interview protocol located in Appendix A.

Yin (2014) defined documentation as a method to supplement and support data from other case study sources. Spyridonidis and Calnan (2010) used documentation to corroborate evidence collected by project leaders to understand how strategies met financial responsibility. Ibrahim and Tella (2020) found that documentation supported successful project strategies collected through interviews. Puyvelde (2018) stated that the researcher is the data collection instrument that collects facts and insight into the respondents' experiences. Project performance documentation provides senior IT leaders and stakeholders with project information on the status of the project (Nestsiarovich &

Pons, 2020). I used project documentation to supplement and support data collected through private interviews of participants.

Morse (2018) described member checking as providing the participant with a summary of the interview, correct data, and or provide additional information. Roberts et al. (2019) stated that transcribing the interview should occur before the member checking to ensure validity. Iivari (2018) used member checking to provide more reliability and validity to information systems projects. I have described the use of member checking in the Data Collection Technique section. I triangulated the data gathered from the interviews with the project documentation I received from the participants.

Methodological triangulation allows a researcher to corroborate their findings using multiple sources.

Data Collection Technique

The research question for this study is: What strategies do some IT project leaders use to prevent project failures resulting from project scope changes? The data collection techniques for this study will be a semistructured interview and review of company documents. I conducted a phone or video conference interview to comply with CDC guidelines because of COVID-19.

I identified a target list of small IT consulting companies in Atlanta, Georgia, and participants that are on LinkedIn and the local PMI chapter. I then contacted the participants by email, explain the nature of the study, send a consent form, schedule a date, time, and location with the participants for an interview. The advantage of a face–

to-face interview is to observe the participants in a real-world setting (Yin, 2014). Additionally, I conducted a face-to-face interview virtually, audio recorded using Zoom, and manually transcribed the interviews. However, the disadvantage of using audio recording is there can be sound quality issues or the inability to distinguish between the researcher and participants based on the equipment (AlKhateeb, 2018). I was able to audio record the interview with good sound quality and distinguished between researcher and participants.

After completing the interview, I collected any available project change documentation and transcribe the interview recordings. I summarized the data collected during the interview and ask questions to ensure accuracy. I employed member checking after the interview to resolve any concerns and confirm the accuracy of my interpretations of the data captured from the interview. I follow-up the member checking interview with the participants to verify my interpretations of the participants' responses to the interview questions. I then reviewed the company documents with participants to confirm the accuracy of my understanding from the company data.

Data Organization Technique

The main goal of the organization of the data collected is for preservation and retrieval (Yin, 2014). I recorded video conference interviews by using a digital recorder and the PC sound recorder application for Windows as a backup. I recorded telephone interviews by using an online free conference meeting application. I used note-taking to document the interview logistics and as a way to recall information collected from the

interview. The researcher can use note-taking to trigger memory and organize data collected from the interview (S. Chen, 2017). I requested company data at the end of the interview and will store the information in a password-protected storage system for 5 years. I organized the data using a hierarchy directory with a file naming system. The directory system will consist of a parent and child relationship structure for access and retrieval of recording and documents. I used member checking to ensure the data collected were interpreted correctly. The formatting of the recordings and documents' structure will support the NVivo software program. I used the NVivo qualitative method for coding, tagging, and searching for patterns and themes. Data collection and storage will align with the IRB requirements, where only I will have access to the data. I will store all digital and raw data on a password-protected hard drive for 5 years. I will destroy digital data and shred any raw data paper files after 5 years.

Data Analysis

Qualitative researchers analyze transcripts and other sources as part of the data analysis process (Polacsek et al., 2018). Case study researchers use triangulation as part of the analysis process (Natow, 2020). Researchers use methodological triangulation to corroborate their findings using multiple data methods (Natow, 2020). I enhanced the quality of the findings by conducting semistructured interviews, member checking, and a review of company documents. The company documents included scope change management plans, project plans, project cost documents, and change control logs.

