

PROJECT TERMINATION QUALITY AND ITS INFLUENCE ON  
ORGANIZATIONAL LEARNING AND PROJECT MANAGEMENT SUCCESS

by

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## ABSTRACT

CRAIG CARDELLA. Project Termination Quality and its Influence on Organizational Learning and Project Management Success (Under the direction of DR. CHANDRA SUBRAMANIAM)

Project Management activities have become an integral part of almost every organization. Most of the effort on a project tends to occur in the middle of a project with a substantial focus on the planning and execution phases, but with limited emphasis on the closing or termination aspect. Terminating a project has intrinsic and extrinsic organizational effects that need to be acknowledged and addressed at the end of a project lifecycle. Even successfully completed projects require post-project analysis to fully realize the benefit of the experience attained at the end of a project. The learning that occurs can augment or improve business processes, technological capabilities, senior management trust, and can mitigate current and future stakeholder issues. By adding the constructs of Project Termination Quality, Organizational Learning, Organizational Capability and Organizational Culture within the framework of the Project Excellence Model, this study examined the effect that performing a quality termination has on project management success. Based on survey data from a sample group of 166 respondents, Organizational Capability is positively associated with Project Management Success. Organizational Culture is also positively associated with Project Management Success, Project Termination Quality has a positive direct effect on Organizational Learning, and Organizational Learning has a positive moderating effect on the relationship between Organizational Culture and Project Management Success. The study fills in the gap on project termination literature and explains why more emphasis should be placed on the project termination phase. Execution of a quality project termination promotes organizational learning that can enhance the potential for firm success.

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## DEDICATION

I would like to dedicate this dissertation to my parents William and Alma Cardella, my wife Jill, and my children Phillip and Lauren. My parents always stressed the importance of education and always encouraged me to push forward when topics or assignments were difficult. My wife was a pillar throughout the entire process and I would not have been able to complete the journey without her support. To my children, my wish was to inspire them to continue with their education and show that you can accomplish anything if you set your mind to it. All of my family has inspired me to continue to achieve and grow.

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## List of Abbreviations

ABV	Attention-Based View
BRM	Benefits Management Realization
CMM	Capability Maturity Model
CVF	Competing Values Framework
EFQM	European Foundation for Quality Management model
FLC	Fornell-Larcker Criterion
HTMT	Heterotrait-Monotrait Method
IRB	Institutional Review Board
IT	Information technology
KM	Knowledge Management
OGC	Office of Government Commerce
OrgCap	Organizational Project Capability
OrgLrn	Organizational Learning
OrgCult	Organizational Culture
PM	Project Management
PMI	Project Management Institute
PMO	Project Management Office
PMSuccess	Project Management Success
PTQ	Project Termination Quality
R&D	Research and Development
VIF	Variance Inflation Factor

## Chapter 1 – Introduction

### 1.1 Background

Project Managers tend to lose operational control during the termination phase of a project. The limited resources are typically re-allocated to support next generation projects outside the locus of control afforded the project managers, and project ending competence is typically lost on the personnel left behind to finish the job (Williams, Warnecke, Shepherd, & Patzelt, 2014) (De, 2001). Stakeholders remain interested in the closing of the projects for financial or personal reasons and want to ensure all aspects of the project requirements are met. They want to share in the success of a project or recover compensatory damages in the event of a project failure, emphasizing the importance of a quality termination (An, Qiang, Wen, Jiang, & Xia, 2019).

Because of the effort required during the planning and execution phase of a project, most of the literature in project management focuses on these phases. The termination phase only makes up 5% - 10% of the effort on a project. The existing literature pays little attention to the termination phase as well, where less than 5% of pages discuss project closure. (Havila, Medlin, & Salmi, 2013) The literature that is available primarily focuses on the elements obtained during project termination without considering the impacts of a low-quality termination effort. When a project closes, it is the primary responsibility of the project manager to obtain the project ending competence, satisfy stakeholders, and closing documentation with the limited remaining resources. (Havila et al., 2013) The gap that needs to be addressed is how project terminations can have consequences on future projects when projects are not closed properly.

Projects that terminate unsuccessfully tend to receive less attention at the close of the project than do the successfully completed projects. Equal emphasis needs to be placed on

failed project closures because research has continually shown that more than 40% of Research and Development (R&D) projects fail (Boulding, Morgan, & Staelin, 1997; Chakrabarti, 1974; Chakrabarti & Hauschildt, 1989; Schmidt & Calantone, 2002) (Lechler & Thomas, 2015). It is also estimated that 35% to 45% of all innovative products fail (Shepherd, Covin, & Kuratko, 2009). Learning how to manage projects comes from understanding both project success and project failure. To reduce the number of project failures organizations must make adjustments based on past projects. As projects come to a close, the initiation and planning of a new project may have already begun causing valuable resources to be shifted away from the terminating project for the sake of the new project and learning is lost in the process. The closing of a project should be treated like the beginning of a new project so organizational resources are utilized by management across all projects and the stakeholders are satisfied (Jonas, Kock, & Gemünden, 2013).

## **1.2 Overview**

Project termination is typically a completely overlooked phase of the project lifecycle, and yet is probably one of the best opportunities for the project manager to play a pivotal role as a team leader (Wen & Qiang, 2019). During the project lifecycle, the initiation and execution phases tend to draw quite a bit of interest and participation from the organization. As the project nears completion, many of the team members are thinking about the next project and interest begins to wane (Atkinson, Crawford, & Ward, 2006). To achieve project management success, the project manager must realize the benefits of the project and achieve stakeholder satisfaction (Dupont & Eskerod, 2016). This research moves beyond the benefit realization aspect and proposes to study the impact a quality project termination has on project management success.

Project termination quality is identified by three important elements. The first element is organizational strategic value integration that insures the projects alignment to organizational strategy or overall portfolio, termination of non-value efforts, and strategic partnership development and maintenance which is a strategic part of stakeholder satisfaction (Unger, Kock, Gemünden, & Jonas, 2012) (Dvir, 2005). The second element is project closing efficiency which includes timely closure and transfer to the end user, budget control, detection and elimination of poor quality issues, and customer satisfaction (De, 2001). The third element, is the knowledge asset accumulation which is of paramount importance for success on future projects through organizational learning (Joslin & Müller, 2016).

When talking about a project there are two main concepts that need to be considered; project success and project management success. Because of the mutual relationship of the concepts, it is sometimes difficult to separate the two ideas (Toor & Ogunlana, 2010). Project success relates to the overall achievement of the target goals, whereas, project management success is traditionally measured by the constructs of time, scope, and budget as identified in the Project Management Iron Triangle (Radujković & Sjekavica, 2017). However, the role of the Project Manager goes beyond the aforementioned elements by also being responsible for the integration, scope, communication, stakeholder, risk, and the procurement management (Radujković & Sjekavica, 2017).

