

# **THE EFFECTIVENESS OF ADAPTIVE AGILE TECHNOLOGY IMPLEMENTATION**

by

Dr. Steven Craig Ashley, DBA\ITM

ADAM HICKMAN, PhD, Mentor

ANNETTE CRAVEN, PhD, CPA, ACC, Program Committee Member

PAULA CHERRY, DBA, School Committee Member

Cheryl Boncuore, PhD, Interim Dean

School of Business, Technology and Health Care Administration

A Capstone Project Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Business Administration

Information Technology Management

Capella University

May 2024

© Copyright 2024 Steven Craig Ashley

- I am a DBA 2.0 learner (I started before July 2021 and decided to remain in DBA 2.0). I do not plan to cross to 3.0 at this time.

## Table of Contents

SECTION 1. BUSINESS PROBLEM AND PROJECT SCOPE .....	1
1.1 Introduction.....	1
1.2 Capstone Topic .....	2
1.2.1 Problem of Practice.....	2
1.3 Purpose of the Project .....	3
1.3.1 Project Need.....	4
1.3.2 Project Question(s).....	4
1.3.4 Project Context: Information Technology Management .....	5
1.3.5 Terms and Definitions.....	8
1.4 Doctor of Business Project Specifications .....	9
1.4.1 Importance of the Project.....	9
1.5 Summary .....	11
SECTION 2. LITERATURE REVIEW AND PROJECT PLAN .....	13
2.1 Introduction.....	13
2.1.1 Applied Framework .....	14
2.2 Method for Discovering Literature .....	22
2.2.1 Inclusion and Exclusion Criteria.....	23
2.2.2 Search Strategy .....	23
2.3 Review of Scholarly and Practitioner Literature .....	25
2.3.1 Historic and Current Business Problem Trends.....	26
2.3.2 Previous Efforts to Address the Problem.....	31

2.4 Summary of Literature.....	36
2.5 Recruitment.....	37
2.6 Project Study Protocol .....	39
2.6.1 Data Sources .....	40
2.6.2 Data Collection .....	42
2.6.3 Data Analysis Plan and Presentation .....	43
2.6.4 Validity and Reliability/Trustworthiness.....	45
2.6.5 Ethical Considerations .....	45
2.7 Overview of the Project Study Plan.....	46
2.8 Summary and Conclusion.....	47
SECTION 3. RESULTS, DISCUSSION, AND IMPLICATIONS.....	49
3.1 Introduction.....	49
3.2 Data Collection Results.....	49
3.3 Data Analysis .....	51
3.3.1 Theme 1 Organization and Leadership .....	63
3.3.2 Theme 2 IT Governance .....	65
3.3.3 Theme 3 Solution Validation .....	68
3.3.4 Theme 4 Communication.....	71
3.4 Contribution to Theory, the Literature, and the Practitioner Knowledge Base .....	72
3.4.1 Theme 1 Organization and Leadership .....	72
3.4.2 Theme 2 IT Governance .....	73
3.4.3 Theme 3 Solution Validation .....	75

3.4.4 Theme 4 Communication.....	77
3.5 Project Application and Recommendations.....	78
3.6 Conclusion .....	79

## **SECTION 1. BUSINESS PROBLEM AND PROJECT SCOPE**

### **1.1 Introduction**

According to Thompson et al. (2017), three interdependencies identify the behavior and interactions within an organization's structure. This qualitative inquiry on the effectiveness of adaptive agile technology implementations applied the interdependency theory. The application of interdependency theory was used to evaluate interdependencies between project communication, testing, and implementation planning. The evaluation of interdependency explored the control objectives of information and related technologies (COBIT) framework, the exchange of ideas, solution validation, and scheme formulation. According to Thompson et al. (2017), the three types of organization structure interdependencies are pooled, sequential, and reciprocal.

According to Thompson et al. (2017), pooled, sequential, and reciprocal interdependencies are distinct from one another. Pooled interdependence suggests that organization entities operate independently and contribute to an overarching strategy, portfolio of goals, and organization objectives (Thompson et al., 2017). This collaboration is relative to successful solution validation. The sequential interdependence theory aligned with organizational culture and the importance of planned communication in how people communicate and exchange ideas (Thompson et al., 2017). The formulation of a scheme is a reciprocal interdependence that influences a change in process and organization throughput (Thompson et al., 2017). The capstone project used the exchange of ideas, solution validation, and formulation of a scheme as factors that influence the success of implementing adaptive agile technology.

## **1.2 Capstone Topic**

The Capella University Doctor of Business Administration (DBA) specialization in information technology management (ITM). is a discipline in managing computer systems, system applications, data storage analysis, and information consumption to support businesses and organizations. The purpose of this qualitative inquiry project was to explore the perspectives of IT leaders in United States (U.S.) technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate.

This study is vital to provide information technology management organizations with an adaptive agile IT governance framework. Qualitative inquiry research asked information technology leaders about their perspectives on adaptive agile methodology. According to Dhatchanamoorthi and Kamaraj (2020), the capstone project was timely, as many organizations have already begun to explore ways to improve their technology implementation success rates (Dhatchanamoorthi & Kamaraj, 2020).

### **1.2.1 Problem of Practice**

The general business problem is that many information technology organizational leaders have faced challenges in adopting adaptive agile best practices for successful technology implementation (Levstek et al., 2018): the triple constraints, time, cost, and quality measure technology implementation success. According to Mukerji (2019), not all technology implementations are identical. Evaluating success or failure requires a set of key performance indicators (KPIs) to measure against (Mukerji, 2019). Levstek et al. (2018) suggested that despite attempts at implementing best practices and revised frameworks, technology implementation



failures continue to erode an organization's information technology investment (Levstek et al., 2018).

The specific business problem was the IT project failure rate of 85% in U.S. IT organizations. IT industry leaders who do not use adaptive agile methods have experienced higher costs and reduced productivity (Mielli & Bulanda, 2019). According to Westfall (2020), qualitative inquiry on failed IT projects suggests that the impact extends further than IT to the organizational level, and the cost of failed projects is not recoverable for many organizations. The study showed that failed projects receive funding beyond the return on investment of failed projects, which often continues. This capstone project extended the study of IT governance by adding organizational culture, strategy planning, and stakeholder analysis to influence technology implementation success.

### **1.3 Purpose of the Project**

The purpose of this qualitative inquiry project was to explore the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate. More evaluations on the effectiveness of adaptive agile as a methodology are needed. A qualitative inquiry was required to understand further how adding adaptive agile into the IT governance portfolio was perceived as a control objective of information and related technology (COBIT) to improve technology implementations. The project's literature review examined scholarly peer-reviewed articles contributing to the COBIT IT governance framework, and focused on peer-reviewed articles and publications that aligned with system development lifecycle methodologies, digital transformation, organizational change management, and stakeholder analysis.

### **1.3.1 Project Need**

The need for the project existed because of the lack of IT organizations understanding of agile principles is the main factor of limitations for adaptive agile adoption (Ghani & Bello, 2015). According to Mersino (2018), information technology organizations have yet to adopt adaptive agile in their IT governance portfolio (Mersino, 2018). There was a growing shift in IT project delivery to an agile framework. Many organizations seek agile to manage technology implementations better and control the success factors (Koutsikouri et al., 2020). Lawal and Ogbu (2021) suggested that the traditional waterfall project management methodology had become less favorable due to the high rate of IT project delivery failures reported yearly. Additionally, the agile project methodology is only as successful as waterfall projects. The success rate of agile versus waterfall projects is improved by implementing or adopting an IT governance for managing adaptive agile IT project delivery (Lawal & Ogbu, 2021). According to Mersino (2018), agile projects are statistically more successful than waterfall projects because agile deliverables are broken down into smaller efforts that require less stakeholder involvement, less formal documentation, frequent communication, and periodic solution reviews (Mersino, 2018). An argument is that IT governance and an adaptive agile SDLC methods can improve technology implementation beyond the success of agile methodology implementations.

### **1.3.2 Project Question(s)**

**PQ:** What are the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate?

### **1.3.3 Project Justification**

Research studies on project success and failure confirmed that improvement in information technology solution delivery is needed. Statistical ratios on success and failure vary widely among researchers due to different research methods, data analysis techniques, population study, and perspectives on the study criteria. Mielli and Bulanda (2019) reported that 85% of all digital transformation projects fail. Moreover, projects fail because of a lack of strategic direction, stakeholders are reluctant to change, and stagnant process improvement practices (Mielli & Bulanda, 2019). Aranyossy et al. (2018) report that 61% of IT projects either failed or were challenged (Aranyossy et al., 2018). Alami (2016) denotes that 16% of IT projects did not meet requirements, 52% were marginally successful, and 13% flat-out failed (Alami, 2016). Ghani and Bello (2015) highlighted significant improvements in project success in IT organizations adopting the agile methodology. They further denote that an organizational shift is required for agile to succeed (Ghani & Bello, 2015). Edison et al. (2022) support the idea that additional study is needed to determine the interdependence between successful IT governance and the factors influencing the success rate of adaptive agile technology implementation (Edison et al., 2022). The gap in practice is that leaders in the U.S. IT industry have not fully adopted adaptive agile methodology into their IT governance, which could reduce the IT project failure rate (Muhammad et al., 2021).

#### **1.3.4 Project Context: Information Technology Management**

System development life cycle (SDLC) methods provide a structured process for developing and implementing system solutions. While there are many methods for managing system development and implementation, the most common are waterfall and agile (Proulx et al., 1996). According to Aroral (2021), the SDLC waterfall methodology is a sequential approach to

technology implementations. As there are many variations to the waterfall method, the basic concept is a phased approach consisting of a business process review, a design phase, a development phase, and an implementation phase (Aroral, 2021). The waterfall method collects requirements at the beginning of a project in a business process document. The requirements are further detailed in a business process or blueprint document. Next, the requirements are elaborated into a functional pseudocode document explaining what the requirement will achieve, how it will function, and the purpose of the need. A requirement is similar to an agile user story. A functional and technical document is developed to define further the data migration, processes, and integration requirements. The development phase often consists of programming and defect resolution activities. The Project Management Institute categorizes good practice into process areas: initiate, plan, execute, design, develop, monitor and control, test, deploy, and close. These process areas are supported by a knowledge area that influences the success of technology implementation. The knowledge areas are integration management, scope management, time management, cost management, quality management, communication management, resource management, risk management, procurement management, and stakeholder management.

The agile methodology provides organizations with an alternative to sequential phased technology implementation. Kisielnicki and Misiak (2017) proposed that agile provides quicker value to organizations due to the ability to realize incremental deliverables, value to the project team and stakeholders, and see project information sooner than traditional waterfall methods (Kisielnicki & Misiak, 2017). A research study from Schtein (2018) demonstrates that waterfall and agile are equally successful in delivering IT project results. The triple constraints measure the effectiveness of both methodologies, time, cost, and scope (Schtein, 2018). Scholars agree

that the true benefit of the agile method is adaptability and providing benefits through incremental deliverables to the customer. Azanha et al. (2017) reviewed that the agile project methodology also benefits the project team's overall satisfaction with the deliverables to the customer. Azanha et al. outlined an opportunity for improved stakeholder involvement, communication, testing, and planning (Azanha et al., 2017).

An argument can be made that failed agile technology implementations suffer from the same issues as many waterfall technology implementations. According to Radhakrishnan et al. (2022), agile and waterfall alone can improve project success. Instead, a hybrid agile and waterfall methodology, such as an adaptive agile methodology, is needed. The study concludes that project managers and implementation teams who adopt and adapt to a hybrid method will have a success advantage (Radhakrishnan et al., 2022). The conclusion supports that neither agile nor waterfall methodology is more successful than others. A qualitative evaluation of agile proves that success or failure can be attributed to three key factors: communication, testing, and implementation planning. Mishra et al. (2021) suggested that consistency in project management and IT governance cadence increases the success rate of technology implementation. According to Chen (2021), agility in business and IT will benefit from improved IT governance. Adaptive agile benefits stakeholders and organizations by better controlling the factors that influence success through better reporting, cost-saving opportunities, and visibility of resource utilization. The approach to supporting and implementing waterfall and agile projects is often laden with burdensome backend administrative processes. The adaptive agile methodology solves the problem by bringing the success factors of waterfall and agile to a structured hybrid model. The

hybrid adaptive agile methodology focuses on exchanging ideas, solution validation, and formulating a scheme.

### **1.3.5 Terms and Definitions**

The terms used in this study may have multiple definitions in the literature. The following definitions were used throughout this capstone project.

***Adaptive Agile.*** Adaptive project management focuses on the ability to adapt to changing scope quickly to change the outcome of a project. Like the waterfall methodology, the adaptive method includes planning, scheduling, and identifying essential dependencies and milestones (Li & Chan, 2019).

***COBIT.*** is a framework created by ISACA for information technology management and IT governance. It focuses on business continuity as an IT governance principle (Bernroider & Ivanov, 2011).

***The Exchange of Ideas.*** The exchange of information and ideas between two or more people. The communication and flow of information, opinions, facts, and ideas from one person to another (Mielli & Bulanda, 2019).

***Formulate Scheme.*** Formulate scheme involves developing execution plans or a set of actions to be implemented by a team or individual understanding of perceived risk (Pillai, 2021).

***Solution Validation.*** Solution Validation is the complete set of tests and testing activities. The activity includes reviewing data, testing business processes and practices, validating completed configurations, interfaces and interchanges, and any custom software enhancements (Pillai, 2021).

## **1.4 Doctor of Business Project Specifications**

The IT management disciplines or governance portfolio provides value across an organization's business channels and functional areas. Many IT processes are deemed as a necessary business cost. According to Madzimore (2020), the IT value chain links many organizational business processes that support the overall business strategy (Madzimore, 2020). A review of an organization's digital transformation and maturity of enterprise information technology management (ITOM) provided insight into potential areas of IT governance for adoption or improvement. Improved technology implementation through adaptive agile methodology may be an area of improvement that can be leveraged to contribute to an organization's value chain.

### **1.4.1 Importance of the Project**

The factors determining whether an IT project is successful are delays in schedule, cost overrun, changes in scope, and poor quality. By inspecting peer-reviewed articles and journals, scholarly journals highlight improved IT delivery management and the adaptive agile methodology success phenomenon. The capstone project explored the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate by examining key performance indicators of time, cost, and scope that influence the factors of exchanging ideas, solution validation, and the formulation of a scheme. The study investigated IT governance models and the change management theory to identify fundamental causes of technology implementation success using waterfall, agile, and hybrid (adaptive agile) SDLC methodologies.

A hybrid methodology combines waterfall and agile methods to implement solutions that do not fit either methodology structure. An adaptive project methodology combines waterfall and agile methods to implement solutions that do not fit either structure, and is different from hybrid by nature of having a structured IT governance model (Van der Waladt, 2011). The waterfall methodology is a sequential tiered approach to technology implementation consisting of typical blueprint, design, development, testing, and deployment phases (Andrei et al., 2019). The agile approach is a Kanban model that uses an incremental structure, providing faster deliverables and return on investment (ROI). The agile method allows more control over time, cost, and scope (Mishra et al., 2021). The tools and measures for this capstone project was the Ishikawa root cause analysis, stakeholder analysis, IT value chain analysis, and change impact analysis. The Ishikawa root cause analysis identified the impact of dependency misalignment and supports the influence of technology implementation success factors from the COBIT framework. The stakeholder analysis helped explain the importance of stakeholder involvement and the influence stakeholders have on adaptive agile technology implementation (Wood et al., 2021). The IT value chain analysis reviewed the requirements for successful technology transformation (Harrin, 2018). Understanding digital transformation also supported the ITIL and ITSM requirements for the IT governance framework.