I transcribed the interview and analyzed the transcripts, notated the themes in the strategies used by project leaders, and examined the company's documents. I used Microsoft Excel and NVivo to organize and analyze the data collected. I used thematic analysis to analyze the interview data and documents gathered in the study. Thematic analysis is widely used in qualitative research and consists of reading the data, coding, decomposing, constructing and analyzing themes, and concluding the findings (Castleberry & Nolen, 2018). Qualitative case study researchers consider using natural and denatural methods in transcribing interviews (Mero-Jaffe, 2011). Researchers use a natural method to capture the unfiltered discourse of the interview and use a denatural method to filter out nonverbal communication (Mero-Jaffe, 2011). I transcribed the interview using a denatural method to transcribe the interview verbatim and to filter out nonverbal communication. I continued to review the data and use thematic analysis until no new themes emerge. I also used current studies to assist in emerging and new findings, then related them to the conceptual framework.

Reliability and Validity

Simon et al. (2018) explained reliability and validity as the concept of significance in the research. Yu et al. (2019) noted that reliability and validity in a qualitative study are different and contentious compared to a quantitative study. Morse (2018) argued researchers should use multiple strategies to achieve validity and reliability. Yu et al. described reliability as the repeatability of results to obtain similar results and validity as the criteria for assessing the quality of research. The standard

criteria that address the trustworthiness and rigor of a qualitative research study include:

(a) credibility, (b) transferability, (c) dependability, and (d) confirmability (Reio & Werner, 2017).

Reliability

Bokhove and Downey (2018) described reliability as measuring repeatable data under similar conditions returning to similar outcomes. I conducted a video conference, semistructured interview in accordance with the interview protocol (see Appendix A) and collect company documentation. After completing the interview, I used member checking to ensure the data collected was interpreted correctly. I conducted follow-up member checking interviews with the participants to verify my interpretations of the participants' responses to the interview questions.

The researcher can achieve dependability by enhancing transparency, ensuring the research procedures are understood, and replicating the research methods (Houghton et al., 2013; Rodrigues et al., 2019). I enhanced dependability by interviewing IT project leaders who are knowledgeable in strategies used in preventing project failures from project scope changes. I also documented the details gathered from the interview data, identified any discrepancies, and made corrections to ensure the data accurately summarized the participants' responses. I also used the qualitative analysis software tool NVivo to code and analyze the data.

Validity

Validity underlines the credibility of a research study by inducing a firm conclusion (Bokhove & Downey, 2018). Researchers use triangulation and member checking to increase the credibility of the study (Hamilton, 2020). I used methodological triangulation of data gathered from the transcribed interviews and company documentation. Credibility in a qualitative case study involves the assertion of the participants and confidence in the researcher's findings and conclusion (Birt et al., 2016; Smith, 2018). I used note-taking during the interview to document brief details. I also conducted a follow-up member checking interview with the participants to verify my interpretations of the participants' responses to the interview questions to increase the credibility of the data by including the participants in the verification of the data.

Transferability

Transferability is an important aspect of trustworthiness and is achieved when researcher's interpretation or finding from the case study are transferrable to other similar observable events (Nassaji, 2020). Researchers provide rich details and assumptions of the study to provide the reader with evidence of the research findings that can be applied to other contexts (Nassaji, 2020). I recorded the time, the location of the data collected, and the detailed presentation of the findings so that other researchers can determine if the information is transferable to their research.

Confirmability

Confirmability is the level of confidence in siding with the data, and interpretation shaped by research participants and not in researcher bias or interests (Cypress, 2017). Researchers can use reflective journaling to mitigate bias or interest (Amaechi & Fusch, 2019). Reflective journaling allows the researcher to acknowledge their personal experience during the study (Amaechi & Fusch, 2019). I recorded my personal experience in a journal during the interview so that the data and interpretations emerge from the participants and is separate from my own experience.

IT business leaders' interview responses were examined and coded into themes several times until no new information emerges and I reached data saturation. I examined the documents that support strategies used by project leaders in preventing projects from failing. Researchers achieve data saturation when no new information is gathered during the interview process (Onwuegbuzie & Weinbaum, 2017).