Organizations typically do not manage singular projects and can have multiple active projects with many more planned that require the same resources. While project success is important, the firm should be more focused on the overall portfolio of projects and maximize the most efficient use of resources (Williams et al., 2014). Past research has shown that a positive portfolio performance has a strong correlation to project management success (Saeed, Tabassum,

Zahid, Jiao, & Nauman, 2021). Thus, determining factors that promote project management success are of paramount importance. Project portfolio management forces the organization to successfully adapt to technological advances and changing competitive landscapes building the foundation of a firm's absorptive capacity. If the projects align with the organizational strategy and fits into the project portfolio, managers can easily decide which resources are set aside for smaller individual projects (Blichfeldt & Eskerod, 2008). Organizations need to leverage internal and external knowledge obtained during projects to further enhance their dynamic capabilities, providing them with a competitive advantage within their portfolio (Hoang & Rothaermel, 2010). Adapting this type of culture looks beyond the internal operations of the organization and creates a stakeholder management model that promotes communication and continued learning (Alhiddi, Osborne, & Anyigor, 2019). This improved communication and knowledge accumulation can be achieved during the closing of a project.

Prior research has shown that firms that are focused on learning promote effectiveness and efficiency. Organizational learning is a key factor in new development projects because firms must be able to adapt to rapidly changing technology, competition, and demand uncertainty (Onağ, Tepeci, & Başalp, 2014). The ability of an organization to use knowledge acquired is dependent upon the human resources ability to share and generate new knowledge from the knowledge of others. It is also recognized that the interconnection between the individual and organizational level are important for a firm to retain and assimilate acquired knowledge (Antunes & Pinheiro, 2020). For organizational learning to occur the traditional behavior and/or practices inside the firm need to change. Based on previous research, there are two main theories supporting behavior changes within an organization : “theories of action”, and the “theory of

cognitive and behavioral changes”(Antunes & Pinheiro, 2020). An effective project termination can incite these behavioral changes and exploit the elements of the aforementioned theories.

My research maintains there must be a vehicle that promotes organizational behavior changes and that a quality project termination offers such a path. Insights on business processes, competitive landscapes, and technology shortfalls can be identified during this phase (Von Zedtwitz, 2002). Successful project management must utilize the termination phase of a project to improve organizational capability and culture (Von Zedtwitz, 2002). Post project reviews or terminations typically focus on technical issues or are completely bypassed due to lack of time, resources, or interest (Von Zedtwitz, 2002). Project managers that can capture new knowledge, enhance the dynamic capabilities of the organization and assist in organizational integration as a result of previous project experience is the baseline for project management success outside of the normal measures (Radujković & Sjekavica, 2017) (Winter, 2003).

### **1.3 Research Objective**

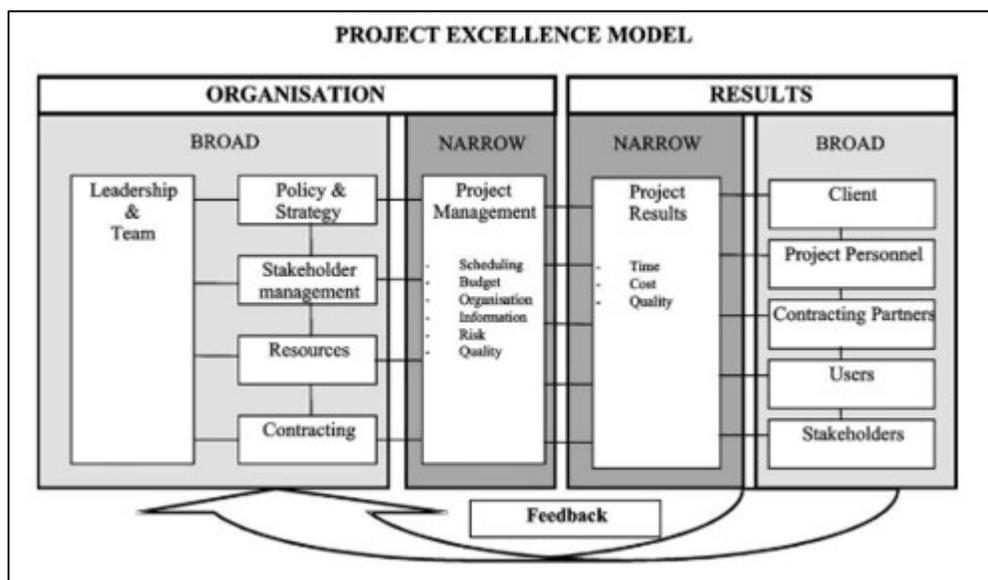
The main purpose of this study is to bring awareness of the importance of the termination phase of a project and highlighting the importance of understanding project dynamics when a project is successful or unsuccessful and the value that this knowledge brings to an organization. The study aims to measure the effects of successful project termination on the overall project management success utilizing the project excellence model (Fig. 1), theory of double-loop learning, dynamic capabilities theory, and the Knowledge-Based View (KBV) of the firm. The importance of measuring the impact on project management success is due to the amount of literature outlining a direct correlation between successful portfolio management and firm success (Meskendahl, 2010; Saeed et al., 2021). I propose a direct relationship between

organizational factors (capabilities and culture) and project management success, with project termination quality and organizational learning strengthening the relationship. The study evaluates existing project management literature and performs a quantitative analysis on organizational factors, project termination quality, and organizational learning. Based on the findings, the intent is to show a connection between the aforementioned elements that leads to project management success. I address the following research questions:

*Does performing a quality “project termination” enhance organizational learning and assimilation process within an organization?*

*How does project termination quality and organizational learning that occurs during ongoing project portfolio activities moderate the effect of the organizational factors on project management success?*

**Figure 1. Project Excellence Model (Westerveld, 2003, p. 415)**



#### **1.4 Contributions to the existing knowledge and practice**

In the proposed model, we discuss the importance of organizational learning as a result of quality project terminations, and the overall impact that quality project terminations and organizational learning has on project management success. I posit that a quality project termination positively impacts organizational learning that leads to a more capable organization. It should be noted that not all projects are successful but, information learned from project failures or successes can be leveraged to ensure success on future projects. To achieve future success, an organization must also recognize the potential for failure or success on a project and improve or expedite the termination decisions of a project that are destined to fail. This recognition can be achieved by the institutionalization of the lessons learned during the termination phase.

By empirically testing the relationships between quality project terminations, organizational learning, organizational capabilities, and organizational culture will show that project management success is predicated on the organizations learning ability. The plan is to review these characteristics across multiple industries to ascertain the generalizability of the

concept. Upfront planning and a capabilities analysis will help reduce the number of projects that are destined to fail from the beginning.

Project Management is almost solely responsible for the project termination quality, and would benefit greatly from organizations that are committed to every phase of a project (Unger et al., 2012). By increasing the importance of project terminations during the lifecycle of a project, we improve the ability of project managers to complete and close-out projects.

Treating the termination phase as the beginning of the next project will create success and more opportunities for the future (Jonas et al., 2013).