#### **1.4.2 Approach for the Project**

The approach for the capstone project used a generic qualitative inquiry. Collecting and analyzing data came from responses queried by a panel of information technology leaders with experience implementing SAP S/4HANA, an enterprise resource planning software solution. The



study sought to understand the IT leadership perspective of SAP Activate, adaptive agile, the interdependence between communication, testing, implementation planning, and the most likely risk to technology implementation success. The specific process areas of questioning were the exchange of ideas, solution validation, and formulation of a scheme. Additional data sources were the Standish Group, Independent Project Analysis, and other project research forums. The forums provided information about the advancement of technology implementation. The barrier to collecting interview data was obtaining enough responses to discern a perception. The approach was to canvas organizations that were implementing S/4HANA and then send interview requests to LinkedIn member connections working in those organizations. The contingency plan for low interview responses was to solicit interview responses from SAP project managers who have worked on SAP S/4HANA projects or SAP S/4HANA project team members, the contingency was not required. The framework for supporting the interview responses was the COBIT framework, which is a framework created by ISACA for information technology management and IT governance (Bernroider & Ivanov, 2011).

## **1.5 Summary**

Section 1 of this document described the need for a qualitative inquiry into the effectiveness of adaptive agile to improve the success rate of technology implementation in information technology management. The document described the problem in practice, outlining the project's purpose and justification. The capstone literature included scholarly peer-reviewed journals and articles. The collected works gave evidence to the gap in practice supporting the project topic; review areas are technology implementation, IT governance, organizational culture, change management, leadership theory, and stakeholder analysis. The technology

implementation literature identified gaps in agile and waterfall methods by comparing system project failure, methodology transformation, planning, testing, communication, and supporting evidence of factors influencing success. The literature further supported the need for a structured hybrid methodology and improved IT governance.

Similarly, the review of IT governance literature supported IT governance's influence and the value IT adds to an organization (Chau et al., 2020). The organizational culture literature review examined the impact of organizational value, trends in technology adoption, and the influence of organizational culture change necessary to support IT governance improvement and technology implementation (Felipe et al., 2017). The change management literature aligned with digital transformation, planning, and information technology with people and the gap between interdependent success factors (Roberts, 2013). The leadership theory and stakeholder analysis further supported the gap that influence the success of technology implementation.

## **SECTION 2. LITERATURE REVIEW AND PROJECT PLAN**

### **2.1 Introduction**

The capstone project explored the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate. The capstone project used a generic qualitative inquiry technique to collect data from 10 information technology leaders in U.S. technology organizations planning an SAP S/4HANA implementation or implementing SAP S/4HANA through 45 to 60-minute semi-structured interviews.

The capstone project explored the COBIT framework as it applies to IT governance system development life cycle (SDLC) methodologies to improve technology implementation with adaptive agile, focusing on the factors for successful technology implementation. In a qualitative inquiry, the study evaluated the importance of exchanging ideas, solution validation, and formulating schemes that influence technology implementation success.

Studies report project failure and success from multiple sources with varying degrees depending on the key performance indicators (KPI) used to evaluate project success or failure rates (Mishra et al., 2021). The most common measurement is the triple constraints: time, cost, and scope (Saxena & McDonagh, 2019). There are many studies on the effectiveness of waterfall and agile projects (Lawal & Ogbu, 2021),

The gap in practice by scholarly literature on project success and failure provided estimates ranging from 35% to 84% depending on the research method and applied framework (Saxena & McDonagh, 2019). Scholarly literature supports that improvement in information technology solution delivery is needed because the overall success rate of technology

implementations is low, and the cost of failed projects is high. Additionally, 85% of all digital transformation projects fail. Moreover, they suffer from a lack of strategic vision, a reluctance to change, and having stagnant process improvement (Mielli & Bulanda, 2019). Hughes et al. (2016) incorporated a methodology for interpretive structural modeling to identify the relationship between technology implementation success factors and proposed outcomes (Hughes et al., 2016). Additional study is needed to determine a consensus on the interdependence between successful IT governance and the factors influencing the success rate of adaptive agile technology implementation.

### **2.1.1 Applied Framework**

The applied framework helps IT leadership teams overcome the problem and shrink the gap in practice. The framework helps to evaluate the control factors of adaptive agile technology implementation success and the interdependence between the exchange of ideas, solution validation, and the formulation of the scheme. The COBIT framework originated from the Information Systems Audit and Control Association (ISAC). ISAC was first introduced in the late 90s as a governance model for information security and risk management (Proulx et al., 1996). COBIT is a framework to monitor and control IT governance and management, adding value to business objectives (Bernroider & Ivanov, 2011). The COBIT framework, now in its fifth edition, provides good practice for the foundation of enterprise governance of IT (EGIT) but is not an all-inclusive framework for how organizations should manage IT. Over the years, the COBIT framework has been modified to meet business and IT organization needs; COBIT 5 introduces a revised framework incorporating agile methodologies within IT governance to safeguard business IT investment (De Haes et al., 2020).

### **2.1.1.1 COBIT Framework**

The interdependency types align the COBIT framework with IT governance success factors. The COBIT framework is the foundation for the capstone project and aligns with the Capella University DBA Information Technology Management (ITM) specialization. Additional frameworks are evaluated as part of this capstone project to explain the project's need, identify the gaps in practice, and construct the interview questions. The frameworks are the interdependence theory framework, competing values framework, leadership theory, scaled agile framework, and adaptive project framework. The interdependence theory framework identifies the behavior and interaction within an organization (Thompson et al., 2017). The competing values framework is used to determine the organization's culture type, in which the baseline is the way leadership influences how an organization communicates and interacts between business units (Cameron, 2009). The leadership theory is reviewed to understand an organization's ability to adopt an agile method as part of an organization's digital transformation and the effectiveness of IT governance (Yi & Zulaikha, 2022). Understanding the two leadership styles aids the development of the interview questions. The scaled agile framework (SAFe) compares against the hybrid methodology. It explains how agile is used on an enterprise level (Ciancarini et al., 2022), giving insight into how agile hybrid, as the SAP Activate methodology, supports S/4HANA technology implementations.

COBIT is a complex set of principles that supports business and IT strategies (Mangalaraj et al., 2014). The purpose of COBIT is to align the enterprise goals of IT with business strategy. The theory of IT governance is not a new concept and has evolved over the last twenty years to what is known today as the enterprise governance of IT (EGIT) framework.

EGIT aims to ensure the value of IT within the organization's strategy. EGIT is an area of scholarly research. Recent research has focused on the standard practice of IT audibility and governing framework. As such, in corporate IT governance, ISO/IEC standard 38500 outlines IT governance as controlling IT disciplines' current and future use. The purpose of ISO/IEC standards is to direct and evaluate the use of IT and the effectiveness of strategy and policy for leveraging IT within an organization. ISACA introduced the IT Governance Institute (ITGI) in late 90s to highlight IT governance theories (Bernroider & Ivanov, 2011).

The COBIT IT governance framework was introduced to address concerns of IT financial audit communities. As a result, the committees formulated the COBIT framework to guide best practices for IT audits. Revisions to COBIT 2 and 3 transform into an expanded management and IT governance framework and a set of utilities, key performance indicators (KPIs), evaluation models, critical success factors, the exchange of ideas, validation, and formulate a scheme that identifies the roles and responsibilities for IT functions and processes. COBIT 3 introduces organizational policies and procedures to safeguard business IT investment from the risk of impeding an organization's goals. COBIT realigns best practice to good practice as a proven successful action in many organizations, giving reliable and positive results. Information Technology has become an integral part of the organization's value chain. The value of IT earned the attention of senior management professionals and academic literature relevant to IT governance.

#### **2.1.1.2 Adaptive Project Management**

A project is a temporary endeavor that aims to achieve specific goals within predetermined constraints of time, cost, scope, and quality to meet the expectations of

stakeholders (Azanha et al., 2017). There are two types of projects: predictive (waterfall) and non-predictive (agile). An IT project manager plays a crucial role in supporting and facilitating the implementation of business applications. The project manager collaborates with operations, IT, and vendors to implement solutions. The primary responsibility of a project manager is to communicate and report project progress and timeline deviations to stakeholders, including business and technology teams. The project manager also identifies and mitigates project risks and keeps project execution statuses updated in standard work-tracking tools and processes. They ensure that the teams allocated to each project understand the business's priorities and are aligned with them. The project manager prepares inputs for planned vs. actual resource allocation per project review and facilitates routine project meetings, reviews, and ad hoc meetings as necessary. They identify dependencies between projects that might affect the delivery date and coordinate dependencies between teams. The project manager tracks the project workstreams and the flow of information and understands the workflows and technology department processes needed to support project execution within the predetermined constraints of time, cost, scope, and quality. However, the project manager must be mindful of risk and uncertainty.

The theory of constraint (TOC) suggests removing constraints that can impede the project's success by identifying risks and roadblocks in advance (Lortie et al., 2021). The critical chain method in project management suggests adding buffers to the project to mitigate risk to the triple constraints. However, this also leads to unnecessary costs for the project (Mishra et al., 2021). There are many studies on project management best practices and the best methodology for successful project implementation. Scholarly research has improved project management

discipline over the years leading up to changes in the COBIT framework. However, successful project management continues to challenge professionals and organizations (Azevedo et al., 2021). Englund and Graham (2019) proposed that hybrid project management methods are more effective than the conventional waterfall approach (Englund & Graham, 2019). Most projects fail by conventional methods because the predictive model does not conform to the dynamics of complex project environments.

Further, an adaptive method gives more control over uncertain challenges. Adaptive project management (APM) allows flexibility in adapting quickly and changing courses (Van der Waldt, 2011). Adaptive project management gives control over risk and predictability, which is lacking in linear project methodologies. The increased complexity of business and technology requires project managers to be more agile to succeed in an unpredictable environment. The adaptive approach adjusts scope change interactively to meet the intended results within the project constraints. The dynamic nature of adaptive project methods, irrespective of the complexity or size of a project, requires consistent communication, testing, and planning. Ranjan (2022) suggests that predictive projects are better suited for projects with defined linear phases, whereas adaptive projects enable improved project outcomes (Ranjan, 2022). The broader view of the IT governance framework expands on the enablers for effective adaptive project management.

### **2.1.1.3 IT Governance**

The main objective of COBIT is to ensure that technology aligns with stakeholder needs by applying a comprehensive end-to-end framework that distinguishes governance from management. The project study adapts the COBIT framework for IT governance and adaptive



agile project delivery. IT governance is an extension of corporate governance introduced as a set of principles to safeguard the value of organizations' IT investment. The IT governance framework allows organizations to manage better the risks associated with IT, which aligns with the overarching objectives of the organization's strategy (Kesuma et al., 2022). ISACA introduced the IT Governance Institute (ITGI) to help executives and IT managers understand IT risk and ensure that IT value is realized according to an organization's strategy (Chau et al., 2020). The IT governance domains are value delivery, strategic alignment, performance management, resource management, and risk management. There are multiple reasons why organizations seek to implement an IT governance framework: regulatory compliance, IT resource utilization, better IT performance, and business alignment, to name a few. An argument can be made that organizations must fully understand the benefits of aligning their governance with IT governance (Levstek et al., 2022).

A research study on executive views toward IT governance by ITGI revealed that over 600 respondents denote barriers preventing the value of IT investment. The resounding response is that IT fails in technology implementation and that IT governance needs to improve (Fasihuddin et al., 2022). Further, executives feel that IT can perform more effectively and that more is needed before IT can reach its full potential and value. The research study reveals that better communication (exchange of ideas) on technology transformation opportunities that have the potential to improve value is needed. The research study identifies organizational culture, fear of change, lack of skill, training, and time as impeding barriers. The effectiveness of IT governance is often measured by the ability to improve IT operational performance, the role IT has in future business success, IT contribution to innovation, the ability to reduce the cost of the

IT enterprise, and analyzing risk (Kesuma et al., 2022). IT governance is essential for business managers and IT project managers. IT governance spans the multiple disciplines of an IT organization. The literature review suggests that further application delivery improvement is needed to support an organization's strategic IT investment and value (Saxena & McDonagh, 2019).

#### **2.1.1.4 Technology Implementation Success Factor Framework**

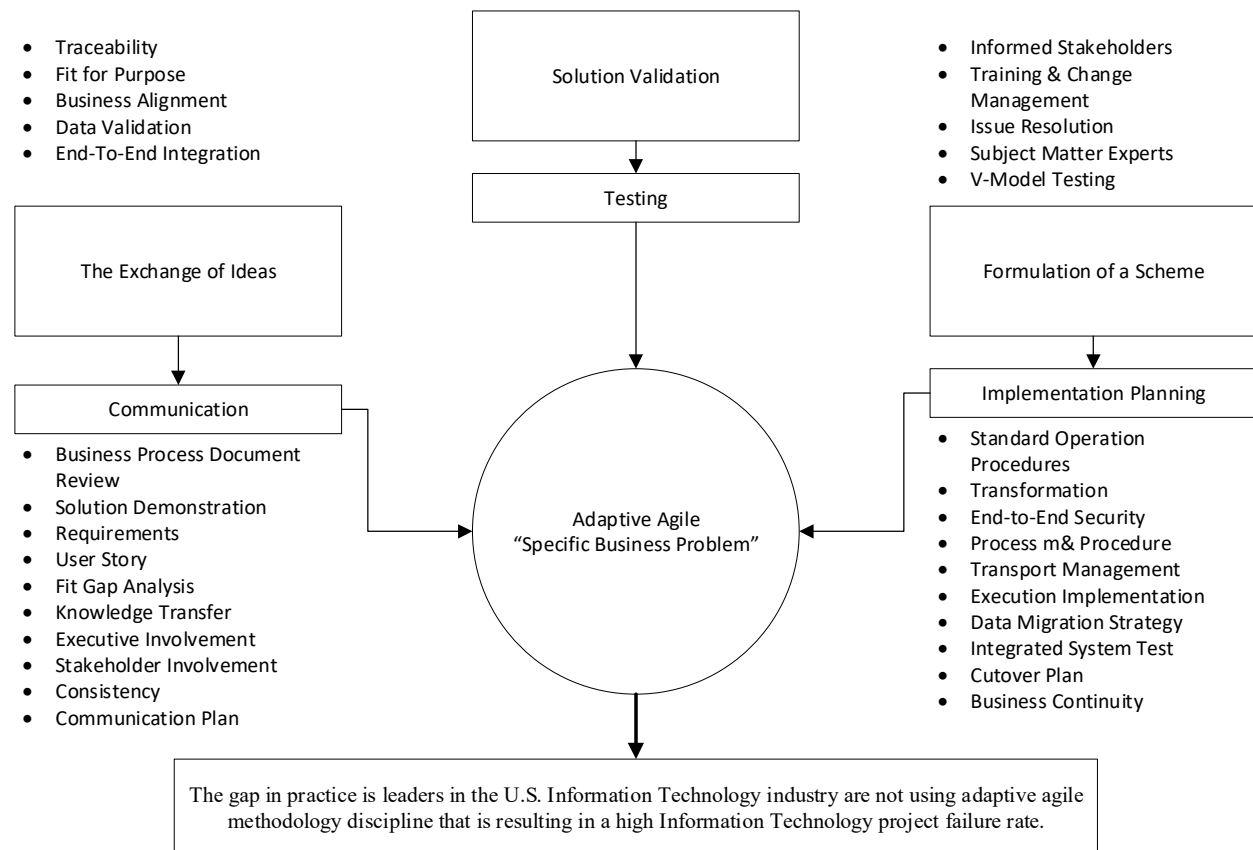
IT governance (ITG) aims to ensure the value of IT is realized and safeguard the organization's IT investment. Research studies identify that application technology implementation failure concerns executives (Chau et al., 2020). There must be more than project management best practices (Prince2, PMBOK) to ensure successful technology implementations. The proposed Technology Implementation Success Factor (TISF) framework, see Figure 1, identifies the process area that influences technology implementation success. The influencers include exchanging ideas, validating solutions, and formulating schemes. The ITSF framework aligns with the ITG domains, performance management, risk management, and resource management. The TISF framework defines the exchange of ideas as exchanging information and ideas between two or more people or communication between people (Mielli & Bulanda, 2019). Solution validation is the complete set of test and testing activities. The solution validation activities include reviewing data, testing business processes and practices, validating completed configurations, interfaces and interchanges, and any custom software enhancements.