Transition and Summary

In Section 2, I restated the purpose statement and outlined the role of the researcher, criteria for selecting participants, and reasons why the case study design and qualitative method research design were appropriate for my study. I defined the population and sampling procedures and explained why I chose snowball and purposive techniques. I also explained the importance of ethics and ethical processes in order to receive of Walden's IRB approval. I also described myself as the data collection instrument and explained why I chose semistructured interviews. Next, I described

methodological triangulation and techniques, and used NVivo to code, organize, and analyze data. I also described reliability and validity, as well as dependability, credibility, transferability, and confirmability. Section 3 begins with a presentation of findings of the study, application to professional practice, implications for social change, and recommendations for action and further research, reflections, and a conclusion.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative single case study was to explore the strategies some IT project leaders use to prevent project failures caused by project scope changes. Data were collected from three semistructured video conference interviews with leaders from IT consulting companies in Atlanta, Georgia. I triangulated data from the company's website as well as documents and participant responses. Participants responded to interview questions (see Appendix B) outlined from the interview protocol in Appendix A. Video conference interviews were used to comply with CDC and Walden University COVID-19 guidelines. Participants selected for this study were three IT project leaders who used successful strategies and tools to prevent project failures resulting from scope change.

IT project leaders' responses to interview questions exposed themes aligned with my research question and conceptual framework. The research question for this study was: What strategies do some IT project leaders use to prevent project failures resulting from project scope changes? I used reflective journaling to mitigate personal bias during my data analysis. I transcribed recordings from interviews, conducted member checking, and gathered company documents provided by each participant. I then performed manual coding before importing data into NVivo. I reviewed the company website, participant observations, and data collected from company documents for methodological triangulation and validation of themes.

Findings of the study revealed three common themes that IT project leaders used to prevent project failures resulting from project scope changes. The first theme was understanding project scope, which increases scope awareness and scope change strategies. The second theme identified was performance techniques. Effective performance techniques improve IT project leaders' ability to identify and measure project performance. The third theme was communication. Creating proper communication between IT project leaders, project teams, and stakeholders increases IT project success because of scope change.

Presentation of the Findings

The overarching research question for my study was: What strategies do some IT project leaders use to prevent project failures resulting from project scope changes? The three emerging themes from data analysis were (a) understanding project scope, (b) effective performance techniques, and (c) communication. I identified themes used to manage and control project scope, costs, and schedules. Emerging themes from interviews and company documents extended the knowledge of successful strategies used to prevent project failures resulting from project scope changes.

Snipes (2021) identified the following three strategies for managing prevention of IT project failures: (a) scope management, (b) effective communication, and (c) managing priorities. I explored the data collected from the study to further understand the constraints and strategies used in preventing project failures. Responses from participants

were used to address strategies used by project leaders for preventing project failures resulting from project scope changes.

TOC was used as the conceptual framework. It provided a basis for the study because this concept identifies constraints and strategies to prevent project failures caused by project scope changes. Goldratt developed the theory of constraints in 1984 to explain the constraints in performance that may obstruct an organization from reaching its goal (Goldratt & Cox, 1984; Şimşit et al., 2014). Throughout the data analysis process, I used the TOC as a lens to view emerging themes from participant interviews and company documents to analyze strategies project leaders use to prevent project failures. Data analysis was used to identify strategic activities for managing project success as a result of scope changes. Findings from interviews with participants and themes extended the knowledge regarding strategies for managing scope changes.

Theme 1: Understanding Project Scope

The first theme emerged from participant interviews. According to Perrier et al. (2018), managing scope changes increases project success and reduces costs, which supports the organization's goals of delivering projects on time. Epurescu (2019) suggested that IT project leaders should understand the particulars of project scope to improve business and project performance.

Table 1 shows data gathered from responses describing strategies used to manage scope change. IT project leaders seeking to prevent project failures should exploit these

strategies. Table 1 shows frequency of themes in the data analysis. The themes are (a) understanding scope, (b) value, and (c) collaboration.

Table 1

Understanding Project Scope

Thematic Categories	Frequency	Percent of themes
Understanding Scope	30	31%
Value	20	21%
Collaboration	18	19%

Understanding Scope

Participants reported that understanding scope is a great way to deal with scope changes. P2 stated, “I would say before engaging the customer in moving forward with a project, you first want to truly understand the scope, what the requirements are, and what your deliverables are, to help keep projects in scope.” P2 emphasized, “truly understanding the scope, requirements, and deliverables before engaging the customer.” According to Gemino et al. (2021), a clear understanding of project scope can affect project success. P1 explained the importance of both the customer and project team’s understanding of the scope. P1 stated, “the project manager and business units must understand what it truly needs to execute on and deliver.” IT project leaders can use TOC to determine reasons for scope changes to overcome challenges in project scope. TOC is a strategic method IT project leaders can use to identify potential gaps in project scope and improve project scope understanding (Bauer et al., 2019).