## **Chapter 2: Literature Review**

Literature identified in supporting this research goes beyond the typical emphasis on achieving the objectives of the “iron triangle” to obtain project management success. Many of the articles discussed come from the areas of organizational science, project management, and knowledge management. This literature stream informs on quality project terminations, organizational capability, culture and learning and their impact on organizational dynamics involved in portfolio project management. The knowledge management literature coupled with project management literature highlights the importance of project termination quality and project management success. The next section focuses on literature discussing project management success.

### **2.1 Project Management Success**

Early studies of project management suggested there are several organizational conditions under which project management operates. These conditions include the structure of the project organization, the extent of managerial authority given to the project manager, and the overall cost and size of the project. These studies also concluded that certain types of structures were less likely to enhance the chances of project success. The organizations where the project manager had greater authority over personnel were less likely to have cost or schedule overruns and resulted in higher rated success levels (Might & Fischer, 1985). Since these early studies, most of the structural design of organizations has revolved around understanding whether project based, functional based or matrix-based structures are the most successful. Figure 2 outlines the aforementioned organizational types and discusses the level of authority provided to the Project Manager (Might & Fischer, 1985).

**Figure 2: Project Management Authority by Organizational Type (Might & Fischer, 1985, p. 72)**

CONTINUUM	SPECIFIC DESCRIPTION
FUNCTIONAL ORGANIZATION	Project manager was the focal point for communications but had no authority to direct people other than by persuasion or through a superior.
FO	Project manager was the focal point for controls but did not actively direct the work of others.
MATRIX ORGANIZATION	Project manager was the focal point for directions and controls and may have had some engineering and control people reporting to him/her on a line basis, while the remainder of the project team was located administratively in other departments.
PI	Project manager had many of the essential elements of the project team under his/her authority.
PROJECT ORGANIZATION	Project manager had almost all of the employees who were on the project team under his/her authority.

To confirm earlier studies, Might & Fisher (1985) examined the role that structural factors play in determining the success or failure of project management. After sampling 103 development projects, the findings indicated several organizational structure variables do influence the success or failure of project management and should be considered before deciding on how to manage a project. The study found that the organizational design, specifically a matrix format with decentralized management was positively related to project management success. One of the most interesting findings was that the technical success of the project was not associated with the organizational design. When the project manager was given a high level of authority, the results clearly showed a positive association to project success across almost all measures of the project performance. The relationship between the size of a project, and the project management control system was indeterminate. (Might & Fischer, 1985)

Within the project management literature there are five common organizational structures identified: functional, weak matrix, balanced matrix, strong matrix, and projectized (Feger &

Thomas, 2012). Each of these structures define the level of authority provided to the project manager with the projectized type providing the highest level of power. The type of matrix structure also determines the project team selection process and most of the time matches the structure of the organization (Gray, 2001). A balanced or strong matrix, or a projectized structure is the most conducive to achieving project management success (Feger & Thomas, 2012).

Zwikael & Smyrk (2012) breaks down project management to one simple question. “Do I regard the achieved project as at least equivalent to the approved project plan” (Zwikael & Smyrk, 2012, p. S16)? “If the answer is ‘yes’, the project management (and the project manager) is judged successful; otherwise, it is judged a failure” (Zwikael & Smyrk, 2012, p. S16). The authors identified four criteria of extreme importance regarding the deliverables required as part of the overall project plan: their fitness-for-purpose, the time taken, the costs incurred, and the triggering of any detrimental outcomes by the project manager. “A detrimental outcome is defined as one that is undesirable, unacceptable and avoidable (Zwikael & Smyrk, 2012, p. S16).” The first three items listed are the elements of the “iron triangle” (Project Management Institute, 2008), and to determine the success or failure of a project you must consider the fourth element (Rose, 2013; Zwikael & Smyrk, 2012).

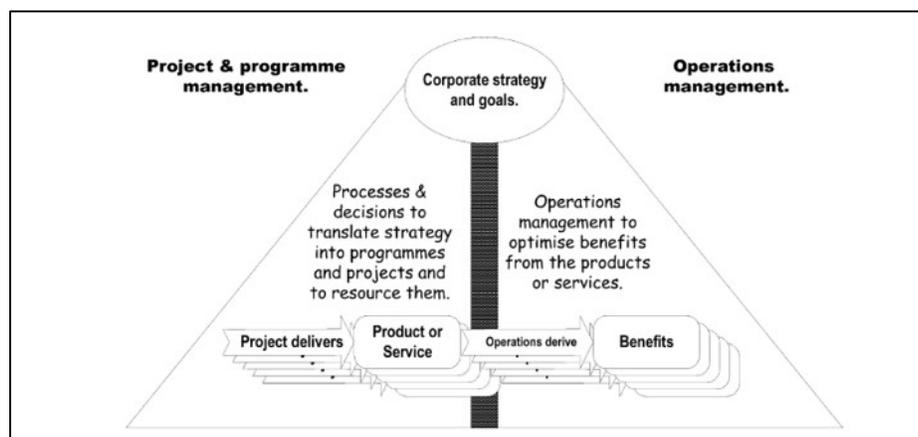
The iron triangle offers a simplistic view of measuring project success, however; recent research has shown that new measures are being employed (Toor & Ogunlana, 2010). Low and Chuan (2006) recommend the expansion of the success measurement more towards project management success or overall business success (Pheng & Chuan, 2006). Other measures that should be considered are customer satisfaction, satisfaction of all stakeholders involved, and how well the project manager and project team manage project risks (Toor & Ogunlana, 2010). An

earlier study by Freeman and Beale (1992) outlined the five most frequently used criteria to measure project success which included: technical performance, the efficiency of execution, managerial implications, personal growth, the organization's ability, and overall business performance (Freeman & Beale, 1992).

While organizational structure has been shown to positively impact project management there are other factors that need be considered. The traditional measures of performance of cost, time, and quality are critical to project management success which enables the overall organizational management system to achieve overall business success (De Wit, 1988). Cooke-Davies (2002) identified multiple key factors that are critical to project management success. The results of the study outline the factors that are critical to project management success (Cooke-Davies, 2002). There was a visible correlation across the range of projects. The organizational factors for on-time performance identified during the study include the ability to properly manage risk, ability to assign responsibilities, and to keep the length of the project under three years. Factors identified for on-cost performance are a mature project scope change process, and the maintenance of a consistent project performance baseline. Delivering project management success involves holding goals constant and changing the practices to meet a project's pre-determined goals. In addition to the aforementioned factors there are four others that are critical to project management success: (1) the organizational structure that allows for cooperation between project management and operations management so that beneficial change can exist as shown in Fig. 3.; (2) the creation of portfolio and/or program management practices that allow companies to allocate resources to a suite of projects that are closely matched to the overall corporate strategy; (3) a comprehensive list of metrics on projects and programs that provides real-time feedback on current projects and that is capable of predicting future project

success so that project and company decisions are aligned; and (4) an effective method of “learning from experience” on projects, that enables continuous improvement in an organization which is outlined as the fifth and highest stage of project management maturity in an organization (Cooke-Davies, 2002).