The formulation scheme involves developing execution plans or a set of actions to be implemented by a team or individual understanding of the perceived risk (Pillai, 2021). The communication process includes a communication plan, requirements, user stories, business

process documents, fit-gap analyses, knowledge transfer, solution demonstration, and executive and stakeholder involvement. The testing process involves business alignment, fit-for-purpose, traceability, data validation, end-to-end integration, issue resolution, training, change management, informed stakeholders, subject matter expert engagement, and v-model testing. Implementation planning involves reviewing standard and operating procedures, transformation, security, process and procedures, transport management, execution implementation, data migration strategy, integrated system test, business continuity planning, and cutover planning. The ITSF framework provides the framework for the capstone project semi-structured interview open-ended questions.

**Figure 1**

*Technology Implementation Success Factor Framework*



## 2.2 Method for Discovering Literature

This qualitative inquiry capstone project sought the perspectives of U.S. information technology leaders on the effectiveness of adaptive agile technology implementation. The key topics included in the literature review are waterfall and agile system development lifecycle methodologies. The method for discovering literature was a review of practitioner and scholarly peer-reviewed journals, articles, books, theories, frameworks, techniques, and professional

consortiums to address the gap in practice. The literature review did not consider unreliable sources, news articles, personal blogs, websites, non-peer-reviewed journals, articles, or any information resources irrelevant to this capstone project.

### **2.2.1 Inclusion and Exclusion Criteria**

The inclusion and exclusion criteria for the literature review defined the validity of the research data (Sanfilippo et al., 2020). The inclusion criteria focused on technology implementation success factors. The literature review explored the COBIT framework's perception and IT governance's effectiveness as it pertains to system development lifecycle methodologies and best practices from scholarly peer-reviewed journals, articles, conference papers, credible practitioner literature, and historical content to show the evolution of topics and theories. The exclusion criteria defined data and information that have no value to the gaps in practice. Exclusion ensured that the study was focused on the problem and meaningful outcomes (Snyder, 2019). Data with no relevance or applicability to the project problem was excluded. The exclusion criteria for the capstone project further validated that the data collected was viable and would provide meaningful insight into the project problem.

### **2.2.2 Search Strategy**

The technology implementation literature identifies gaps in agile and waterfall methods by comparing system project failure, methodology transformation, planning, testing, communication, and supporting evidence of factors that influence success (Andrei et al., 2019). The literature further supported the need for a structured hybrid method and improved IT governance. Similarly, the review of IT governance literature supported the influence of IT governance, and the value IT governance adds to an organization (Asgarkhani et. al., 2014). The

organizational culture literature review examined the impact of organizational value, trends in technology adoption, and the influence of organizational culture change necessary to support IT governance improvement and technology implementation (Felipe et al., 2017). The change management literature aligned digital transformation, planning, and information technology with people and the gap between interdependent success factors (Roberts, 2019). The leadership theory and stakeholder analysis further supported the gap and influenced the success of technology implementation (Alzoubi et al., 2021).

While there are many studies on the success and failure of the waterfall and agile methods, there are few studies on the success factors that identify the confluence of adaptive agile methods (Sastoque-Pinilla et al., 2022). Further investigation was needed to understand how adding adaptive agile into the IT governance portfolio improves technology implementations. The scholarly literature review of this study focused on peer-reviewed articles and publications that align with IT governance and system development lifecycle methodologies. The examination of anthropomorphism in articles contributing to the COBIT framework, IT governance, and waterfall and agile SDLC methodologies. The literature review included literature from project management research consortiums, The Standish Group, and the Independent Project Analysis research forum. The literature review also included scholarly peer-reviewed articles on organizational change management, digital transformation, and stakeholder analysis. The research keywords and terms used were *Predictive Project Management*, *Adaptive Project Management*, *Waterfall Project Management*, *Agile Project Management*, *Hybrid Project Management*, *IT Project Success*, *IT Governance*, *COBIT*, *Technology Implementation*, *Project Communication Management*, *SDLC Testing*, *IT Cutover Planning*, see Table 1.

**Table 1***Search Strategy*

Keyword	Topic	Source	Contribute	GAP
COBIT	Framework	ISAACS	Historical overview	Executive adoption
ITG	Principles	ITGI	Application, Why ITG is needed	Value of IT
Waterfall	Predictive	EBSCO, Standish Group, Google Scholar	Perception of IT failure	Evidence
Agile	SCRUM	EBSCO, Standish Group, Google Scholar	Perception of adaptive agile	Evidence
Hybrid	Adaptive	EBSCO, Standish Group, Google Scholar	Best of both methods	Opportunity
Theory	Best Practice	EBSCO, Google Scholar	Developing theories	Compare and contrast
Method	SDLC	Prince2, PMBOK	Best Practice	Argument

*Note. The list of keywords and topics used to search literature and article sources.*

### **2.3 Review of Scholarly and Practitioner Literature**

Successful technology implementation has long been a research topic for many scholars and project management practitioners. Over the years, technology solutions have become the backbone of an organization's operational success. Investment in information technology increases when new emerging technologies are introduced. The cost of failed technology implementations concerns many organization leaders (Altarawneh & Samadi, 2019). The Information Systems Audit Control Association (ISACA) was formed in the late 60s to address growing concerns over information technology systems and their importance to organizational operations. ISACA introduced the Controls Objectives for Information and Related Technologies

(COBIT) as a framework for IT governance. The COBIT framework measures the financial risk of technology implementations (Fasihuddin et al., 2022). The Institute of IT Governance (ITIG) was formed in the late 90s to minimize risk and support IT investment. A concern of executives is the failure rate of technology implementation projects. Technology implementation success or failure is argued to be the misalignment between IT and organizational governance (Chau et al., 2020).

### **2.3.1 Historic and Current Business Problem Trends**

Project failure has long been a critical factor in the evolution of technology implementation (Zoirovich, 2023). Thomas Edison tried 6000 different filaments before successfully developing a longer-lasting incandescent lightbulb. Edison was not concerned about the monetary cost of failure but rather the project's success (Zoirovich, 2023). Over the years, the concern of failed project costs has increased due to organizations' increasing failed implementations. Technology implementation projects fail for many reasons: misalignment of requirements, lack of organizational support, insufficient skill set, and stakeholder adaptation, to name a few (Lauesen, 2020). A historical overview of the evolution of computer science is a prerequisite to understanding the reasons behind technology implementation project failures and the gap in business practice today.

#### **2.3.1.1 Historic Business Problem Trends**

Charles Babbage invented the difference engine in the early 18th century and the conceptual design for the analytical engine shortly thereafter (Collier, 1990). Charles Babbage's invention underpinned the modern-day computer (Collier, 1990). The first computer program was developed by Ana Lovelace, who wrote an algorithm, the first computer program, for



Babbage's analytical engine (Collier, 1990). The two events would later lead to the discipline of computer science. The discipline of computer science focuses on software development, solution validation, and implementation (Proulx et al., 1996). George Forsythe, a mathematics professor at the University of Stanford, devised the term computer science. Forsythe described computer science as a programming theory encompassing data processing, numerical analysis, and computer systems design. His research study of numerical analysis led to theories on statistical algorithms and artificial intelligence. While teaching at the University of Standford, Forsythe suggested that computers should be part of the mathematics undergraduate curriculum, thus beginning the computer science division (Knuth, 1972).

The foundational theories in computer science have led to incredible advancements in information technology and how it benefits society (Canpolat, 2022). Computer science allows us to interpret vast amounts of historical data to develop new technology that better the lives of humankind. Advancements in computer science since the 50s introduced mathematical algorithms, supercomputers, software solutions, and programs (Mahoney, 1988). The advancements have allowed mankind to send humans to the moon and one day to Mars. Because of the advancements in computer science, modern society now has the Internet, cellular technology, machine learning, robotics, and advancement in medicine; indeed, it is a fantastic time. The pioneering vision of Charles Babbage, Ana Lovelace, George Forsythe, and other great minds has made these advancements possible (Collier, 1990).

### **2.3.1.2 Current Business Problem Trends**

The military developed the first computer, the Electronic Numerical Integrator and Computer (ENIAC), at the end of World War II.; the Universal Automatic Computer (UNIVAC)

was developed for the Bureau of Consensus. UNIVAC was later adopted by companies such as Dupont and IBM (Brice, 2006). The 60s introduced procedural programming languages such as Fortran, which is used for numerical computation, and COBOL, the first structured language for statistical decision processes using the what-if algorithm (Canpolat, 2022). Hence, the beginning of the managed information systems (MIS) era. The number of managed information systems proliferated during the early 70s (Canpolat, 2022). However, many of these MIS projects failed due to fallacious starts and unsystematic implementation approaches. The cause of failure was more instruction on managing an MIS project. The cost of the failed projects pushed many organizations away from any large-scale implementation. Methodology in system development was introduced as a guide to successful MIS implementations, which led to the discipline of project management (Brice, 2006).

During the 80s, computer manufacturers recognized the need for computers in small to mid-size companies (Canpolat, 2022). They then spawned the era of micro-computers. The micro-computer gave way to local and wide area networks (LAN\WAN), allowing people to share information across systems. Advancements in operating systems introduced operating systems, allowing multiple systems to connect. The 90s introduced new programming languages that made operating systems, such as Java, to communicate between non-disparate systems and the end of operating systems altogether (Canpolat, 2022). Companies began to see the value of integrated systems and local and wide area networks, and smaller and faster mini-computers were introduced as servers. Large computer rooms were replaced by server closets, and operating systems were managed by network administrators. Companies began to adopt the notion of the Internet as a communication method to send emails. Around the mid 90s, email was available to

the general population via Hotmail and America Online (Brice, 2006). The 90s introduced the World Wide Web and internet browsers like Microsoft Internet Explorer, Firefox, and Netscape Navigator. New development languages allowed dynamic web pages (Brice, 2006). The new millennium has seen an astonishing advancement in technology, the Apple iPhone, social media, cryptocurrency, quantum computing, driverless cars, and the use of artificial intelligence, making the first 20 years of the new millennia the most technically advanced in human history (Cuthbertson & Griffin, 2021). The new millennia also introduced the Agile methodology to reduce the number of failed IT projects. However, many organizations find implementing the agile SCRUM method challenging (Mahoney, 1988).

### **2.3.1.3 Evolution of Adaptive Project Management**

Before agile software development methodology, there was the sequential waterfall methodology framework. The waterfall method was highly structured, requiring identifying requirements before any design and development work. The waterfall method must be more structured and prone to time delays and cost overruns. The agile software development method is introduced to deliver software solutions faster and more accurately. *Agile* is a word used to describe a methodology for software development, accentuating collaboration, continuous learning, planning, and incremental delivery. Agile was introduced as a set of principles known as the Agile Manifesto. The manifesto established principles for software development: customer satisfaction, welcoming change, delivering working solutions, working together, motivating project teams, face-to-face, measuring progress, agile sustainable development, technical excellence, simplicity, architecture, requirements, designs, and retrospectives. The agile manifesto identifies four values representing the framework of the agile development

methodology (ADM): individuals and interactions over process and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan (Gheorghe et al., 2020).

According to (Cohen et al., 2003), more research on failed agile projects needs to be done. The positive results stem from shorter deliverables, team collaboration, and less documentation. The argument is made that implementing agile as prescribed delivers successful results (Cohen et al., 2003). Agile development methodology embraces smaller work units, collaboration, and communication between team members. An advantage of ADM is that work units can be implemented into production in release cycles versus a one-time release approach. Another advantage is that the full scope of the solution implementation can be more thoroughly vetted, and changes to the design are welcomed. Embracing change during the development puts pressure on business teams who would be required to sign off on a design and deliverable in a waterfall project. Approval and sign-off of deliverables are sticking points for most stakeholders because they want to avoid being held accountable for cost overruns if the solution does not work as expected (Luong et al., 2019). The success factors of ADM are project, technical, people, organization, and process. In contrast, factors that lead to ADM failure are attributed to the lack of stakeholder and customer involvement and the team's structure, culture, and skill set (Darwish & Rizk, 2015).

#### **2.3.1.4 Failed IT Projects**

The topic of failed IT projects and their impact on organizations has concerned many company executives and stakeholders for many years. IT projects fail, regardless of the

implementation methodology. Projects fail because requirements, resource skill sets, little executive sponsorship, poor planning, scope creep, never-ending sprint cycles, poor communication, and unknown risks are not fully defined. Project failure can be blamed on anything (Lauesen, 2020). Researchers have studied the complexity of IT projects, taking a deeper evaluation of the technical aspects of an IT implementation, the conflicting norms, commercial off-the-shelf compared to custom-developed solutions, and specific regulatory requirements that impede success. The cost of failed projects continues to increase yearly, partly due to the fast pace at which new technology is introduced. The cost of failed projects can incapacitate a company, if not bankrupt the company. Studies show that the annual project spending is more than 19% of the world's gross domestic product. Research shows that over \$120 million is lost for every \$1 billion of IT investment (Westfall, 2020).

### **2.3.2 Previous Efforts to Address the Problem**

Successful organizational change consists of eight steps. Kotter's research describes how each of the eight steps provides the framework for organizational transformation. The success of a change management plan requires having a sense of urgency, guiding the coalition, creating and communicating the vision, empowering others, planning for quick wins, continuously raising the bar, and adopting new approaches throughout the organization (Kotter, 2009). Teams are often motivated by a sense of urgency when push comes to shove; people will rise to protect their livelihood and societal way of life. This sense of urgency can only be supported by having a guiding coalition of leadership. Senior-level executives are encouraged to support the change effort by creating a vision and constantly communicating the goals and objectives. Successful

change management empowers others to make decisions and continually challenges the team to the next level. Additionally, change management initiatives require an organizational culture shift for the long term (Kotter, 2009).

#### **2.3.2.1 Change Management Plan**

Innovations in the change management plan have emerged as an essential aspect of a successful transformation of an organization (Gopalakrishnan et al., 2010). The planning phase and communication planning are critical activities for implementing a successful change management plan. The purpose of the communication plan is to understand the requirements for communicating with stakeholders (Rosenberg, 2018). A communication plan outlines the communication requirements, media, frequency, and distribution to ensure the intended audience receives information promptly and consistently through proper channels. The communication plan catalyzes successful change management and technology implementation.

A communication plan must outline the information flow required for timely decision-making, action item tracking, status updates, and overall understanding of the goal and deliverables. In addition, the communication plan should also include the communication type, such as weekly status reports, weekly change management meetings, key stakeholder communication, and benchmark or milestone reviews. The communication plan must identify the media in which information is disseminated: email, in-person, blog, or internet forums. The communication plan must clearly define the frequency of the communication, the format, and who needs to receive what type of information (Plowman & Diffendal, 2020).