Value

Scope change for small IT consulting companies is a source of revenue. Estimating the potential value of project scope changes is important in terms of the understanding of project scope. Each participant described scope change as having potential to increase business value. P3 stated, “If there is a limit impact on the scope change, which will in return bring a high value.” P2 stated, “By evaluating the scope change, there is the potential of additional work.” Zerjav (2021) stated small IT organizations value project creations. IT project leaders have to invest in project scope and elevate other constraints (Zerjav, 2021). P1 stated, “at the end of the retrospective, scope changes are evaluated and added to the backlog for the next iteration.” The application of the TOC provides project leaders with a framework to increase project value.

Collaboration

Small IT consulting companies require collaboration with stakeholders to understand the scope. P1 and P3 described collaboration between stakeholders and project teams in preventing project failures. Zhang et al. (2019) stated collaboration was essential to project success. Organizations that use collaboration methods have improved market timing and enhanced business knowledge (Zhang et al., 2019). P3 stated, “What’s essential is to have a collaborative approach to make sure it’s a consensus understanding of those requirements to help prevent disruption.” P1 stated, “It’s more of a strategy to bring the people, the stakeholders to hear the requirements upfront to mitigate the

changes.” Small IT project leaders identify, exploit, subordinate, and elevate collaboration constraints that may increase their understanding of scope changes. An increased understanding of scope changes may increase project success.

Theme 2: Performance Techniques

The second theme that emerged from the participant interviews was employee performance and project performance. Dasí et al. (2021) stated the proficiency of identifying skills when analyzing project performance. P2 noted the importance of providing performance feedback to employees when tracking project performance. IT project leaders in small IT consulting companies are looking to use strategies to overcome scope changes and identify employee skills to prevent project failures. The participants’ responses from the interview provided techniques for identifying project performance. P3 suggested one of the strategies is measuring performance, measuring the cost against plan value and team contribution on performance. Table 2 shows the techniques IT project leaders have used to overcome scope changes in preventing project failures. The reoccurring themes were employee performance and project performance.

Table 2

Effective Performance Techniques

Thematic Categories	Number	Percent of themes
Employee performance	13	13%

Project performance	11	11%
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Employee Performance. To overcome project scope changes, IT project leaders must recognize employee performance in preventing project failures. The three participants agreed that understanding and recognizing employee performance were critical in preventing project failures as a result of project scope changes. P1 advised IT project leaders to be positive and encouraging when pointing out the value of their role in the impact and causes on the project. P2 stated, “Sometimes I’ve seen how it totally turns individual’s attitudes around and a team when they feel they are not valued and what they are doing exactly impacts their performance review.” Bhargava and Pradhan (2018) found that employee proficiency had a positive impact on job performance. P3 stated, “based on the historical performance of the team the technique can determine their velocity.” Bhargava and Pradhan (2018) concluded that proficiency in highly constraint organization and change improves employee performance. IT project leaders can use TOC to identify performance needs and develop strategies beneficial to the employee.

Project Performance. Jitpaiboon et al. (2019) noted that project performance was essential to project success because of scope changes. P1 expressed measuring project performance. According to P1, “it is very important to determine how well you’re doing as you progress on the project.” All participants agreed measuring project cost and schedule as the project progresses. P2 describe the importance of having alignment on the current requirement at different phases of the project. P3 also described understanding where you are and the future state of the project. P1 describe using performance

techniques such as schedule performance index and cost performance index in determining project performance. All participants agreed that it was necessary to present project performance in charts and diagrams. P1 shared experiences of when projects were failing and how performance improvement plans were implemented. TOC is a helpful tool in elevating constraints in projects in performance techniques. IT project leaders use performance indicators in key decision-making when elevating scope change (Ayub et al., 2019).