**Figure 3: Importance of project and operations management working together to drive beneficial change (Cooke-Davies, 2002, p. 187)**



Project success criteria are typically both quantitative and qualitative in nature and determines whether a project is determined to be successful (Shao, Müller, & Turner, 2012). Since programs are essentially a collection of projects, the same success criteria applies (Maylor, Brady, Cooke-Davies, & Hodgson, 2006)(Thiry, 2002). The Project Management Institute (PMI) (2008) and the Office of Government Commerce (OGC) (2007) advocate determining program success criteria through benefit realization. A benefit is defined as an improvement that is measurable produced from a resulting outcome that the stakeholder believes is an advantage (Großbritannien, 2004). A benefit from the stakeholder viewpoint can be financial, tangible, or intangible (e.g knowledge) (Shao et al., 2012). Thiry (2002) suggested to measure program performance properly, you must view it from a life-cycle learning loop perspective. He also

suggested that phased reviews of the program to determine strategic benefits and enhance stakeholder satisfaction levels be part of an ongoing process (Thiry, 2002).

Organizations begin with a vision of their solution to develop a strategy and deliver through the creation of individual projects or programs. Unfortunately, organizations operate with a finite set of resources, so they must choose the projects that most closely align with the overall corporate goals and delivers the most valuable benefits (Amason & Ward, 2020). Because of this limitation, companies use project portfolio management methods that include appraisal and evaluation models to select the projects to be worked on that provide the most return (Serra & Kunc, 2015). The judgement of whether or not a project is a success or failure can be different depending on the perspective. Whatever the perspective may be, project managers are responsible for the alignment of the success criteria associated with all stakeholders (Serra & Kunc, 2015).

Individual projects utilize organizational resources for a period of time to produce some intermediate result of the long-term business objective. These projects can produce positive changes or strategic improvement to the business called benefits. Benefits are defined as improvements in the business value as seen by shareholders, customers, suppliers, or from societal perspectives (Zwikael & Smyrk, 2012). These benefits or business changes are usually achieved by program and project management techniques (Serra & Kunc, 2015). Usually, the benefits are acquired through the direct achievement of the strategic objectives which enhance business operations as a result of sets of projects managed together as a program or a portfolio (Breese, Couch, & Turner, 2020). Therefore, successful projects create strategic value to the business, and ensure deliverables are met, and the realization of the right benefits is captured. This idea of Benefits Management Realization (BRM) is a direct correlation to Project

Management Success. BRM encourages project managers to focus on the long-term and strategic improvements to the organization by adding the measurement dimension of value creation to the overall business (Serra & Kunc, 2015).

To achieve project portfolio success the goals are to maximize the financial value of the portfolio, link the portfolio to the firm's strategy, and to balance the projects within the portfolio based on the organization's capacity (Cooper, Edgett, & Kleinschmidt, 2002). Martinsuo and Lehtonen (2007) emphasize that an individual project's success is necessary and desired but, on its own, is not enough to realize the benefits that project portfolio management can provide (Martinsuo & Lehtonen, 2007). Cooper (2002) divided portfolio success into two dimensions with the first including the elements of the 'iron triangle' along with customer satisfaction and the second dimension analyzing the interdependence of the firm's business strategy and the portfolio balance (Meskendahl, 2010).

Cooper's (2002) method for measuring and defining portfolio success was comprised of four dimensions: (1) the average success of projects and includes customer satisfaction ratings, (2) the ability to align the firm's technical capabilities with overall market requirements, (3) the organization's ability to control and enforce strategic fit for all its projects, and (4) the ability to balance resources across the project portfolio (Cooper, Edgett, & Kleinschmidt, 2002).

Meskendahl (2010) added (5) the ability to achieve economic success leveraging the portfolio and (6) the ability to ensure success on future projects (Petro & Gardiner, 2015).

The concept of strategic fit has its origins based on the idea that the performance of the firm is a result of two or more factors that include strategy, structure, technology or environment (Bergeron, Raymond, & Rivard, 2001). Based on this initial concept, strategic fit of the project portfolio describes how well all the projects reflect the corporate strategy. The idea of strategic

fit is an important aspect because of the resource constraints of the firm. It becomes necessary to detect projects that do not fit any longer and be cancelled so resources can be withdrawn.

Unger, 2012 introduced the initial concept of project termination quality by considering how well the decision making and termination process is executed (Unger, Kock, Gemünden, & Jonas, 2012). Within portfolio management, firms need to ensure pursued projects are a close match with the overall business strategy to promote future success (Meskendahl, 2010).

Portfolio balance theory has been discussed within management literature since the 1970's. The theory is that the firm creates a combination of projects that enables it to meet its business objective while minimizing the risk (Mikkola, 2001). There is not a consistent measure. However, the success of the portfolios must balance the short-term benefits realized from individual projects with the long-range benefits realized across all projects. These elements include the project type pursued, the risk level of each project, and the resource adequacy available to the firm (Killen, Hunt, & Kleinschmidt, 2008).

The business success dimension deals with project results and examines the short-term and economical effects and the long-term financial implications of the portfolio. The economic success dimension has more to do with the product or market success and describes how well the firm performed against sales objectives and market share targets (Shenhar, Dvir, Levy, & Maltz, 2001). Preparing for the future in portfolio management examines the long-term benefits and opportunities that are realized after projects have been completed. These benefits include, identification of new markets, technologies, process, and the requirements of new skills (Shenhar et al., 2001).

The Project Excellence Model, is based on the European Foundation for Quality Management (EFQM) model, and is a self-assessment tool designed to measure the strengths and

identify potential areas of improvement for an organization (Westerveld, 2003). The EFQM focuses on the result areas of “WHAT” an organization has achieved, and organizational areas of “HOW” the results were achieved. The Project Excellence Model is based on the EFQM model and promotes the idea that projects need to be managed by focusing on project success criteria called “result areas” and critical success factors called “organization areas” with details more specific to managing projects (Figure 1). Previously, project success criteria focused on the ‘iron triangle’ of time, budget, and quality. As the field of project management progressed it was realized that project success criteria contained many other subtle items. These additional criteria are not standardized either, as there are a wide range of stakeholders that each judge project success differently (Westerveld, 2003). Van Aken, 2009 additionally defines project success as: “The satisfaction of all stakeholders” (Van Aken, 2009). The model proposes the elements of the ‘iron triangle’ fall under the results section in the narrow topic category shown in Figure 1. Past research has shown that it is impossible to generate a universal checklist for project success. Criteria will be different for every project and the model attempts to be more flexible by outlining clusters of success criteria shown in the broad categories of the results areas section of the model (Westerveld, 2003). Success factors within the “project excellence model” identifies levers that project managers can use to increase the likelihood of project success. The model breaks it down to six organizational areas that outline success criteria in the narrow column and critical success factors shown in the broad column shown the organizational areas within Figure 1. In order for a project to be successful, the choices made at the organizational level have to match with the project goals set in the results section of the model (Belassi & Tukel, 1996; Westerveld, 2003).