#### **2.3.2.2 Stakeholder Involvement**

Research on change management suggests efforts to change organizational behaviors fail due to resistance from stakeholders and hereditary culture. Resistance from stakeholders comes in many forms. The impact of stakeholder resistance should be included in the change management plan as a stakeholder analysis. In addition, understanding the dynamic nature of the organization and perceived stakeholder influence and opinions is essential. Acceptance of change will help identify user requirements. Stakeholders may become resistant when they feel threatened by change. Stakeholder Resistance is a cause of a communication breakdown that adds barriers to the technology implementation plan. Providing communication early and often will help ease stakeholder tensions. It is equally important to acknowledge that stakeholders have expectations from organization leadership. Effective change requires leaders to be visible to internal and external stakeholders (Kavanagh & Ashkanasy, 2006). Three components to increase stakeholder involvement are conducting a stakeholder analysis, developing a communication plan, and training (Long & Spurlock, 2008). An argument is made that stakeholder involvement does not constitute a responsibility to the stakeholder. Effective stakeholder management requires assigned stakeholder accountability (Greenwood, 2007). Having too many stakeholders involved in the implementation of technology may be counterproductive. Likewise, having the right stakeholders is equally important. Stakeholders may express different opinions on the requirements and differing agendas from the stated purpose or objective. Involving stakeholders early in the planning process will help better understand stakeholder roles and responsibilities that gain acceptance and better participation (Greenwood, 2007).

### **2.3.2.3 Leadership Theory**

There are two types of leadership styles: transactional leadership and transformational leadership. The leadership styles, in theory, provide different results that depend on the organization's reporting structure and financial alignment (Humaidi & Balakrishnan, 2015). The two leadership styles are authoritarian leadership and leadership engagement. Further analyses suggest that transformational leadership is more effective in achieving successful IT governance. Many IT organizations are in the infancy of digital transformation. They are adding IT as a strategic part of their business strategy, shifting to agile and improved technology implementation. Adaptive agile in the IT governance portfolio is also needed for organizations to remain competitive digitally. Establishing IT governance requires a partnership between organizations and IT. Many organizations need help with the proper cadence for establishing and maintaining IT governance. IT organizations often decide to outsource some or all IT support and functions without consideration of cultural awareness and the impact on information technology systems management (ITSM). Establishing an IT governance model across internal and external resources may require different approaches. The challenge is defining a common framework on which all parties understand and agree (Roberts, 2013). Organizations needing help establishing IT governance suffer from performance-related issues like project failure. These issues often cause internal processes and procedures to fail and diminish the IT value chain (Muller, 2015).

#### **2.3.2.4 Value Chain Analysis**

A value chain analysis is the process review of associated value from each business function. The value chain assessment aims to identify areas requiring improvement and areas the organization can leverage to disrupt the industry segment or market they serve (Hsin Chang et



al., 2013). The IT management disciplines, or governance portfolio, provide value across an organization's multiple business channels and functional areas. Many IT processes are noticed more as a necessary business cost. The IT value chain links to the many organizational business processes supporting the overall business strategy (Hsin Chang et al., 2013). A review of an organization's digital transformation and maturity of ITOM provides insight into potential areas of IT governance for adoption or improvement. Improved technology implementation through adaptive agile methodology may be an area of improvement that can be leveraged to contribute to an organization's value chain.

#### **2.3.2.5 Organizational Value Chain**

Information technology provides an integral part of the organizational value chain. Information technology's purpose was to keep systems and operations running effectively. The perception of IT operations in many organizations was to keep the lights. Today, IT plays a significant role in the value of an organization. Many organizations would not continue functioning without IT, as so much of an organization's value chain depends on IT services. Advancements in technology have strengthened the value of IT within many organizations (Golgeci & Y. Ponomarov, 2013). Additionally, IT allows organizations to change direction and improve business processes (Radhakrishnan et al., 2022).

#### **2.3.2.6 IT Value Chain**

Many organizations are putting more effort into their digital transformation efforts. The transformation efforts include finding value from the IT investment. Digital transformation is changing the way businesses think of IT. Instead of being looked upon as a necessary cost of doing business, organizations are now looking to understand how they can derive value from IT.

An IT governance portfolio assessment is needed to identify an IT organization's value. In many organizations, IT transforms from a supporting role to a strategic partner (Tarofder et al., 2013).

Further adoption of cloud computing and third-party support has enabled the IT value chain to become a key strategic driver in many organizations. Computer systems touch many aspects of today's business world; managing business operations with IT would be easy. There is a movement among organizations to be agile with their technology implementation and keep up with the fast-paced change in IT (Wang et al., 2012).

For organizations to remain competitive, they must have an adaptive mindset to implement technology quickly and successfully. Organizations that adopt adaptive agile in their IT governance portfolio will have an advantage over the competition. Organizations are beginning to see the advantages of adaptive agile technology implantations as a new disrupting force, thus placing IT at the top of its value chain. Additionally, organizations view IT differently as a critical contributor to the business value chain.

## **2.4 Summary of Literature**

The financial loss of failed technology implementation has been a significant concern of industry leaders since the dawn of modern-day computer systems (Lauesen, 2020). The literature review for this study discovered the theories and methods that have guided the evolution of computer science and system development frameworks. The literature review highlighted the importance of business and IT governance alignment and the perception business leaders have on the effectiveness of IT governance framework on organizational strategies (Chau et al., 2020). A comprehensive evaluation of the control objectives for information and related technologies outlines the importance of aligning the gaps between technical problems and business risk. To

further substantiate the gap in practice, organizational culture, leadership theory, stakeholder assessment, and the IT value chain were explored.

The synopsis of the literature provided insight into the need for an enhanced IT governance framework (Levstek et al., 2022). A review of the history of system development methodologies highlighted the need to make technology implementations more efficient. Many companies have traded the predictive project management (waterfall) methodology for the adaptive (agile) project methodology. However, the problem of failed technology implementations continues to fail at a very high level (Koutsikouri et al., 2020). IT governance aims to manage the risk associated with IT investment. The proposed critical success factors framework intends to reduce project risk through the exchange of ideas, solution validation, and scheme formulation. The study identifies concurrence on effective strategies for adaptive agile technology implementations that reduce IT project failure.

## **2.5 Recruitment**

The qualitative inquiry for this capstone project examined the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate. Participants were selected from 2,000 industry professionals who have requested or accepted previous LinkedIn connection requests. Respondents were evaluated against the survey qualification questions. The qualifying criteria ensured that the participant had organization and leadership responsibility and influence over organizational change. The technical criteria ensured that a participant understood the impact and cost consequence of failed information technology projects. The participant's tenure in information technology and educational background ensured an understanding of SDLC

methodology and concepts presented during the interview. The qualification criteria ensured that participants understood the gap in practice and could provide responses relevant to the project study.

The inclusion criteria for the study required that participants have ten years of experience as an information technology leader, either a chief information officer, chief technical office, Information technology vice president or information technology director, have a minimum bachelor's degree in computer science, managed information systems (MIS), or related technical certification, have experience with enterprise resource planning implementations (ERP), have participated in an SAP S/4HANA or planning an SAP S/4HANA implementation project, is knowledgeable in SDLC methodologies.

The exclusion criteria ensured that respondents could not participate if they were not information technology professionals, IT personnel who were not director level and above, not fluent in English-speaking, and living or working outside the U.S. The qualification criteria ensured meaningful responses to the projection questions. Participants' responses further highlighted the need for information technology organizations to adopt adaptive agile as part of their IT governance framework.

I invited 10 IT leaders in U.S. technology organizations to participate in a 45-to-60-minute interview through Zoom meetings. During the interview, participants were asked 8 questions about their perspective on adaptive agile and factors that influence technology implementation success. The population for the capstone project targeted information technology professionals with ERP solution delivery experience. As this is a broad group of multiple disciplines, the approach was to collect interview responses from only U.S. information

technology leaders with expertise in implementing or planning to implement SAP S/4HANA solutions. There was little chance that an interview respondent with SAP S/4HANA experience has not participated in an SAP S/4HANA technology implementation.

To ensure ethical considerations are addressed, participants met the qualifications outlined for information technology professionals having experience with SAP S/4HANA implementations. The participants received an email with a copy of the Capella University IRB informed consent form. The consent form included the purpose and use of the interview data collected, how personally identifiable information is used, permission to share the result of data, acknowledgment of use, permission, and an opt-out statement. Participants also had the opportunity to opt out of the interview at any time.

## **2.6 Project Study Protocol**

IT organization leaders have yet to fully embrace or support the adaptive agile success factors that reduce cost overruns in technology implementations. Understanding IT leadership's perspective of failed adaptive agile technology implementation has further substantiated the need for a success factors framework. The outcome of the study provided a supported consensus on the proposed success factors framework. The study advanced the field of information technology management with a broader perspective of factors that influence technology implementation success. The study further supports the need for IT leaders to implement or maintain IT governance principles fully within their organizations. The framework was not modified due to the study, but future enhancements were considered. The data analysis technique for this qualitative inquiry study was the thematic analysis method. The method was chosen as it provides a structured process for analyzing data collected from the study participant interviews.

The thematic analysis process is not a methodology but a method to identify themes or patterns relevant to the study question. The process steps for thematic analysis are to first understand or familiarize with the data, code and correlate exciting aspects, search and review themes, analyze and name the themes, and then interpret and report on the findings (Maguire & Delahunt, 2017).

### **2.6.1 Data Sources**

The primary data source for the capstone study came from qualified respondents who participated in and completed the semi-structured interview. The benefit of the semi-structured interview data collection method is that it allows the interview coordinator to explore with open-ended questions to expand on new ideas during the interview process (Adeoye-Olatunde & Olenik, 2021). The interview guide outlines the open-ended questions for the interview participants.

#### **2.6.1.1 Preliminary Sources of Data Expected.**

The data sources for the qualitative inquiry study included responses from interview participants, scholarly and practitioner articles relevant to the project study question, and online data sources such as the Standish Group and the Independent Project Analysis forum. The primary data source was the interview response. The interview data was collected from 10 participants in 45- 60-minute Zoom sessions each. The semi-structured interview sessions were recorded with an audio transcript function that was turned on to translate the audio recording to text in real time. Participants were notified in advance that the semi-structured interview would be recorded. The audio and transcript ensured the accuracy of the data being collected. The transcripts were coded as part of the thematic analysis process. The secondary data came from search keywords identifying the scholarly literature, practitioner articles, and terms noted in

section 2.2.2. Search Strategy section, see Table 1. The tertiary data sources are selected because they provide independent research on project failure causes and statistics. The data sources will be used to compare practitioner responses to IT industry empirical research.

The open-ended questions are designed to query the perspectives of U.S. IT leaders about the effectiveness of adaptive agile technology implementation success. The open-ended interview questions are formulated based on the proposed success factors framework using the applied framework to illustrate knowledge of the business problem and gap in practice. The open-ended questions incorporate the components of the applied framework, the exchange of ideas, solution validation, and the formulation scheme. The open-ended questions allow participants to respond in their own words instead of pre-determined multiple-choice responses.

#### **2.6.1.2 Instrumentation and Data Collection Tools.**

The instrument and data collection tool for this qualitative inquiry was the interview method, by which participants were asked a series of open-ended questions that aligned with the success factors applied to the framework. The open-ended questions are categorized into four groups: COBIT and IT governance, organization and leadership, solution implementation methodology, and success factors framework. The open-ended questions were structured without bias, allowing participants to provide their perceptions regarding the open-ended questions.

The COBIT and IT Governance open-ended questions sought the perspective of the IT organization's maturity and adoption of the IT governance framework. The feedback was used to gauge the understanding and willingness to incorporate the success factors. The organization and leadership open-ended questions provided the perspective on IT leadership's position, leadership style, and perspective on the IT value chain. The data from the participant's perspective was

classified by the gaps in practice. The solution implementation methodology open-ended questions identified the perception of the impact of predictive vs. adaptive project management methods. The open-ended questions provided insight into perceived influencers that cause technology implementation to fail. The success factor open-ended questions provided an overview of the framework and understanding of the perceived applicability and determined if there is consensus amongst interview participants.

### **2.6.2 Data Collection**

The study technique for this capstone project was a qualitative inquiry, which used an interview method to conduct semi-structured interviews. The data came from interviews with participants. The participants were asked a series of semi-structured interview questions as outlined in the interview guide. The interview requests were sent to LinkedIn members who have previously accepted or requested a LinkedIn connection. The interview respondents were asked to participate in the semi-structured interview. Screening and identification of qualified candidates are:

1. Information Technology Professional Qualification
  1. Minimum bachelor's degree in an information technology-related field.
  2. Minimum of ten years in an information technology-related field.
2. Position Qualification
  1. Chief information technology officer.
  2. Chief financial officer – IT oversight.
  3. Director of information technology.
3. Solution Qualification



1. Ten years of SAP experience.
4. Methodology Qualification
  1. Experience working on a waterfall project.
  2. Experience working on an agile project.
  3. Knowledge or experience with a hybrid methodology approach.

The steps for data collection are in Table 2. The steps for data collection will involve an initial qualification interview and a follow-up semi-structured interview.

**Table 2**

*Data collection steps*

Steps	Description
Step 1	Send the qualification interview request.
Step 2	Receive qualification interview requests.
Step 3	Review and log responses.
Step 4	Select participants for the semi-structured interview.
Step 5	Send interview disclosure statement acknowledgment.
Step 6	Receive interview disclosure statement acknowledgment.
Step 7	Follow up and schedule a semi-structured interview.
Step 8	Conduct semi-structured interviews.
Step 9	Document interview responses.
Step 10	Send the interview transcript back to the respondent for verification.
Step 11	Receive interview transcript response verification.
Step 12	Conduct thematic data analysis.
Step 13	Assess data results.
Step 14	Document findings.

Note. *Steps necessary for data collection*

### **2.6.3 Data Analysis Plan and Presentation**

The thematic analysis for the qualitative inquiry study used the Clarke and Braun (2013), six-step data analysis method. The coding method was used to identify categories and themes in the data collected from the semi-structured interviews. Coding ensured that there was a reliable

and repeatable procedure for analyzing the data for each of the interview questions. The coding process included multiple data reviews using inductive and deductive theory methods. The deductive theory method was only used to compare inductive analysis as the purpose is to formulate a theme from the data collected (Williams & Moser, 2019).

Williams and Moser (2019) proposed a coding process that follows a linear approach, which is open coding, axial coding, and selective coding (Williams & Moser, 2019). The first step in this method is to review the participant feedback transcriptions to identify any reoccurring words or short combinations of words that stand out between interviews and add a code name. The code names highlight essential aspects of the transcription text. The open code inspection took multiple iterations to identify all relevant data. The next step in the process was the axial coding. Axial coding categorized the open code into a structured model such as the “Six C’s Model.” The model proposes to group the open codes based on “cause, contexts, contingencies, consequences, covariance, and conditions.” (Williams & Moser, 2019, p. 51). The final level of coding was selective coding, which organizes the axial code into meaningful relationships where a theme starts to materialize. The coding steps further substantiate the validity of the study results. To ensure the accuracy of the thematic analysis, the Clarke and Braun (2013) thematic data analysis method to formulate the data, generate the codes, combine codes into themes, review the themes to determine significant themes, and report the findings (Maguire & Delahunt, 2017). The final deliverable was the thematic statement that aligns the categories and themes derived from the interview participants into a cohesive synopsis (Lochmiller, 2021). The final report included a data collection report (Guest et al., 2012), a weighted alignment chart

(Christopher & de Vries, 2020), and a diversity of option chart (Rouder et al., 2021). The final analysis added to the draft report.