Theme 3: Communication

The third theme from the participant interviews was the communication plan. Invernizzi et al. (2018) stated the frequency of communication is important in project success because of scope changes. P3 noted that IT project leaders in small consulting companies who manage communication between the client and delivery team encounter communication challenges. Leaders in small IT consulting companies looking to succeed in project delivery, developing a communication plan reduces communication challenges. The participant responses from the interviews provided recommendation for developing strategies communication planning. Tables 3 shows IT project leaders using communication plans when preventing projects from failing because of project scope change.

Table 3*Communication*

Thematic Categories	Number	Percent of themes
Communication Plan	5	5%

Communication Plan. A reoccurring theme identified was utilizing a communication plan when preventing projects from failing. P1 stated, “the number one strategy we use is communicating what type of communication plan you put in place incase anything falls through the cracks.” P2 stated, “having a constant dialogue and communication that they’re delivering on time when.” P3 described the constant communication through daily standups and various meetings. P1 described establishing frequent meetings with customers and detail documentation in preventing gaps in understanding the scope. P2 referenced using color indicators in communicating project distress as the project progress. P3 stated, “documented project scope and changes into sprints so that you keep a record of features that are pulled in or out is recorded.” All participants recognized the importance of developing, documenting, and communicating early in the project.

Establishing communication during the project ensures that project scope and project team align with the project goal. The exchange of information during the project promotes a positive transition of knowledge and communicating the project goals (A. L. Marnewick & Joseph, 2020). According to the company’s website and documentation, over 17 technical certifications and over five large companies are business partners. P1

stated that it was important to communicate proficiency in IT skills and experience in project management. These documents outlined project goals and status, stakeholders and contact information, and meeting frequency according to sample communication plans. P2 stated that it is important to know what method of communication is preferred and what information should be communicated to different stakeholders.

Applications to Professional Practice

The findings of this study may provide IT project leaders with strategies in managing project failures because of scope changes. Use of the themes identified could assist in the reduction of project failures in small IT consulting companies. Scope change in the IT consulting industry requires an understanding of project scope changes and identifying project constraints. IT project leaders may be able to apply TOC to identify constraints to project success as a result of project scope changes. Too et al. (2017) stated that project leaders encounter at least one barrier that hinders project success. de Jesus Pacheco et al. (2021) stated project leaders could use TOC to improve strategies that can positively impact the schedule and project cost because of scope changes. Goldratt and Cox (1984) noted that the implementation of TOC could provide project leaders with a method to identify and continuously improve the bottlenecks found in strategies increasing throughput.

The findings of this case study supported Assaad et al. (2020) and de Jesus Pacheco et al.'s (2021) findings IT project leaders used to improve their strategies in understanding project scope, project value, collaboration with teams, employee and

project performance, and communication planning. P1, P2, and P3 described their strategies when managing project scope changes to prevent project failures. Assaad et al. (2020) emphasized the importance of measuring project performance to monitor potential project failure because of scope changes. P1, P2, and P3 shared their experience and techniques used in measuring project performance. de Jesus Pacheco et al. (2021) found that a process improvement strategy prevented project failures resulting from project scope changes. P1, P2, and P3 described using tools, technology, and project methodologies to prevent project failures.

The results of this study could be used by IT project leaders in small IT consulting companies to improve efficiencies in scope change management, understand the impact of scope change on projects, and measure project performance. Ayub et al. (2019) emphasized the importance of identifying and measuring project performance when elevating scope change. Boosting productivity, communication with stakeholders, team engagement, and seeing signs of failure are critical steps. Small IT consulting companies have small organizational models and subcontract most of their services to save on cost. IT project leaders need to communicate well to align with clients and their teams to understand project scope and scope changes. Understanding the cause and communicating scope change is essential to project success (Simushi & Wium, 2020).

Implications for Social Change

The implications for social change include the potential for economic development in local communities in Georgia. Communities may benefit from more job

opportunities as small IT companies look to expand operations around Georgia. Improving the economic conditions in local communities may increase wages and quality of life. There may be opportunities to restore spending in local markets and community confidence. Families may have a chance to send their children to world-class schools. Talent availability may increase and provide local community growth.