## 2.2 Organizational Capability

Organizational capability is defined as the capacity of a company to identify, utilize, and execute a set of available resources with the goal of performing to the level expected by the internal and external stakeholders (Ho, Ahmad, & Ramayah, 2016). It also addresses the organization's ability to adapt to changes in the marketplace and stakeholder expectations (Uddin, Bose, & Yousuf, 2014). This adaptability identifies capabilities as a differentiator between a poor and an excellent performing organization (Bature, Sallehuddin, Rosli, & Saad, 2018). This adaptability or innovativeness identified within the organizational capabilities allows the firm to react quickly in changing business environments (Acar & Özşahin, 2018). This innovative mindset promotes the development of skills and technical know-how required for future business endeavors. This culture draws from the dynamic capability theory which links firm performance in its' ability to build new capabilities, reconfigure existing resources, and modify business strategies (Teece, 2007). A firm's dynamic capabilities significantly influence firm performance and the ability to acquire, assimilate, disseminate, and utilize new knowledge is a major part of this process (Bature et al., 2018).

Firms today more than ever need to leverage their dynamic capabilities over traditional capabilities in order to react to ongoing technology and changing business environments. Carvalho and Reis (2012) examined the role of information technology (IT) as a dynamic capability and identified IT as a key element in delivering innovative products to the market (Carvalho & dos Reis, 2012; Hindasah & Nuryakin, 2020). This makes dynamic capabilities an essential element within a firm's innovation process management. Innovation process management requires flexible decision making to address changing environments. Innovation termination of product development or project activities is a perfect example. Dynamic

capabilities are related to the management of uncertainty and the capability to coordinate and redeploy internal and external resources and competencies (D. J. Teece, Pisano, & Shuen, 1997). A company should be focused on thinking creatively about future projects and business opportunities and how to successfully execute them. Innovation or project termination requires agile and quick reactions to unexpected changes and is closely linked to the concept of dynamic capabilities (Vaculik, Lorenz, Roijakkers, & Vanhaverbeke, 2019). An effective termination requires a transformational culture and strong leadership capable of realigning assets, shifting strategy, and modifying processes. Dynamic capabilities are important when dealing with termination activities but, can also be enhanced during the closing process (Vaculik et al., 2019).

The effectiveness of any organizational capability is determined by its ability to integrate or interact with current functional and strategic capabilities. Thus, utilizing the framework outlined by Davies and Brady, (2000) considers project capability as an integral element that enhances the functional and strategic capability. This implies that managing projects and project teams is required for achieving successful integration of new innovative ideas into products or services to obtain business success (Davies & Brady, 2000). The aforementioned framework also implies that in project-based organizations', people capability builds on existing people management systems that integrates their capabilities with the firm's current project capabilities (Bredin, 2008). Integrating capabilities within an organization is an ongoing process that is constantly evolving over time. The framework also embraces the idea of dynamic capabilities defined as the firm's ability to reconfigure competencies in ever changing environments (D. J. Teece et al., 1997).

Maintaining a people management system related to the employment and development of technologies is critical in enhancing a firms functional capabilities required to embrace new

business opportunities (Bredin, 2008). For continued firm growth, a people management system needs to provide access to people with a critical knowledge base, provide integrative training, retain the required skills, and create a community where employees can move across the organization (Bredin, 2008). Another aspect of the people capability framework is the importance of the integration of skills with the existing strategic, functional and project capabilities. When creating project teams, it is important to have the people with the required competence available during the project period. Also, considering group dynamics would suggest the people management system should build teams that have similar personalities and can complement one another. This means creating a trustworthy environment within the project and minimizing high pressure work (Bredin, 2008).

Program management requirements differ slightly from project management requirements. Typically, project success is reviewed more at the tactical level ensuring that time, quality, and budget are met. Program success, much like project portfolio management success looks at what is required to make positive transformational adjustments to ensure long term success within organizations (Maylor, Brady, Cooke-Davies, & Hodgson, 2006). Shao et al. (2009) reviewed literature on program success and found very limited information exists with regards to program success, and what is available is at the conceptual level. Due to the limited information, Shao (2012) created a model for program success which is comprised of four success dimensions all related to organizational capability (Shao, Müller, & Turner, 2012). The four dimensions are: 1) delivery capability; 2) marketing capability; 3) organizational capability; and 4) innovativeness (Shao et al., 2012).

When considering a project termination, senior managers and project managers must have the skills and competencies to support the event. The primary requirement is that the

managers need to take ownership for the killing of the project and work together to plan for the next steps. The actual decision to terminate the project is a key competency unto itself. These terminations can occur unexpectedly, and successful project management is based on the accumulated knowledge from past projects, and the individual and collective competencies available to the organization (Geraldi, Lee-Kelley, & Kutsch, 2010). Many times these projects end prematurely and business as usual spirals into uncontrollable situations. The senior managers and project managers are put in situations where they have to deal with new types of stakeholders and have the ability to react to requests outside of their normal operations. Just because the project closed, there are stakeholders such as suppliers, end customers, and consultants that require project updates or explanations and potentially need to be compensated for their involvement (Havila et al., 2013).

Managing uncertainty within an organization is central to the success of an organization. Uncertainty lies in the organization's ability to pursue multiple projects, and to terminate projects that are not performing (Williams et al., 2014). This will enable the redeployment of resources to projects that show promise, and to learn from the failure (McGrath, 1999). The involvement of the senior managers and their ability to re-direct resources and re-negotiate with clients or stakeholders is an important skill because many times these negotiations are contrary to all previous agreements (Havila et al., 2013). This interaction with project managers can aid them in dealing with critical issues that are beyond their level of authority. These conflicting situations were successfully handled by open information sharing across operative and strategic levels of management (Vaaland, 2004). The level of project ending competency has been identified as being extremely important in premature project ending closures (Williams et al., 2014).

Project Management (PM) considers Knowledge Management (KM) a key component of gaining and achieving organizational success. Magnier-Watanabe (2008) defined KM as the process for acquiring, storing, diffusing, and implementing both tacit and explicit knowledge from inside and outside the organization to achieve corporate success (Magnier-Watanabe & Senoo, 2008). Tacit knowledge is information that resides within individuals and is difficult to articulate, put into text or drawings. It is considered to be the most valuable source of knowledge and can enable positive changes within an organization. It includes cultural beliefs, attitudes, specific skills, expertise, and hidden capabilities. Explicit knowledge is the most easily controlled as the content is captured in the form of databases, notes, memorandums in some reusable media (Alghaila, Yaob, Kiec, & Alkawsid, 2017). Enhancing PM practices and achieving project success within an organization is considered to be extremely reliant on knowledge management capabilities. Through KM, the organizations intent is to acquire or create potential knowledge for those who can use it to improve organizational performance (King, 2009). Organizations have recognized KM as a useful tool in improving business functionality, has a strong influence on the efficiency of the project manager, and required to advance the potential of organizational improvement (Alghaila et al., 2017; Love, Irani, & Edwards, 2003).