#### **2.6.4 Validity and Reliability/Trustworthiness**

The trustworthiness of the data analysis process in a qualitative inquiry study was fundamental. The study illustrated that the data analysis process had taken precautionary measures to ensure the validity of the results and that steps taken in the data analysis process were repeatable and reliable. Trustworthiness was evident throughout the data analysis: planning, collection, review, coding, categorization, and reporting (Elo et al., 2014). The data analysis timeline for the capstone project is outlined in Table 3.

**Table 3**

#### *Data Analysis Timeline*

Weeks	Data Analysis Phase
2	Open Code Inspection
1	Axial Coding Categorization
1	Selective Coding
1	Report Preparation (Identify Themes)
5	Estimated time to data analysis completion

For the semi-structured interview, an identifier was assigned to each question, i.e., IQ1.1, IQ1.2.

#### **2.6.5 Ethical Considerations**

The ethical consideration of the research study was of the utmost importance. The study required an expert review before submitting to the Institutional Review Board (IRB). The expert review validated the interview guide, the open-ended questions, and the study checklist to ensure

the artifacts were coherent and appropriate for the study. Additionally, a test run was conducted with a Capella University peer. The peer reviewer did not have the prerequisite qualification and was notified in advance that the response would not be included as part of the study.

The research was categorized as minimal risk research. The informed consent form was sent to participants at least 24 hours in advance, describing the informed consent requirement and how to respond to the email that consent has been read, along with a copy of the Capella University IRB-approved informed consent form. The email provided how the participant information would be stored, the consent form, interview audio, transcripts, and how they could request a copy of the interview transcript.

The interview audio recordings, transcripts, notes, and data obtained from the semi-structured interview data were encrypted and stored on an external drive and in a secure safe deposit box, which will be kept for seven years and then permanently destroyed. Interview data did not contain personally identifiable information (PII) about the participants. A coding scheme/identifier was used to name the sessions. Any reference participant's PII data was replaced with a coding scheme/identifier.

## **2.7 Overview of the Project Study Plan**

The estimated study was 16 weeks. The project was submitted for an expert panel review upon completing and approving Section 2: Literature Review and Project Plan, after which changes will be applied. After revisions, the project was submitted to Capella University IRB for review and approval. The research study recruitment phase did not start until IRB approval was given. After the IRB approval, a communication was posted to LinkedIn connections of more two thousand requesting volunteers to participate in the research study. The targeted goal was to

have 10 participants. Selected participants received a confirmation email containing the consent form and instructions for scheduling the semi-structured interview. On completion of the interview, the transcript was sent back to the participant for review and approval on the accuracy of the data, and the participant had five days to confirm; otherwise, the data was deemed accurate. The thematic analysis was estimated to take five weeks. After the thematic analysis, the data was summarized into a final report and submitted to the Capella University review committee and the Dean's approval.

**Table 4**

*Project Timeline*

Phase	Estimated Time (Weeks)	Participants
Expert Review\Pilot	1	Expert Panel
IRB Approval	1	IRB Panel
Recruitment	2	LinkedIn
Participant Consent	1	Interview Participants
Semi-Structured Interviews	2	Researcher
Thematic Analysis	5	Researcher
Final Report	3	Researcher
Capella Committee\Dean Approval	1	Capella University
Estimated time to completion	16	

*Note.* Final project timeline and approval.

## 2.8 Summary and Conclusion

Information technology organizational leaders face challenges in delivering successful IT projects. Despite attempts at best practices and revised IT governance frameworks, technology implementation continues to fail, impacting IT value to an organization's information technology investment (Levstek et al., 2018). Information technology organizations have yet to be able to adopt adaptive agile successfully in their IT governance portfolio (Mersino, 2018). This

qualitative inquiry project sought the perspectives of IT leaders in U.S. information technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate.

## **SECTION 3. RESULTS, DISCUSSION, AND IMPLICATIONS**

### **3.1 Introduction**

This project focuses on gathering the perspectives of information technology leaders from U.S. technology organizations on effective strategies for implementing adaptive agile technologies to address the rate of IT project failures. The rate of IT project failures is a pressing business problem due to increased costs and reduced productivity (Mielli & Bulanda, 2019).

The study participants were asked to respond to the project question (PQ): "What are the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate?" The qualitative semi-structured interview questions were designed based on the study framework's concepts and were aligned with the interview guide's project question for data collection.

### **3.2 Data Collection Results**

A panel of experts from Capella University, Adam Hickman, PhD, Mentor; Annette Craven, PhD, CPA, ACC, Program Committee Member; and Paula Cherry, DBA, School Committee Member, reviewed and approved the interview guide questions before the data collection interviews. This step ensures that the questions are relevant and aligned with the project question, which is crucial for collecting accurate and valuable data.

The recruitment process for the study began only after fulfilling all the requirements of the Institutional Review Board (IRB). An online recruitment notice was posted on LinkedIn, which reached over two thousand professional network connections. Interested participants sent an email indicating their willingness to participate in the study. The eligibility of potential participants was evaluated based on the study's qualification criteria. Those who met the criteria

were then notified of their acceptance through email and were requested to schedule a semi-structured interview. Once the interview time was agreed upon, the participants were sent a copy of the informed consent form through DocuSign. The informed consent form provided information about the study's purpose, what to expect, the qualification criteria, privacy protection, the length of the interview, the interview procedure, and opt-out notification. After receiving the signed informed consent form, the interview was scheduled.

Ten of the 11 individuals who volunteered met the inclusion criteria and were selected to participate in the study. The interviews were conducted virtually through Zoom and were scheduled to last 45-60 minutes. To ensure privacy and confidentiality, participants were informed that their information and replies would not be shared with anyone else. The interview dialogue was kept informal to encourage participation and allow for clarification questions. The aim was to ensure that each participant felt valued and heard throughout the study.

In the introduction phase, the project was briefly presented to the participants who were given the opportunity to ask any questions they had. Following the interviews, the responses were collected, and the participants were thanked for their time. Afterward, the transcripts were sent back to the participants for verification. Once their input was received, the transcripts were uploaded to the assignment section for mentor review.

The participants who took part in this study were selected based on specific criteria to ensure that the information collected was an accurate reflection of the perspectives and opinions of IT leaders in technology organizations across the U.S. All the participants had prior



experience in various information technology positions. The demographic statistics of the participants are in Table 5.

**Table 5**

*Participants Demographics*

Participant	Occupation	Years of Experience
P1	IT Director	20
P2	IT Director	23
P3	Chief Executive Officer	20
P4	Applications Director	15
P5	Chief Information Officer	24
P6	Chief Information Officer	20
P7	IT PMO Director	22
P8	IT Director	19
P9	IT PMO Director	22
P10	IT PMO Director	23

*Note.* The demographic of study participants.

### 3.3 Data Analysis

Thematic analysis and inductive coding were utilized to investigate the data and answer the research question: What are the effective strategies for adaptive agile technology implementations to reduce the IT project failure rate as perceived by IT leaders in U.S. technology organizations?

The initial and final lists of codes were developed to identify the categories. The categories were defined using meaningful descriptions and then arranged into relevant topics. To analyze the data, I followed Clarke and Braun's (2013) six-step data analysis method. As part of the first step, I familiarized myself with the data set by listening to the recordings and re-reading the data multiple times. The initial notes included any analytical ideas. In the second step, I

manually analyzed the initial codes using the inductive analysis method, which was helpful in determining the significance of each term. Counting the frequency of words and phrases during the analysis was crucial to finding potential codes. The analysis identified 40 preliminary codes, but only 24 were directly relevant to the research question. Moving from initial to final codes was the second phase in Clarke and Braun's (2013) six-step analysis process. A set of patterns established throughout the data familiarization phase was the foundation for coding. Table 6 displays the codes extracted from the interviews and participant transcripts, along with their definitions and examples.

**Table 6**

*Code Definitions and Examples*

Codes	Definitions	Examples
Negative	IT governance is not well received by business and IT partners. It is deemed as an unnecessary requirement.	<p>“I feel that sometimes IT governance is perceived negatively.” (P4)</p> <p>“IT governance is all overhead that doesn't add any value.” (P5)</p> <p>“A lack of IT governance and understanding by the organization on what is required for managing IT project.” (P7)</p>
Positive	IT governance is well received and is viewed as valuable to the business organization.	<p>“We do have a governance structure in place based on scenarios, how the information or communication needs to happen from the project team to the PMO.” (P1)</p> <p>“Without IT governance, it would be difficult for any organization to run the business.” (P3)</p>

Codes	Definitions	Examples
Required	IT governance is a requirement and necessary to achieve successful implementation.	<p>“The business views IT governance as a way to ensure is met from the delivery teams.” (P10)</p> <p>“You have to have something that's going to be able to adapt to all of that or be able to accommodate.” (2)</p>
		<p>“Involves having steering committee meetings and keeping the steering committee informed on the status of the project.” (P6)</p>
		<p>“I think leadership may want to reduce it. but they are not able to reduce it because compliance is needed.” (P8)</p>
Key Performance Indicators	Key performance indicators are used to measure the effectiveness of IT governance.	<p>“What tools and metrics the main tools were our instructions.” (P2)</p>
		<p>“Step number one which is, go look at the last couple of times we did this process, and see if we can improve anything.” (P5)</p>
		<p>“What's the burn rate with the consultants and everybody working on the project, you know, is it?” (P6)</p>
Maturity	Measure the maturity of the IT organization's Project Management Office.	<p>“From it, governance point of view. I will say we have a governing body.” (P1)</p>
		<p>“We had a global conference where we bring all the IT people together in one room as close as we could come to that.” (P5)</p>

Codes	Definitions	Examples
		<p>“Organizations have a change control board that reviews and approves a particular change before it's deployed to production.” (P7)</p>
Project Management Office	The organization has a structured project management office that is responsible for IT governance.	<p>“We do have a structural way of monitoring those things.” (P1)</p> <p>“I typically like to have a steering committee meeting once a month, and then as we get towards doing our user acceptance, testing and getting ready for go live.” (P6)</p>
Communication	Communication management is an essential activity for successful technology implementation.	<p>“Processes are in place to move to fastest approval of the work.” (8)</p> <p>“How is that information getting escalated to the next level?” (P1)</p> <p>“Making sure that you have buy-in from the stakeholders” (P4)</p> <p>“Business leaders that think they need a modification need to communicate to me and explain to me why they need the modification.” (P6)</p>
Testing	The testing strategy is an essential activity for successful technology implementation.	<p>“That's an indication to me that there's something wrong.” (P7)</p> <p>“Governance is at a very, very high level. I mean, different my needs, you know, compliance is the need or the audit.” (P8)</p> <p>“Those that strategy then defines the goals that are then cascaded down.” (P10)</p>

Codes	Definitions	Examples
Cutover	Cutover planning is an essential activity for successful technology implementation.	<p>“From the initiation to the close of that incident. (P1)</p> <p>“The final acceptance is the main point. (P2)</p> <p>“Most effective because we automated stuff and made people's lives easier.” (P5)</p>
Organization	IT is a strategic partner in the organization's goals and is viewed as delivering value to achieve them.	<p>“The business goals align with corporate objectives.” (P5)</p> <p>“The business invests in the infrastructure in support of the organization's goals.” (P7)</p> <p>“The IT objectives have to align to business goals.” (P8)</p>
Support	IT is viewed as a support organization that keeps the lights on.	<p>“A lot of variables and a lot of safety that it becomes heightened at that stage.” (P2)</p> <p>“Have a plan and know what goals you are trying to achieve in support of the organization.” (6)</p> <p>“Customers purchase a subscription, and then they transfer all the risk and the cost of managing the infrastructure to support.” (P7)</p>
Alignment	The business and IT are aligned with the overall strategic goals and viewed as providing cost savings to the organization.	<p>“In our organization, the CIO reports to the CFO. And internally, the CFO reports to the CEO.” (P1)</p> <p>“Leadership participates in the organization strategy planning.” (P5)</p>

Codes	Definitions	Examples
IT Value	IT provides value to the organization, and it contributes to its profitability.	“The CIO reports directly to the CEO.” (P6)
		“The CIO works closely with the CEO to see what is short-term and what are long-term goals for the company.” (P4)
		“They look to technology to help with automation and achieve some of these fix fishes that helped their bottom line.” (P7)
Cost of Doing Business	IT is viewed as a necessity and not a strategic partner	“I’m not sure the company looks at IT as a value, but certainly adds value.” (P9)
		“It was always perceived as a cost of doing business.” (P5)
		“We need technology to support our operation.” (P7)
Strategic Partner	IT is a strategic partner and key to the organization's success. The CIO reports to the CFO and not the CEO.	“I think they look at us more as a cost of doing business.” (P9)
		“In our organization, the CIO reports to the CFO. and internally, the CFO reports to the CEO.” (P1)
		“The CIO works closely with the CEO to see what is short-term and what are long-term goals for the company.” (P4)
Waterfall	The waterfall model is a project management approach that involves deconstructing into project activities into sequential phases. In this	“IT Leadership participates in the organization's strategy planning.” (P5)
		“We used to follow the waterfall in the past as the regular norm; now it’s more agile.” (P1)

Codes	Definitions	Examples
	approach, each phase depends on the deliverables of the previous phase and corresponds to a specialization of tasks. This method is commonly used in certain areas of engineering design.	<p>“We use waterfall methodology for implementing major projects, and you know nobody wants to follow it, and it doesn't work well.” (P6)</p> <p>“Usually, we follow a more traditional waterfall approach.” (P7)</p>
Agile	Agile methodology is a collaborative project management process that involves working in iterations	<p>“We are following more of an agile methodology.” (P4)</p> <p>“We're now overwhelmingly an agile shop.” (P9)</p> <p>“Agile is a loosely defined term. Right? I can say I'm using agile because in my global implementation.” (P10)</p>
Hybrid	A System development lifecycle methodology that incorporates waterfall and agile practices for technology implementations.	<p>“Definitely a modified waterfall.” (P5)</p> <p>“I would prefer that a modified methodology, and be flexible on the implementation.” (P6)</p> <p>“Usually requirements follow a more traditional waterfall approach, and then the execution part of the project leverages incremental sprints.” (P7)</p>
Failure	The project did not meet stakeholder expectations and did not meet the triple constraints of time, cost, and scope.	<p>“No, it was not, and that was because they didn't install the rest of the installation that they were supposed to.” (P2)</p> <p>“Each of them had their own project plans and their assumptions on who was doing</p>

Codes	Definitions	Examples
		<p>what? But they were all working in silos, and not communicating to each other.” (P6)</p> <p>“This projects in the Dumpster. It’s on fire. It’s not going to succeed.” (P7)</p>
Successful	The project stakeholder expectations and met the triple constraints, time, cost, and scope.	<p>“Full-fledged implementation of S/4HANA. It was a team of 18 people, and we successfully implemented that module.” (P3)</p> <p>“The call center was brought in-house lots of help from different vendors, and it was pretty successful.” (P4)</p>
Moderate	Delivered on two of three of the triple constraints.	<p>“The project was very successful because I knew what to do and how to fix it.” (P6)</p> <p>“It made everybody uncomfortable to meet a date versus having quality. However, it was the right thing to do in the business wanted.” (P5)</p> <p>“But by any measure, this was not a of the triple constraint. This was not a successful project.” (P7)</p> <p>“The business objective was met, but the timeline was missed.” (P8)</p>
Agree	Agreed that the success factors framework was completed and decided that implementing the framework as part of IT governance would improve the overall success rate.	<p>“I agree with all the points.” (P3)</p> <p>“This is really good.” (P4)</p> <p>“I would definitely agree with that.” (P7)</p>



Codes	Definitions	Examples
Disagree	Does not agree with the success factors and that any adjustment to the framework would add to a successful technology implementation.	<p>“I think these are the standard, you know. I think I do see almost like 80%”. (P1)</p> <p>“Obviously, the implication of cutover again part of the which is a part communication process. (P2)</p> <p>“I feel that there has to be baseline implementation to support an adaptive approach.” (P8)</p>
Change	Recommended or suggested changes and or additions to the success factors framework	<p>“Business alignment should be number one. Your idea in the middle of a specific business problem.” (P5)</p> <p>“I would add integration strategy at least at a high level.” (P7)</p> <p>“Change management could be its own box where you outlined those steps.” (P10)</p>

*Note.* The code definitions were extracted from the participant response.