Recommendations for Action

IT project leaders in small IT consulting companies must use strategies to prevent project failures because of project scope changes. The findings presented successful strategies and practices for managing project scope changes in small IT management consulting firms into current practices. My recommendation to IT project leaders of small IT consulting companies in Georgia is to incorporate this study's finding when developing strategies to prevent project failures because of scope changes. I recommend that IT project leaders understand project scope and value, collaborate with teams, measure employee and project performance, and implement a communication plan. TOC is a management methodology used by IT project leaders to identify project constraints and apply continuous process improvements to prevent project failures (de Jesus Pacheco et al., 2021). The results may benefit consultation in small and large IT consulting companies in developing strategies to manage project scope. I plan to distribute this study in articles, public speaking events, and college courses.

Recommendations for Further Research

Further research recommended from the findings of this research study are (a) time constraints, (b) number of participants, and (c) data collected by phone, follow-up interviews, emails, and documents. Time constraints limited the number of interviews that could be conducted and the number of participants willing to participate. I used a snowball sampling technique to recruit participants but found participants reluctant to refer others. The first recommendation is to use a convenience sampling technique for further research. Researchers use a convenience sampling technique to collect data from readily available participants (Speak et al., 2018). Conducting a multiple case study instead of a single case study may also provide additional participants. Because of time constraints, interviewing project leaders from multiple companies can provide more participants to interview and availability. Interviewing IT project leaders from various consulting companies could also provide different experiences and perspectives. The second recommendation is for a quantitative research study measuring the impact of independent and dependent variables. Finally, I recommend further research studying unsuccessful strategies IT project leaders have used to prevent project failures because of project scope changes. Studying unsuccessful strategies could improve an organization's understanding of scope changes and preventing project failures. A telephone interview option was available if a video conference interview were not possible. Telephone interviews limit the ability to observe body language and eye contact. Further research

could be conducted using video conference or face-to-face interviews to observe participants during the interviews for nonverbal cues.

Reflections

The doctoral journey has been a long and committed process and a childhood dream. I began this process with the end in mind and with the untiring support of my family. Although I changed committee members along the way, Dr. Bearden has been a beacon. The proposal and literature review were time-consuming and challenging. The excitement in receiving my second committee member approval after many submissions opened the door to data collection. I was able to locate participants and start the interview process, transcribing and coding the data collected. NVivo software provided some challenges as the newer release was slightly different than the documented and video version. I spent numerous hours reviewing tutorials and YouTube videos. The journey was indeed a marathon and not a sprint.

Conclusion

Preventing IT project failures caused by project scope changes is an evolving business in small IT consulting companies. The purpose of this qualitative single case study was to explore strategies some IT project leaders use to prevent project failures caused by project scope changes. The three themes, (a) understanding project scope changes, (b) performance techniques, and (c) communication emerged through participant interviews, company document reviews, coding, and data analysis. The research extends the knowledge in strategies for managing project scope in preventing

project failures. IT project leaders in small consulting companies may use the research findings to manage project failures because of scope changes. The increase in revenue from project success, job opportunities, and investments in local communities of small IT consulting companies may contribute to economic growth in Georgia.

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Appendix A: Interview Protocol

1. Introduce myself to the participant(s) via Webex or Zoom.
2. Go over contents of the form, answer questions, and concerns of participant(s).
3. Turn on the audio recording device.
4. Follow the procedure to introduce participant(s) with a pseudonym and coded identification; note the date and time.
5. Begin interview with question #1; follow through to the final question.
6. Follow up with additional questions.
7. End interview sequence; discuss member checking with the participant(s) via Webex or Zoom.
8. Thank the participant(s) for their part in the study. Reiterate contact numbers for follow-up questions and concerns from participants.
9. End interview.

Appendix B: Interview Questions

The following are the interview questions for this study. Question 1 is an initial probe question, Questions 2–5 are concept questions, and Question 6 is a wrap-up question.

1. What project management strategies did you use to identify project scope changes in preventing project failures?
2. What techniques have you used to focus on the project performance to prevent project failures resulting from project scope changes?
3. What process improvements have you used to prevent project failures resulting from project scope changes?
4. What management strategies do you use to manage the constraints of scope, schedule, and budget?
5. What strategies do you use to prevent project failures from project scope changes?
6. What other strategies would you like to share that I have not asked about?