At the end of every project, the asset that is delivered or commissioned will be judged as to its level of success. The organizations that delivered the asset has developed in theory, new capabilities. These enable the organization to tout new skillsets, solve problems, and exploit opportunities that were not previously attainable. The outcomes for every project will be judged months or years after their completion by measuring the expected benefit obtained (Turner, Zolin, & Remington, 2009). The organization hopes the long-term benefits will prepare the

organization by improving its infrastructure that may include new processes, technological advances, and organizational competencies. The measures for success might include penetration into new markets or the creation of a new product line (Shenhar & Dvir, 2007).

### 2.3 Organizational Culture

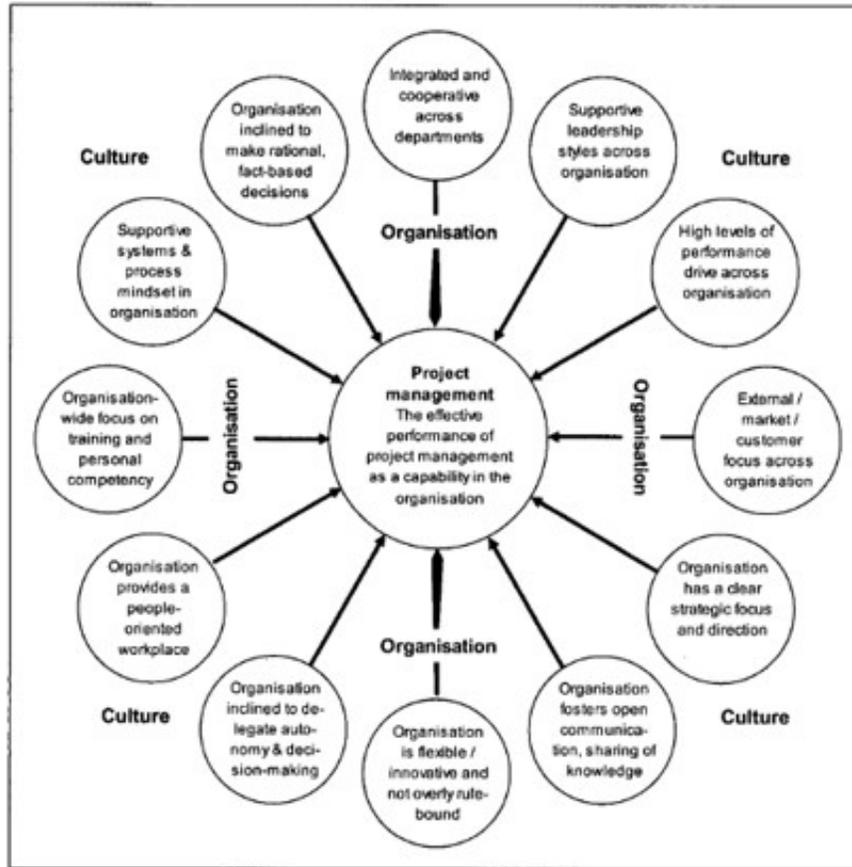
*“Culture has been defined as: A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 1992). The set of important assumptions (often unstated) that members of a community share in common (Sathe, 1985). The sum total of all the shared, taken-for-granted assumptions that a group has learned throughout its history. It is the residue of success (Schein, 1999).”(Buch & Wetzel, 2001; Sathe, 1985; Schein, 1992)(Buch & Wetzel, 2001, p. 40)*

Organizational culture is a set of norms, beliefs, values, procedures and unspoken meanings that an organization follows (Abubakar, Elrehail, Alatailat, & Elçi, 2019). An effective organizational culture is one in which knowledge is easily exchanged and knowledge management activities are encouraged (Janz & Prasarnphanich, 2003). Organizations say that they want to share knowledge across teams; however, a culture of trust and collaboration is required for this to occur (Abubakar et al., 2019). Past research has shown for a collaborative environment to exist it must exhibit interdependent goals, parity at the work levels, and individuals willing to share knowledge (Slater, 2004). When organizations understand the value

of collaboration it provides opportunities for successful knowledge management programs or vehicles that allow the sharing of knowledge (J. Duffy, 2000; Pfister & Eppler, 2012). Project termination activities are one such vehicle that can promote knowledge accumulation. A reward system that provides intangible or tangible benefits can be used to stimulate collaboration and knowledge sharing among the personnel. Being an integral part of closing out a project and sharing in the success can have a positive motivating effect (T. A. Hurley & Green, 2005).

Organizational culture is considered a dysfunctional factor when considering a functional hierarchy, due to the resistance of past practices. Organizational culture is known for holding on to forces that provided past successful behaviors, not recognizing the need to adapt to a changing environment or strategy (Deal & Kennedy, 1983; Kilmann, Saxton, & Serpa, 1985; Kotter, 2008). Organizations are in search of dimensions that will allow and accept change (Morrison, Smit, & Brown, 2006). The findings of the Morrison 2006 study matched the variables of organizational concerns in other project management literature, especially, the dimensions (Table 1 and Figure 4) of organizational culture. Morrison's research strengthened the assumptions that organizational culture is in fact a relevant influence on the success of project management. Also, the proposed dimensions capture what is required to provide a supportive project management environment. There were very few studies, if any, that contradict the findings of Morrison et al., (Morrison et al., 2006).

**Figure 4: Project Management success dimensions within Organizational Culture (Morrison, Smit, & Brown, 2006, p. 48)**



**Table 1: Organizational Culture (Morrison et al., 2006, p. 47)**

<b>Dimensions addressing the organisational concerns of project management</b>	
<b>No</b>	<b>Dimension</b>
1	A flexible and innovative organisation
2	The organisation needs to be integrated across departments
3	An organisation that is performance driven
4*	An organisation that supports its functioning through standardised processes and systems
5	A supportive leadership orientation in the organisation
6	An organisation that is comfortable with decentralising decision-making
7	An organisation that has an external or market focus
8	An organisation that has a clear strategic direction
9	An organisation that emphasises personal competency development
10	A people-oriented organisation
11	An organisation that fosters openness of communication and information
	--
	--
12	An organisation that makes decisions on a rational basis

There have been many models used to identify what organizational cultures measures are the most effective and comprehensive. These studies have produced a multitude of constructs comprised of many different dimensions; however, later studies have sought to merge the dimensions into useable frameworks (Alhiddi et al., 2019; Morrison et al., 2006). Most of these studies were quantitative in nature and combined a realist view of traditional cultural research