After reviewing the codes, definitions, and participation responses, I analyzed the data to group similar codes together, as shown in Table 7. I identified six different categories and assigned corresponding codes to each category. These categories highlight the examples provided by the participants that were used to formulate themes based on their opinions. The categories that were derived from the data analysis highlight different themes and perspectives.

**Table 7**

*Code Category*

Category	Codes	Definition
IT Governance	Performance, Measurement, Maturity, Project Management	Organizations that implement IT governance to mitigate risk are typically more mature. These IT departments, with the help of their internal project management office and business centers of excellence, track key performance indicators to gauge the effectiveness of their operations.
The Exchange of Ideas	Communication, Alignment, Support, Collaboration	Communication is the foundation of progress. It is an indispensable tool for exchanging ideas, building relationships, and achieving success. Effective communication is critical to growth and development, whether you are an individual, a business, a partner, or an organization. By leveraging the power of communication, you can share your thoughts and ideas, work together with others, and achieve the organization's goals.
Organization Leadership	Organization, Value, Strategic Partner,	The significance of Information Technology (IT) in an organization becomes evident when IT is regarded as a strategic partner and participates in its overall strategic plan. Many organizations utilize IT to distinguish themselves in the market and decrease operational costs by enhancing efficiency.

Category	Codes	Definition
Implementation Methodology	Waterfall, Agile, Hybrid, Adaptive, Methods	Several methods exist for implementing information technology, and organizations choose their preferred methods, such as waterfall, agile, or hybrid. Adaptive organizations transition from a prescriptive linear approach to a more flexible approach.
Solution Validation	Testing, Cutover, Stakeholders	Transitioning from a legacy solution to a new one can be complex, with many technical and business-related factors to consider. One of the most important steps in this process is thorough testing to ensure a successful cutover. This involves technical preparations, such as ensuring all systems are compatible and integrated properly, and business readiness, which includes ensuring that all stakeholders are adequately trained and prepared for the change.
Adaptive	Required, Cost, Change	The organization strongly believes in the importance of adaptability in managing risks and costs and, therefore, actively embraces change. To ensure that it meets the expectations of its stakeholders, it employs agile methodologies, which enable it to deliver faster and with greater efficiency. By doing so, it can stay ahead of the competition while

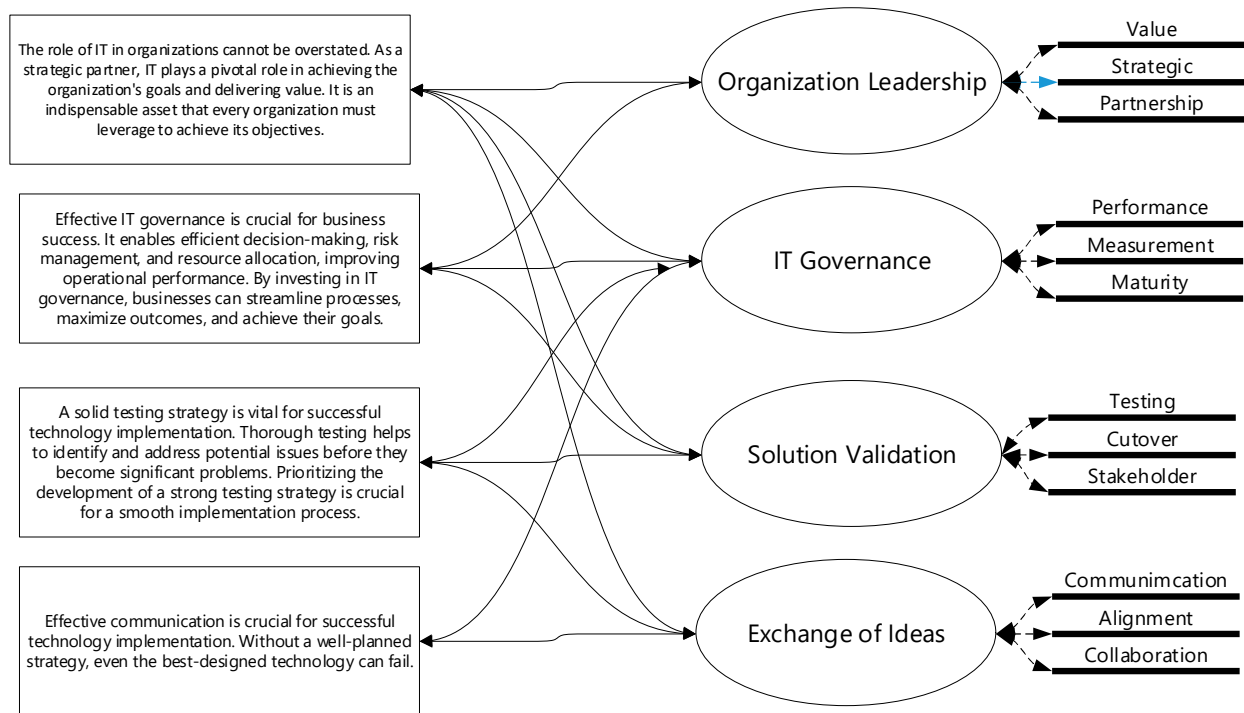
Category	Codes	Definition
		maintaining high levels of customer satisfaction.

*Note.* The data analysis codes are categorized and used to identify the themes

By developing category codes and conducting a thorough thematic analysis, I identified patterns aligned with the capstone project question from the participants' perspectives. Four primary themes emerged: organization and leadership, IT governance, solution validation, and the exchange of ideas, as illustrated in Figure 2. The thematic analysis highlights the importance of understanding participants' perspectives and provides valuable insights for future studies.

**Figure 2**

*Primary Themes*



The themes were identified by analyzing and categorizing the data based on the participants' feedback and perspectives. Figure 2 presents a summary of the themes that fall under different categories. For a more detailed analysis of each theme and relevant quotes from the participants, refer to Tables 8 to 11.

### 3.3.1 Theme 1 Organization and Leadership

Theme 1 highlights the crucial role of IT in organizations, which cannot be overstated. IT is an essential strategic asset that every organization must utilize to achieve its objectives. This theme was identified by comparing responses to discover trends among participants. The

categories of value, strategy, and partnership were used to develop this theme. Table 8 displays theme one and a sample of participant responses.

**Table 8**

*Organization and Leadership*

Theme 1	Participant Response
The role of IT in organizations cannot be overstated. As a strategic partner, IT plays a pivotal role in achieving the organization's goals and delivering value. It is an indispensable asset that every organization must leverage to achieve its objectives.	"The business goals align with corporate objectives." (P5)
	"The business invests in the infrastructure in support of the organization's goals." (P7)
	"The IT objectives have to align to business goals." (P8)

*Note.* Theme 1 aligns with participant responses.

The role of IT in organizations cannot be overstated. As a strategic partner, IT is pivotal in achieving the organization's goals and delivering value. It is an indispensable asset that every organization must leverage to accomplish its objectives. IT should be viewed as a strategic partner that provides value in achieving the organization's goals. Participants share the same perspective on IT and business alignment; "business goals align with corporate objectives" (P5), "the business invests in the infrastructure in support of the organization's goals" (P7), and "the IT objectives have to align with business goals" (P8).

While IT may be seen as a support organization, it plays a vital role in keeping the business running. Without a strong IT team, operations can halt, causing significant delays and losses. So, it's crucial to recognize the value of IT and invest in the right people and resources to ensure that business runs seamlessly. However, IT is often viewed as a support organization that keeps the lights on. When business and IT align with the organization's strategic objectives, they

can collaborate to provide cost savings and promote growth. This alignment is key to achieving success and should be a top priority for any organization. The business and IT must be aligned with the overall strategic goals and viewed as providing cost savings to the organization.

Participants also align on the organization reporting structure: "In our organization, the CIO reports to the CFO. And internally, the CFO reports to the CEO" (P1), "Leadership participates in the organization strategy planning" (P5), and "the CIO reports directly to the CEO" (P6), "the CIO works closely with the CEO to see what is short-term and what are long-term goals for the company" (P4), "they look to technology to help with automation and achieve some of these opportunities that helped their bottom line" (P7), and "I'm not sure the company looks at IT as a value, but certainly adds value" (P9). Additionally, participants agree that Information Technology is crucial to any successful organization. By leveraging the power of IT, businesses can unlock new levels of efficiency, productivity, and profitability. From streamlining processes to optimizing workflows, IT provides immense value that cannot be ignored. With its ability to empower businesses to compete in an increasingly digital landscape, it's clear that IT should be a top priority for any organization looking to thrive in today's market. IT provides value to the organization and contributes to its profitability.

### **3.3.2 Theme 2 IT Governance**

Theme 2 highlights that effective IT governance is crucial for business success. It enables efficient decision-making, risk management, and resource allocation, improving operational performance. By investing in IT governance, businesses can streamline processes, maximize outcomes, and achieve their goals. This theme was identified by comparing responses to discover

trends among participants. Performance, measurement, and maturity categories were used to develop this theme. Table 9 displays theme one and a sample of participant responses.

**Table 9**

*IT Governance*

Theme 2	Participant Response
Effective IT governance is crucial for business success. It enables efficient decision-making, risk management, and resource allocation, improving operational performance. By investing in IT governance, businesses can streamline processes, maximize outcomes, and achieve their goals.	“We do have a governance structure in place based on scenarios, how the information or communication needs to happen from the project team to the PMO.” (P1)
	“Without IT governance, it would be difficult for any organization to run the business.” (P3)
	“The business views IT governance as a way to ensure value is met from the delivery teams.” (P10)

*Note.* Theme 2 aligns with participant responses.

Effective IT governance is essential for any organization's success, ensuring business and IT partners work together to achieve common goals. Failing to implement IT governance can result in poor decision-making, increased risk, and decreased productivity. Therefore, it's vital to establish a robust IT governance framework that aligns with the organization's vision and mission. However, IT governance is not always well-received by businesses and IT partners who see it as unnecessary. One participant said, "I feel that sometimes IT governance is perceived negatively" (P4). Another participant said, "IT governance is all overhead that doesn't add value" (P5), another said, “A lack of IT governance and understanding from the organization on what is required for managing IT projects is a common complaint” (P7).

Effective IT governance is a crucial factor that significantly impacts business organizations' success, providing a framework for efficient decision-making, risk management,



and resource allocation, enhancing operational performance. Therefore, it's highly valued and considered a key component that helps achieve business objectives. IT governance is well-received and viewed as valuable to business organizations. As one participant stated, "We do have a governance structure in place based on scenarios, how the information or communication needs to happen from the project team to the PMO" (P1). Another participant said, "Without IT governance, it would be difficult for any organization to run the business" (P3). Another said, "The business views IT governance as ensuring delivery teams meet their objectives" (P10).

In today's digital age, effective IT governance is not merely an option but a prerequisite for successful technology implementation. Without a structured approach to IT governance, businesses risk facing challenges such as data breaches, system downtime, and project failure. Therefore, companies must prioritize IT governance to ensure they operate efficiently and securely. IT governance is a requirement and necessary to achieve successful implementation. One participant said, "You have to have something that's going to be able to adapt to all of that or be able to accommodate" (P2). Another said that "having steering committee meetings and keeping the steering committee informed of the project's status is a way to implement IT governance" (P6). A third participant said, "While leadership may want to reduce IT governance, compliance is needed" (P8).

Measuring IT governance's effectiveness is important to ensure the business meets its goals and objectives. Key Performance Indicators (KPIs) are powerful tools that can help evaluate performance and identify areas for improvement. By tracking KPIs, businesses can gain valuable insights into their IT processes and make data-driven decisions that help optimize operations and drive success. Key performance indicators are used to measure the effectiveness

of IT governance. As one participant said, "What tools and metrics the main tools were our instructions" (P2). Another participant suggested looking at past processes to improve performance (P5). A third said "Measuring burn rate and consultants' cost are essential KPIs to track" (P6).

Measuring the maturity of the Project Management Office is a crucial step in elevating an IT organization's success. It helps identify areas of improvement and optimizes project management processes. Measuring the maturity of the IT organization's Project Management Office is essential. Additionally, one participant said, "From an IT governance point of view, I will say we have a governing body" (P1). Another participant mentioned "A global conference that brought all IT people together" (P5). A third said, "Organizations must have a change control board that reviews and approves a particular change before deploying it to production" (P7).

### **3.3.3 Theme 3 Solution Validation**

Theme 3 highlights that A solid testing strategy is vital for successful technology implementation. Thorough testing helps to identify and address potential issues before they become significant problems. Prioritizing the development of a robust testing strategy is crucial for a smooth implementation process. This theme was identified by comparing responses to discover trends among participants. Testing, cutover, and stakeholder categories were used to develop this theme. Table 10 displays theme one and a sample of participant responses.

**Table 10**

*Solution Validation*

Theme 3	Participant Response
A solid testing strategy is vital for successful technology implementation. Thorough testing helps to identify and address potential issues before they become significant problems. Prioritizing the development of a robust testing strategy is crucial for a smooth implementation process.	“That's an indication to me that there's something wrong.” (P7)
	“Governance is at a very, very high level. I mean, different me needs, you know, compliance is the need or the audit.” (P8)
	“Those that strategy then defines the goals that are then cascaded down.” (P10)
	“From the initiation to the close of that incident. (P1)
	“The final acceptance is the main point. (P2)
	“Most effective because we automated stuff and made people's lives easier.” (P5)

*Note.* Theme 3 aligns with participant responses.

A well-planned testing strategy is crucial to ensure the success of technology implementation. Thorough technology testing is necessary to identify and address potential issues before they cause significant problems. Therefore, it is crucial to prioritize the development of a robust testing strategy to ensure a smooth and seamless implementation process. One participant responded, “Issues in testing is an indication to me that there's something wrong” (P7). Another participant said, “Governance in testing is needed for compliance or the audit” (P8). A third participant added “We need a test strategy that defines the test goals that are then cascaded down” (P10).

Planning for cutover is also essential in the successful implementation of any technology. Without proper planning, the chances of encountering unforeseen obstacles and issues during the implementation process increase significantly. Therefore, it is imperative to prioritize cutover planning to ensure a seamless and hassle-free technology implementation experience. One

participant said, “From the initiation to the close of that incident” (P1). Another participant added, “The final acceptance is the main point” (P2). A third participant stated, “Most effective because we automated stuff and made people's lives easier” (P5).

When asked how successful your last project was, one participant said “The project fell short of stakeholders' expectations, failed to meet important deadlines, went over budget, and did not fully deliver on all the scope requirements” (P1). To address the specific business problem, IT leaders must take immediate action to learn from the mistakes and make strategic adjustments to ensure future success. Another participant said, “No, it was not successful, and that was because they didn't install the rest of the installation that they were supposed to” (P2). Another participant added, “Each of them had their project plans and their assumptions on who was doing what? But they were all working in silos and not communicating to each other” (P6). A third participant stated, “This project's in the Dumpster. It's on fire. It's not going to succeed” (P7).

The successful completion of a project is a testament to its ability to exceed stakeholder expectations while effectively managing the triple constraints of time, cost, and scope. The project team's dedication and expertise are evident in their ability to deliver a high-quality product that meets all project requirements. This success results from the team's unwavering commitment to excellence and meticulous attention to detail. Examples of successful technology implementations as one participant said, “Full-fledged implementation of S/4hANA. It was a team of 18 people, and we successfully implemented that module” (P3). Another participant added, “The call center was brought in-house with lots of help from different vendors, and it was pretty successful” (P4). A third participant stated, “The project was very successful because I knew what to do and how to fix it” (P6).

A successful technology implementation is often in the eyes of the beholder; projects are deemed successful when they fulfill two out of the three triple constraints. The project delivered on two of the three triple constraints. One participant said, “It made everybody uncomfortable to meet a date versus having quality. However, it was the right thing to do” (P5). Another participant stated, “But by any measure, this was not a of the triple constraint. This was not a successful project” (P7). A third participant added, “The business objective was met, but the timeline was missed” (P8).

### 3.3.4 Theme 4 Communication

Theme 4 highlights that effective communication is paramount for successful technology implementation. Without a well-planned communication strategy, even the best-designed technology can fail. This theme was identified by comparing responses to discover trends among participants. Communication, alignment, and collaboration categories were used to develop this theme. Table 11 displays theme 4 and a sample of participant responses.

**Table 11**

#### *Exchange of Ideas*

Theme 4	Participant Response
Effective communication is paramount for successful technology implementation. Without a well-planned communication strategy, even the best-designed technology can fail.	“How does information get escalated to the next level?” (P1)
	“Making sure that you have buy-in from the stakeholders” (P4)
	“Business leaders that think they need a modification need to communicate and explain why they need the modification.” (P6)

*Note.* Theme 4 aligns with participant responses.

Effective communication management is a crucial component of any technology implementation that aims to achieve success. Even the most well-designed technology can fail to deliver the desired results without a well-planned and executed communication strategy.

During the discussion on technology implementation, some participants emphasized the importance of having a clear communication strategy. One participant asked, "How does information get escalated to the next level" (P1). Another stressed "the need for stakeholder buy-in" (P4). A participant commented that "Business leaders who think they need a modification should explain why they need it" (P6).

### **3.4 Contribution to Theory, the Literature, and the Practitioner Knowledge Base**

This qualitative inquiry project directly addresses the concerns of IT leaders in U.S. technology organizations. The project aims to gather their insights on effective strategies for adaptive agile technology implementations, and reduce the IT project failure rate.

#### **3.4.1 Theme 1 Organization and Leadership**

IT is crucial in achieving organizational goals and delivering value. Thompson's interdependence theory emphasizes the importance of IT as a strategic partner. Chau et al.'s research highlights the need for alignment between IT and business governance. Incorporating adaptive agile methodology in IT governance improves technology implementation success. Practitioners should leverage IT to achieve organizational objectives.

##### **3.4.1.1 Contribution to Theory**

The organization and leadership theme underscores the pivotal role of IT in organizations. As a strategic partner, IT is crucial in achieving the organization's goals and delivering value. The theme highlights that IT is an indispensable asset that every organization

must leverage to achieve its objectives. This theme aligns with Thompson's interdependence theory, which identifies the behavior and interactions within an organization's structure (Thompson et al., 2017).

#### **3.4.1.2 Contribution to Literature**

The literature review for this study discovers the theories and methods that have guided the evolution of computer science and system development frameworks. The theme aligns with Chau et al.'s research, outlining the importance of business and IT governance alignment and the perception business leaders have of the effectiveness of the IT governance framework on organizational strategies (Chau et al., 2020).

#### **3.4.1.3 Contribution to Practitioner Knowledge Base**

The organization and leadership theme of the project has highlighted the vital role that IT plays in achieving an organization's goals and delivering value. As a strategic partner, IT is an indispensable asset every organization must leverage to achieve its objectives. The project's findings have shown that incorporating adaptive agile methodology in IT governance is crucial for an organization to improve the success of technology implementations. One participant commented, "The IT objectives must align with business goals". These insights can provide valuable guidance to practitioners, emphasizing the significance of IT as a strategic partner in achieving organizational goals.

#### **3.4.2 Theme 2 IT Governance**

IT governance is crucial for business success. It facilitates efficient decision-making, risk management, and resource allocation. Alignment between organizational and IT governance is

key for optimal benefits. An enhanced IT governance framework is needed. Investing in IT governance can lead to improved operational performance and organizational strategies.

#### **3.4.2.1 Contribution to Theory**

The theme of IT governance is particularly relevant to IT leaders, as it emphasizes the significant benefits that effective IT governance can bring to business success. IT governance can facilitate efficient decision-making, risk management, and resource allocation, thereby enhancing operational performance. This aligns with research by Levstek et al. (2022), which highlights the importance of understanding the benefits of alignment between organizational and IT governance and their impact on business performance, both directly and indirectly. The IT governance theme also contributes to Thompson et al. (2017) interdependence theory, which suggests that organizations work independently while contributing to an overall strategy. In this context, the IT governance theme explains how the interdependencies of project communication, testing, and implementation planning interlink in adaptive agile technology implementation and how they are applied to IT governance.

#### **3.4.2.2 Contribution to Literature**

The IT governance theme aligns with research by Levstek et al. and the value of having an enhanced IT governance framework (Levstek et al., 2022). Moreover, effective IT governance is crucial for business success. The theme aligns with the participant's response where IT enables efficient decision-making, risk management, and resource allocation, improving operational performance. By investing in IT governance, businesses can streamline processes, maximize outcomes, and achieve their goals. This theme highlights the importance of business and IT governance alignment, and the perception business leaders have of the effectiveness of the IT



governance framework on organizational strategies. The review also reveals the need for an enhanced IT governance framework. A review of the history of system development methodologies highlights the need to make technology implementations more efficient. The theme also identifies that many companies have traded the predictive project management (waterfall) methods for the adaptive (agile) project methodology.

#### **3.4.2.3 Contribution to Practitioner Knowledge Base**

The IT governance theme underscores the critical role of effective IT governance in business success. The findings of this research provide practitioners with concrete evidence that investing in IT governance can lead to improved operational performance. The theme supports that IT governance can streamline processes, maximize outcomes, and help businesses achieve their goals. As (P10) succinctly stated, “The business views IT governance as a way to ensure value is met from the delivery teams”.

#### **3.4.3 Theme 3 Solution Validation**

Solution validation emphasizes the need for a solid testing strategy to ensure successful technology implementation. A well-developed testing strategy is crucial for identifying potential issues early on. Collaboration is essential for successful implementation.

##### **3.4.3.1 Contribution to Theory**

The theme of solution validation emphasizes the importance of having a solid testing strategy for successful technology implementation. Proper testing helps to identify and address potential issues before they become significant problems. IT leaders agree on the need for a well-developed solution validation strategy to ensure a smooth implementation process.

This theme aligns with the research done by Dhatchanamoorthi and Kamaraj (2020) on the significance of having a well-planned test strategy to identify issues early on and the importance of prioritizing testing in the SDLC. The validating solutions theme contributes to Thompson et al. (2017) interdependence theory, which emphasizes the importance of organizations working towards an overarching strategy, a portfolio of objectives, and common organizational goals. To achieve these goals, it is essential to collaborate and validate solutions for successful technology implementation.

#### **3.4.3.2 Contribution to Literature**

The solution validation theme aligns with the research, whereas technology implementations continue to fail (Koutsikouri et al., 2020), and the problem of failed technology implementations continues to persist very high. A solid testing strategy is vital for successful technology implementation. Thorough testing helps to identify and address potential issues before they become significant problems. Prioritizing the development of a robust testing strategy is crucial for a smooth implementation process. A comprehensive evaluation of the Control Objectives for Information and Related Technologies underscores the importance of aligning adaptive agile and solution validations. Research by Plowman and Diffendal (2020) also aligns with the significance of communication and solution validation. This alignment helps bridge the gap between technical problems and business risk Plowman, C., & Diffendal, J. (2020). The review explores organizational culture, leadership theory, stakeholder assessment, and the IT value chain to substantiate this gap further.

#### **3.4.3.3 Contribution to Practitioner Knowledge Base**

The solution validation theme analysis provides practitioners with an understanding of the importance of having a thorough solution validation strategy, which leads to successful technology implementation. Testing helps to identify and address potential issues before they become significant problems. (P7) commented, “That's an indication to me that there's something wrong”. Prioritizing the development of a robust testing strategy is crucial for a smooth implementation process.

#### **3.4.4 Theme 4 Communication**

Effective communication is vital for successful technology implementation. Open communication helps practitioners gain insight into better IT governance. The theme identifies strategies for adaptive agile technology to improve IT governance, reduce costs, and align leadership and organizational goals.

##### **3.4.4.1 Contribution to Theory**

The communication theme postulates that effective communication is paramount for successful technology implementation. Without a well-planned communication strategy, even the best-designed technology can fail. The theme highlights the value of an effective communication plan, which should determine the appropriate media channels for sharing information, such as email, in-person meetings, blog posts, or internet forums. It should also specify the frequency and format of communication and the intended recipients for different types of information (Plowman & Diffendal, 2020).

##### **3.4.4.2 Contribution to Literature**

The theme underscores the need for effective communication, a critical element for successful technology implementation. Without a well-planned communication strategy, even

the most well-designed technology can falter. Effective communication is the key to successful technology implementation. It is not enough to have a well-designed technology; without a well-planned communication strategy, its success is uncertain. The theme contributes to Plowman and Diffendal (2020) research by emphasizing the need to prioritize communication planning to ensure that the technology is fully utilized and its benefits are maximized.

#### **3.4.4.3 Contribution to Practitioner Knowledge Base**

The communication theme reveals the need for effective communication and exchanging ideas in technology implementations. Open communication helps practitioners gain knowledge for better visibility of stakeholder involvement and IT governance. (P4) stated, “Making sure that you have buy-in from the stakeholders”.

### **3.5 Project Application and Recommendations**

This project aimed to gather insights from IT leaders in technology organizations across the U.S. about effective strategies for implementing adaptive agile technology. The main goal of this project was to reduce the high rate of IT project failures. As an experienced information technology professional and project manager, I intend to share my findings with other technology leaders to help them leverage adaptive agile and improve IT governance. This will, in turn, enhance the success rate of technology implementations while reducing costs.

As part of my responsibilities, I will collaborate closely with technology leaders to identify and implement effective IT governance strategies that enable organizations to achieve their objectives. One such strategy will be solution validation, which ensures that all proposed solutions align with the organization's goals and objectives.

In order to ensure that the leadership and organizational goals are aligned, I will engage in regular discussions and brainstorming sessions. I will exchange ideas and knowledge to develop a comprehensive IT governance framework that meets the needs of the organization.

To measure the success of the project, I will use a success factors framework that analyzes how the project contributes to project management disciplines and successful technology implementations. The framework will take into account various factors such as project planning, execution, monitoring and controlling, and stakeholder management. By using this framework, I can ensure that the project delivers the expected results and benefits to the organization are met.

The findings are based on a sample size of 10 participants from U.S. Information Technology leaders with common perspectives that further support the findings. The project's findings are relevant to IT organizations, project management practitioners, and recommendations for improving IT governance.

### **3.6 Conclusion**

This qualitative inquiry project explores the perspectives of IT leaders in U.S. technology organizations regarding effective strategies for adaptive agile technology implementations to reduce the IT project failure rate.

This project is needed because IT organizations lack an understanding of agile principles. While organizations are moving towards an agile framework for IT project delivery, there remains a high rate of IT project delivery failures. The success rate of agile and waterfall projects can improve by adopting an IT governance approach to manage adaptive agile for technology implementations.

After conducting interviews with IT leaders in the US, I was privileged to gain their invaluable perspectives. These perspectives formed the basis of four key themes, each one a testament to the depth of their insights. The themes are: IT plays a pivotal role in achieving the organization's goals and delivering value; IT governance enables efficient decision-making, risk management, and resource allocation, improving operational performance; Thorough testing helps to identify and address potential issues before they become significant problems; Without a well-planned communication strategy, even the best-designed technology can fail.

The purpose of conducting interviews was to gather insights from 10 individuals in leadership positions within the information technology field. The aim was to understand how their organization perceives IT governance, the value of IT, the organization's maturity level, and the strategic partnership between IT and the business.

I was able to determine common perspectives among ten participants and identify where they have succeeded in implementing IT governance by creating an interview guide. The project aimed to validate the perceived success factors for adaptive agile technology implementations and identify areas for improvement. As a doctoral learner and researcher with specialization in Information Technology Management, I have conducted an extensive analysis of scholarly literature and journals to identify the reasons behind the failure of IT projects led by IT organizations. Based on my research, I have developed a framework of success factors that can help address this issue. The data collected from my thematic analysis provides strong evidence to support the implementation of improved IT governance as a measure to enhance the overall success rate of technology implementation. The analysis found that IT leaders in supportive organizations are seen as strategic partners and valuable assets in achieving organizational goals.

Additionally, mature IT organizations promote effective collaboration through exchanging ideas and are most effective in an adaptive agile environment.

Based on the qualitative analysis of the interview participants, it was found that adopting adaptive agile principles into an organization's IT governance framework results in many benefits. The data from the participant interviews indicate that IT leaders recognize the significance of aligning IT governance with their organization's strategic objectives. However, as per the feedback from some participants, additional success factors are needed to enhance technology implementation success rates.

The objective of this project is to address the gaps in the current industry practices and provide a comprehensive framework of success factors for IT leaders to improve IT value. The framework aims to assist IT leaders in implementing adaptive agile technology, which has been identified as an effective solution for reducing the IT project failure rate. The research involved interviewing participants with experience working in IT leadership positions. The data collected from these interviews provides valuable insights into the challenges faced by IT leaders and the measures they take to achieve successful IT projects. The results suggest that adaptive agile technology implementation is key in reducing the IT project failure rate.

This project has significant implications for both industry practices and academic understanding. The framework developed here has the potential to influence industry practices by highlighting the critical success factors for achieving successful IT projects. Furthermore, the findings from this project can contribute to academic understanding by providing insights into the effectiveness of adaptive agile technology implementation in IT projects.