(Morrison et al., 2006). As a result of the analyses, six studies emerged due to their alignment with the functional and quantitative nature of organizational studies. The concepts from these studies are mainly concerned with managerial issues and schools of thought that have been accepted as a valid perspective of organizational culture research (Zammuto, Gifford, & Goodman, 2000). The research that was utilized to obtain accepted dimensions across the construct of organizational culture incorporated managerial schools of thought, total quality management ideologies, project management requirements, and the top management beliefs that promote an effective marketing environment (Morrison et al., 2006). Quinn and Rohrbaugh (1983) developed a Competing Values Framework (CVF) and Fitz-Enz (1986) created the Organizational Value Congruence Scale which is based on the CVF model. The unification of these two models explores elements of compliances, motives, management decisions, effectiveness and organization forms (Jac Fitz-Enz, 1986; J Fitz-Enz, 1986; Quinn & Rohrbaugh, 1983). The model shown in Fig.5 represents how the CVF could map into the component of organizational culture. The model is built on two axes with the vertical axis representing control and flexibility and the horizontal axis representing internal/external organizational factors. The flexibility scale shows the firms desire to remain flexible and spontaneous while the control scale reflect the desire to stay stable or controlled (Alhiddi et al., 2019).

**Figure 5: Competing Values Framework (CVF Model) (Alhiddi et al., 2019, p. 151)**



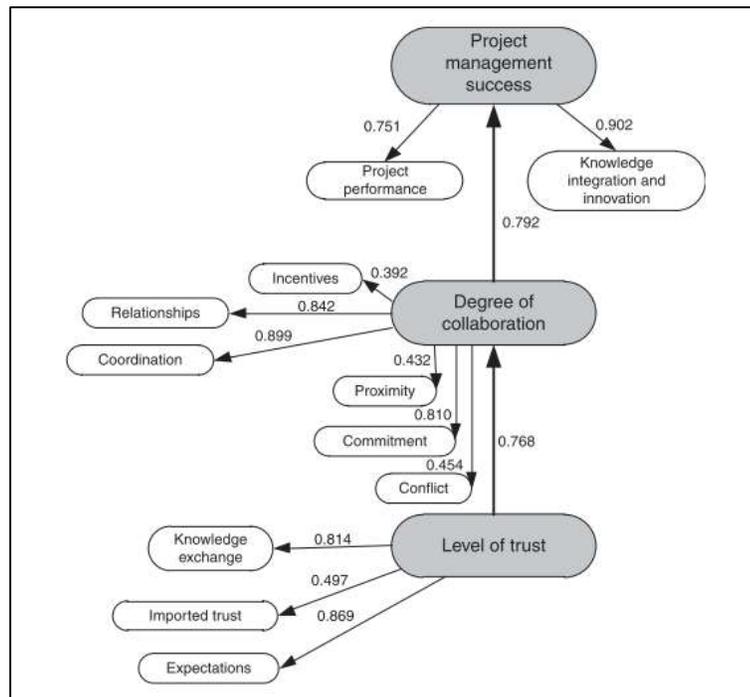
Earlier literature has observed that correct management of the organizational culture is directly linked to project success (Alhiddi et al., 2019; Cameron, 1985). The CVF model (Fig. 5) reveals that understanding of the culture helps in reducing conflicts which promotes innovation and leads to future delivery of project success. This also provides the link between organizational culture and successful project management. There is very little literature linking organizational culture to stakeholder management, however, if both culture and stakeholder management impact the success of project, then there must be an obvious connection between the two elements (Alhiddi et al., 2019).

Radujkovic (2017) identified that project management success factors are broken down into three categories that include project management competency and team capabilities, organizational culture and structure, and project management tools and standards (Radujković & Sjekavica, 2017; Venczel, Berényi, & Hriczó, 2021). Organizational culture is considered to be

the most important factor when collecting and applying knowledge (Venczel, Berényi, & Hriczó, 2021). The culture determines what is considered valuable, and what knowledge needs to be applied to maintain or obtain a competitive advantage. Successful organizations create an encouraging culture that allows for knowledge to be created and shared. Choi and Lee, (2003) focused on the concept of care which focuses on collaboration, trust, and learning which is required in organizational relationships for learning (Choi, 2003).

Collaboration in an organization is where people actively work to help each other within a group (R. F. Hurley & Hult, 1998). A collaborative culture enhances knowledge acquisition through the increased exchange of thoughts and idea. Exchanging of knowledge among groups is achieved in a collaborative culture by reducing fear and increasing open communication with other group members, and is a prerequisite for knowledge creation (Nahapiet & Ghoshal, 1998; Von Krogh, 1998). Collaboration between organizational members reduces individual differences and increases knowledge about the internal and external organizational environments such as the supply chain (Choi, 2003). Collaborative learning is the basis for effective group dynamics and is obtained through personal familiarity, intimacy, and trust (Bond-Barnard, Fletcher, & Steyn, 2018). A trust-based collaborative environment is also required in the construction industry to ensure that information is begin shared across the supply chain in an effort to secure commitments at the start of projects (Manu, Ankrah, Chinyio, & Proverbs, 2015). However, Manu et al. (2015) does indicate there is still significant research required on how to achieve a trust-based collaboration system in the construction and other industry supply chains. Literature does endorse the importance of trust as an element that determines the degree of collaboration, and this is also shown as the direction of the relationship proposed in the model Figure 6 (Bond-Barnard et al., 2018).

**Figure 6: Model for the relationship between Project Management Success, Collaboration, and Trust (Bond-Barnard, Fletcher, & Steyn, 2018, p. 435)**



Having faith in knowing others intentions and behaviors is the basis of trust (Szulanski, 1996). Szulanski, (1996) performed an empirical study that supported lack of trust among employees is a key barrier preventing the exchange of knowledge. Mutual trust can result in knowledge creation due to increased communication. The fear of risk involved in sharing knowledge is reduced and creates a climate of learning (Choi, 2003). When you have trust, people are more willing to exchange information and impart knowledge. Trust in a cross-functional organization is especially important when considering the effectiveness of knowledge management (Choi, 2003). A trust-based collaborative environment aids in facilitating improved communication to enhance knowledge (Bond-Barnard et al., 2018).

Leaders and managers involved in the practice of knowledge management struggle with how to develop a climate of trust built on a culture that rewards knowledge exchange to include mentoring, learning, and cross-functional team collaboration (Janz & Prasarnphanich, 2003).

Management has a need to create this knowledge-based culture to facilitate the creation of knowledge and the dissemination of knowledge. However, very little research has been performed on what constitutes and creates this culture (Janz & Prasarnphanich, 2003).

Research has shown that an acceptable level of collaboration between customer and supplier can reduce the costs of controlling, decrease the likelihood of failure and enhances the potential for learning and innovation (Bond-Barnard et al., 2018). Learning can be defined as the acquisition of new knowledge and occurs within organizations dependent on the level of encouragement. By emphasizing learning and development, individuals within organizations become much more involved in the knowledge acquisition and creation process. For successful knowledge creation, organizations must adopt a learning culture (Choi, 2003).