## References

- Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *JACCP: Journal Of The American College of Clinical Pharmacy*, 4(10), 1358-1367. <https://doi.org/10.1002/jac5.1441>
- Alami, A. (2016). Why do projects fail? *PM World Journal*, pp. 5, 1–9.
- Altarawneh, J., & Samadi, B. (2019). The relationship between critical success factors and success criteria in construction projects in the United Arab Emirates. *International Journal of Advanced and Applied Sciences*, 6(7): 43-53
- Andrei, B. A., Casu-Pop, A. C., Gheorghe, S. C., & Boiangiu, C. A. (2019). A study on using waterfall and agile methods in software project management. *Journal of Information Systems & Operations Management*, 125-135.
- Aranyossy, M., Blaskovics, B., & Horváth, Á. A. (2018). How universal are I.T. project success and failure factors? Evidence from Hungary. *Information Systems Management*, 35(1), 15-28. <https://doi.org/10.1080/10580530.2017.1416943>
- Aroral, H. K. (2021). Waterfall process operations in the fast-paced world: project management exploratory analysis. *International Journal of Applied Business and Management Studies*.[http://www.ijabms.com/wp-content/uploads/2021/05/05\\_ARORAL\\_PB.pdf](http://www.ijabms.com/wp-content/uploads/2021/05/05_ARORAL_PB.pdf)
- Azanha, A., Argoud, A. R. T. T., Camargo Junior, J. B., & Antonioli, P. D. (2017). Agile project management with Scrum: A case study of a Brazilian pharmaceutical company I.T. project. *International Journal of Managing Projects in Business*, 10(1), 121-142. <https://doi.org/10.1108/ijmpb-06-2016-0054>



- Azevedo, G. B. D., Maccari, E. A., & Asgary, N. (2021). The use of adaptive project management practices and methodologies in the development of a professional doctoral program. *Revista de Administração da UFSM*, 14(1), 44-62.  
<https://doi.org/10.5902/1983465942849>
- Bernroider, E. W., & Ivanov, M. (2011). IT project management control and the control objectives for IT and related technology (COBIT) framework. *International Journal of Project Management*, 29(3), 325-336.
- Brice, T. (2006). A short history of systems development. Business analyst/business analysis community and; resources.  
[https://www.modernanalyst.com/Resources/Articles/tabid/115/ID/242/A short-history of systems development.aspx](https://www.modernanalyst.com/Resources/Articles/tabid/115/ID/242/A-short-history-of-systems-development.aspx)
- Cameron, K. (2009). An introduction to the competing values framework. Organizational culture white paper.
- Chau, D. C. K., Ngai, E. W. T., Gerow, J. E., & Thatcher, J. B. (2020). The effects of business-IT strategic alignment and I.T. governance on firm performance: A moderated polynomial regression analysis. *M.I.S. Quarterly*, 44(4), 1679-1703.  
<https://doi.org/10.25300/misq/2020/12165>
- Chen, E. T. (2021). When is a good fit to apply the scrum approach to project management? *Advances in Systems Analysis, Software Engineering, and High Performance Computing*, pp. 84–98. <https://doi.org/10.4018/978-1-7998-4885-1.ch006>

- Christopher, L., & de Vries, M. (2020). Selecting a scaled agile approach for a fin-tech company. *South African Journal of Industrial Engineering*, 31(3). <https://doi.org/10.7166/31-3-2432>
- Ciancarini, P., Kruglov, A., Pedrycz, W., Salikhov, D., & Succi, G. (2022). Issues in the adoption of the scaled agile framework. Proceedings of the 44th international conference on software engineering: Software engineering in practice. <https://doi.org/10.1145/3510457.3513028>
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The psychologist*, 26(2), 120-123.
- Cohen, D., Lindvall, M., & Costa, P. (2003). *Agile software development. Dacs Soar Report, 11*, 2003.
- Collier, B. (1990). The little engines that could have: The calculating machines of Charles Babbage.
- Cuthbertson, A., & Griffin, A. (2021, May 25). Twenty technologies that defined the first 20 years of the 21st century. <https://www.independent.co.uk/tech/technology-bitcoin-iphone-tesla-ai-b1821678.html>
- Darwish, N. R., & Rizk, N. M. (2015). Multi-dimensional success factors of agile software development projects. *International Journal of Computer Applications*, 118(15).
- De Haes, S., Van Grembergen, W., Joshi, A., & Huygh, T. (2020). COBIT as a framework for enterprise governance of I.T. *Management for Professionals*, 125-162. [https://doi.org/10.1007/978-3-030-25918-1\\_5](https://doi.org/10.1007/978-3-030-25918-1_5)

- Dhatchanamoorthis, N., & Kamaraj, R. (2020). An overview on challenges and importance of computer system validation in pharmaceutical industry. *Research Journal of Pharmacy and Technology*, 13(11), 5591–5594. <https://rjptonline.org/AbstractView.aspx?PID=2020-13-11-90>
- Edison, H., Wang, X., & Conboy, K. (2022). Comparing methods for large-scale agile software development: A systematic literature review. *IEEE Transactions on Software Engineering*, 48(8), 2709–2731. <https://doi.org/10.1109/tse.2021.3069039>
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, 4(1), 215824401452263. <https://doi.org/10.1177/2158244014522633>
- Englund, R., & Graham, R. J. (2019). Creating an environment for successful projects.
- Fasihuddin, H., Alharbi, S., Alshehri, A., Alzahrani, A., & Fatani, H. (2022). Measuring the maturity of information technology governance based on COBIT. *Revista Română de Informatică și Automatică*, 32(2), 65-78. <https://doi.org/10.33436/v32i2y202205>
- Felipe, C., Roldán, J., & Leal-Rodríguez, A. (2017). Impact of organizational culture values on organizational agility. *Sustainability*, 9(12), 2354. <https://doi.org/10.3390/su9122354>
- Ghani, I., & Bello, M. (2015). Agile Adoption in I.T. organizations (2015). *KSII Transactions on Internet and Information Systems*, 9(8), 3231-3248. <https://doi.org/10.3837/tiis.2015.08.029>
- Gheorghe, A.-M., Gheorghe, I. D., & Iatan, I. L. (2020). Agile software development. *Informatica Economica*, 24(2/2020), 90-100. <https://doi.org/10.24818/issn14531305/24.2.2020.08>

Golgeci, I., & Y. Ponomarov, S. (2013). Does firm innovativeness enable effective responses to supply chain disruptions? An empirical study. *Supply Chain Management: An International Journal*, 18(6), 604-617. <https://doi.org/10.1108/scm-10-2012-0331>

Gopalakrishnan, S., Kessler, E. H., & Scillitoe, J. L. (2010). Navigating the innovation landscape: past research, present practice, and future trends. *Organization Management Journal*, 7(4), 262–277. <https://doi.org/10.1057/omj.2010.36>

Greenwood, M. (2007). Stakeholder engagement: Beyond the myth of corporate responsibility. *Journal of Business Ethics*, 74(4), 315–327. <https://doi.org/10.1007/s10551-007-9509-y>

Guest, G., MacQueen, K., & Namey, E. (2012). Applied thematic analysis. <https://doi.org/10.4135/9781483384436>

Harrin, E. (2018). Why do some projects fail? (and some succeed?). *ITNOW*, 60(4), 54–55. <https://doi.org/10.1093/itnow/bwy107>

Hsin Chang, H., Tsai, Y.-C., & Hsu, C.-H. (2013). E-procurement and supply chain performance. *Supply Chain Management: An International Journal*, 18(1), 34-51. <https://doi.org/10.1108/13598541311293168>

Hughes, D. L., Dwivedi, Y. K., Rana, N. P., & Simintiras, A. C. (2016). Information systems project failure - analysis of causal links using interpretive structural modeling. *Production Planning & Control*, 27(16), 1313–1333. <https://doi.org/10.1080/09537287.2016.1217571>

Humaidi, N., & Balakrishnan, V. (2015). Leadership styles and information security compliance behavior: The mediator effect of information security awareness. *International Journal of*

- Information and Education Technology*, 5(4), 311–318.  
<https://doi.org/10.7763/ijiet.2015.v5.522>
- Kavanagh, M. H., & Ashkanasy, N. M. (2006). The impact of leadership and change management strategy on organizational culture and individual acceptance of change during a merger. *British Journal of Management*, 17(S1). <https://doi.org/10.1111/j.1467-8551.2006.00480.x>
- Kesuma, M. E.-K., Saputra, R. H., Syaputra, M. A., & Romahdoni, M. R. (2022). Design of information technology (I.T.) Governance using framework COBIT 2019. *Jurnal Teknologi Komputer dan Sistem Informasi*, 5(3), 157.  
<https://doi.org/10.56327/jtksi.v5i3.1193>
- Kisielnicki, J., & Misiak, A. M. (2017). Effectiveness of agile compared to waterfall implementation methods in I.T. projects: Analysis based on business intelligence projects. *Foundations of Management*, 9(1), 273–286. <https://doi.org/10.1515/fman-2017-0021>
- Knuth, D. E. (1972). George Forsythe and the development of computer science. *Communications of the A.C.M.*, 15(8), 721–726.  
<https://doi.org/10.1145/361532.361538>
- Kotter, J. P. (2009). Leading change: why transformation efforts fail. *IEEE Engineering Management Review*, 37(3), 42–48. <https://doi.org/10.1109/emr.2009.5235501>
- Koutsikouri, D., Madsen, S., & Lindström, N. B. (2020). Agile transformation: How employees experience and cope with transformative change. *Agile Processes in Software*

- Engineering and Extreme Programming – Workshops*, 155–163.  
[https://doi.org/10.1007/978-3-030-58858-8\\_16](https://doi.org/10.1007/978-3-030-58858-8_16)
- Lauesen, S. (2020). I.T. project failures, causes and cures. *IEEE Access*, p. 8, 72059–72067.  
<https://doi.org/10.1109/access.2020.2986545>
- Lawal, A., & Ogbu, R. C. (2021). A comparative analysis of agile and waterfall software development methodologies. *Bakolori Journal Of General Studies* 11(2), 1-2. <https://www.bakolorijournal.com/article/v11-2/5/>
- Levstek, A., Hovelja, T., & Pucihar, A. (2018). I.T. governance mechanisms and contingency factors: Towards an adaptive I.T. governance model. *Organizacija*, 51(4), 286-310.  
<https://doi.org/10.2478/orga-2018-0024>
- Levstek, A., Pucihar, A., & Hovelja, T. (2022). Towards an adaptive strategic I.T. governance model for S.M.E.s. *Journal of Theoretical and Applied Electronic Commerce Research*, 17(1), 230-252. <https://doi.org/10.3390/jtaer17010012>
- Li, T. C., & Chan, Y. E. (2019). Dynamic information technology capability: Concept definition and framework development. *The Journal of Strategic Information Systems*, 28(4), 101575. <https://doi.org/10.1016/j.jsis.2019.101575>
- Lochmiller, C. (2021). Conducting thematic analysis with qualitative data. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2021.5008>
- Long, S., & Spurlock, D. G. (2008). Motivation and stakeholder acceptance in technology-driven change management: Implications for the engineering manager. *Engineering Management Journal*, 20(2), 30-36. <https://doi.org/10.1080/10429247.2008.11431764>

- Luong, T. T., Sivarajah, U., & Weerakkody, V. (2019). Do agile managed information systems projects fail due to a lack of emotional intelligence? *Information Systems Frontiers*.  
<https://doi.org/10.1007/s10796-019-09962-6>
- Madzimure, J. (2020). Enhancing supplier integration through e-design and e-negotiation in small and medium enterprises. *The Southern African Journal of Entrepreneurship and Small Business Management*, 12(1). <https://doi.org/10.4102/sajesbm.v12i1.300>
- Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education*, 9(3).
- Mahoney, M. S. (1988). The History of computing in the history of technology. *IEEE Annals of the History of Computing*, 10(2), 113–125. <https://doi.org/10.1109/mahc.1988.10011>
- Mangalaraj, G., Singh, A., & Taneja, A. (2014, August). I.T. governance frameworks and COBIT-A literature review in AMCIS.
- Mersino, A. (2018). Agile project success rates 2X higher than waterfall.
- Mielli, F., & Bulanda, N. (2019). Digital transformation: Why projects fail, potential best practices and successful initiatives. 2019 IEEE-IAS/PCA Cement industry conference (IAS/PCA). <https://doi.org/10.1109/citcon.2019.8729105>
- Mishra, A., Abdalhamid, S., Mishra, D., & Ostrovskaya, S. (2021). Organizational issues in embracing agile methods: an empirical assessment. *International Journal of System Assurance Engineering and Management*, 12(6), 1420-1433.
- Muhammad, U., Nazir, T., Muhammad, N., Maqsoom, A., Nawab, S., Fatima, S. T., Shafi, K., & Butt, F. S. (2021). Impact of agile management on project performance: Evidence from

- I.T. sector of Pakistan. *PLOS ONE*, 16(4), e0249311.  
<https://doi.org/10.1371/journal.pone.0249311>
- Mukerji, D. (2019). Sustainability in project management: Advancing the synergy of practice and theory. *Palgrave Studies in Cross-disciplinary Business Research, In Association with EuroMed Academy of Business*, pp. 285–310. [https://doi.org/10.1007/978-3-030-17523-8\\_13](https://doi.org/10.1007/978-3-030-17523-8_13)
- Muller, H. (2015). The big shift in I.T. leadership: How great C.I.O.s leverage the power of technology for strategic business growth in the customer-centric economy.
- Pillai, M. (2021). Successful SAP implementation strategy.
- Plowman, C., & Diffendal, J. (2020). Project Communications: A critical factor for project success.
- Proulx, V. K., Rasala, R., & Fell, H. (1996). Foundations of computer science: what are they and how do we teach them? *ACM SIGCUE Outlook*, 24(1-3), 42-48.  
<https://doi.org/10.1145/1013718.237523>
- Radhakrishnan, A., Zaveri, J., David, D., & Davis, J. S. (2022). The impact of project team characteristics and client collaboration on project agility and project success: An empirical study. *European Management Journal*, 40(5), 758–777.  
<https://doi.org/10.1016/j.emj.2021.09.011>
- Ranjan, R. (2022). Study of adaptive project management for turnkey projects.
- Roberts, D. (2013). Unleashing the power of I.T. <https://doi.org/10.1002/9781118824672>
- Rosenberg, J. (2018). Planning phase in change management.  
<https://osuva.uwasa.fi/handle/10024/9505>



- Rouder, J., Saucier, O., Kinder, R., & Jans, M. (2021). What to do with all those open-ended responses? Data visualization techniques for survey researchers. *Survey Practice*, 14(1), 1-9. <https://doi.org/10.29115/sp-2021-0008>
- Sanfilippo, F., Tigano, S., Palumbo, G. J., Astuto, M., & Murabito, P. (2020). Importance of inclusion criteria in systematic reviews. *British Journal of Anaesthesia*, 125(5), e398-e399. <https://doi.org/10.1016/j.bja.2020.07.010>
- Sastoque-Pinilla, L., Artelt, S., Burimova, A., Norberto Lopez, d. L., & Toledo-Gandarias, N. (2022). Project success criteria evaluation for a project-based organization and its stakeholders—A Q-Methodology approach. *Applied Sciences*, 12(21), 11090. <https://doi.org/10.3390/app122111090>
- Saxena, D., & McDonagh, J. (2019). Evaluating ERP implementations: The case for a lifecycle-based interpretive approach. *Electronic Journal of Information Systems Evaluation*, 22(1), pp29-37.
- Schtein, I. A. (2018). Management strategies for adopting agile methods of software development in distributed teams.
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, pp. 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Tarofder, A. K., Marthandan, G., Mohan, A. V., & Tarofder, P. (2013). Web technology in supply chain: an empirical investigation. *Business Process Management Journal*, 19(3), 431-458. <https://doi.org/10.1108/14637151311319897>

- Thompson, J. D., Zald, M. N., & Scott, W. R. (2017). Organizations in action.  
<https://doi.org/10.4324/9781315125930>
- Van der Waldd, G. (2011). Adaptive project management. *Administratio Publica*, 19(2), 2-20.
- Wang, L., Ranjan, R., Chen, J., & Benatallah, B. (Eds.). (2012). Cloud computing  
 (2017). <https://doi.org/10.1201/b11149>
- Westfall, A. (2020). Information technology project failure caused by inadequate project  
 scoping: an exploratory qualitative inquiry on inadequate project scopes.
- Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative  
 research. *International Management Review*, 15(1), 45-55.
- Wood, D. J., Mitchell, R. K., Agle, B. R., & Bryan, L. M. (2021). Stakeholder identification and  
 salience after 20 years: Progress, problems, and prospects. *Business & Society*, 60(1),  
 196-245. <https://doi.org/10.1177/0007650318816522>
- Yi, L., & Zulaikha, N. (2022). The influence of leadership skills on organizational management:  
 a conceptual review. *International Journal of Behavioral Analytics*, 2(4), 1-7.
- Zoirovich, K. Z. (2023). The development of the lightbulb. *Open Access Repository*, 4(02), 67-  
 68.