Organizational flexibility is a concept that encompasses the idea of a company's ability to enhance their innovative capability. A flexible strategy is a dynamic capability that allows companies to effectively deploy resources and utilize knowledge based on the current environment (Saeed, Tabassum, Zahid, Jiao, & Nauman, 2021). A firm's strategic behavior towards the market in which it competes, and its technological orientation has a direct effect on its product innovativeness or capability (Khin, Ahmad, & Ramayah, 2012). A flexible organizational culture can efficiently integrate new knowledge used to create innovative ideas. A flexible culture promotes prompt responses and the efficacy to take advantage of new opportunities and competitive threats (Saeed et al., 2021). Saeeds' (2021) study revealed that flexibility as a dynamic capability, enables organization change, enhances innovative capability, and improves the performance of project portfolios (Saeed et al., 2021).

A culture that embraces innovation, new ideas, and information technology can play a large role in breaking down organizational communication barriers. Tools associated with

information technology enable collaborative learning and have a dynamic role in knowledge management (Abubakar et al., 2019)(Davenport & Prusak, 1998). Investing in technological infrastructure increases the success of knowledge management projects and its associated applications has become a cultural requirement for business success (Gold, Malhotra, & Segars, 2001).

Managing projects of all sizes will typically involve stakeholders in and outside of the organization. These stakeholders will place a drain on the organization's resources and create conflict due to competing values and demands (van Marrewijk & Smits, 2016). Hofstede et al. (2002) developed a five-dimension model that is used to aid in explaining cultural awareness and can be used to reduce the social conflict created by stakeholders (Hofstede, Pedersen, & Hofstede, 2002). When discussing success it is clearly dependent on stakeholders, clients, sponsors, managers, resources, team members, and the organizational culture. These are core elements of project management or project success (Alhiddi, Osborne, & Anyigor, 2019).

The word success defined throughout the literature shows that it is dependent on multiple factors, like stakeholders, project resources, project team members, clients, sponsors, managers, and organizational culture. Each one of these factors can provide some measure of the success or failure of the project (Young, 2013). The classic definition of a stakeholder is “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Friedman & Miles, 2006). There are quite a few publications and theories about stakeholders. One of the most accepted stakeholder theories is the theory of organizational management and ethics (Phillips, Freeman, & Wicks, 2003). Because of the increase of stakeholders’ diversity, power, and influence, Meding, (2013) suggests the theory needs to bridge the gap between a firms profit and growth and the ethical relationship management of stakeholders (Von Meding,

McAllister, Oyedele, & Kelly, 2013). The literature acknowledges that stakeholders have considerable effect on project outcomes. This means that the organizational culture must embrace all stakeholder dynamics, characteristics, relationships and communication requirements, and must also understand the engagement requirements (Alhiddi et al., 2019). Organizational culture is a complex construct with many dimensions and the reported values and beliefs from a parent company may not be a reliable measure of the required culture in another region. Stakeholders on one project or region may not have the same requirements and need to be addressed individually (Marcoulides & Heck, 1993).

Typically within an organization, the structure and strategy of the organization determines the type of culture that will prevail. The converse is also true, the organizational culture is usually a reflection of the strategy and mission of the organization (Anbari, Carayannis, & Voetsch, 2008). Consider an entrepreneurial start-up company with a decentralized structure that authorizes its lower to mid-level management who interface with customers to make decisions when presented with issues and opportunities. In a more established bureaucratic company, the aforementioned decisions are left in the hands of the senior managers. The structure follows the overall strategy of the organization and shows that when a project is unbalanced between the organizational capabilities and experience of the functional team, then the project manager should be empowered to manage on the spot decisions related to projects (Carayannis & Coleman, 2005). This includes learning from past projects and the transfer of knowledge to the various stakeholders (Anbari et al., 2008; Carayannis & Coleman, 2005). The value of the post project review is obtained from the effective flow of information from the lessons learned on all projects to improve performance on existing and future projects, enhance organizational skills, and to educate the entire organization. The flow

of information in the most effective type of structure is typically controlled by the project management office (PMO) which is responsible for managing all active projects (Anbari et al., 2008).

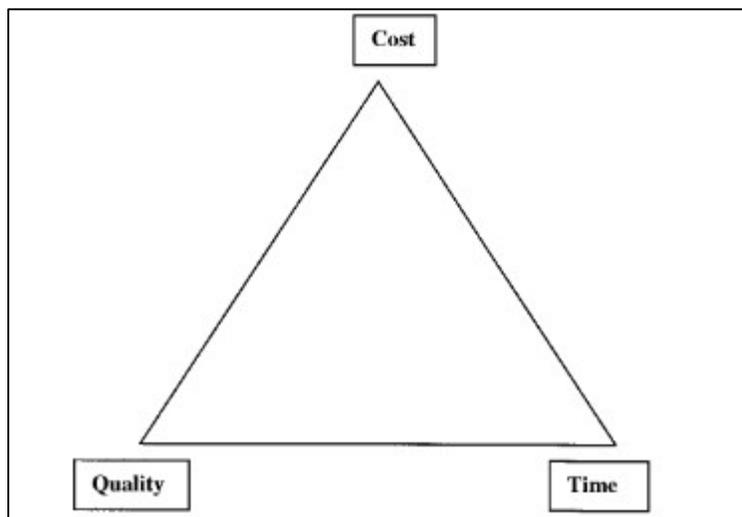
## **2.4 Project Termination Quality**

There are several phases of managing a project, and all portions are equally important. The initiating, planning, executing, and controlling phases always seem to gain most of the attention at the management level. Unfortunately, the attention required in finishing a project has a tendency to be neglected. To close or terminate a successful project involves gaining approval from all stakeholders. It verifies that all deliverables are complete and satisfactory and validated to ensure all project exit criteria were met. Finishing the project includes formal acceptance, and finalization of all project documents, including lessons-learned (Snyder, 2013). To terminate an unsuccessful project involves the same activities as a successful project except for the handoff of the final asset or deliverable. Conversely, lessons learned in a successful project are just as important as the ones learned in a failed project. With all that is required to terminate a project, it would seem obvious this stage would receive the same attention as the previous stages. The limited attention given to the termination phase even expands to existing literature, where less than 5% of pages discuss project closure (Havila et al., 2013).

To further illustrate the importance of the project termination phase, one needs to explore the project management methods that are derived from management and mathematical models of network analysis, and the Theory of Constraints. The two best-known methods for managing project timelines are the Critical Path Method and the Critical Chain Method, which originated from the Theory of Constraints (Bartoska & Subrt, 2012). These methods involve managing

tasks through timeline events. A timeline subject matter that everyone has most likely experienced when working on projects is the phenomenon of procrastination or Student Syndrome. The Student Syndrome can occur on tasks other than schoolwork and is prevalent during any project. The time plan is one of the cornerstones of the project management or iron triangle (see Fig. 7) (Snyder, 2013).

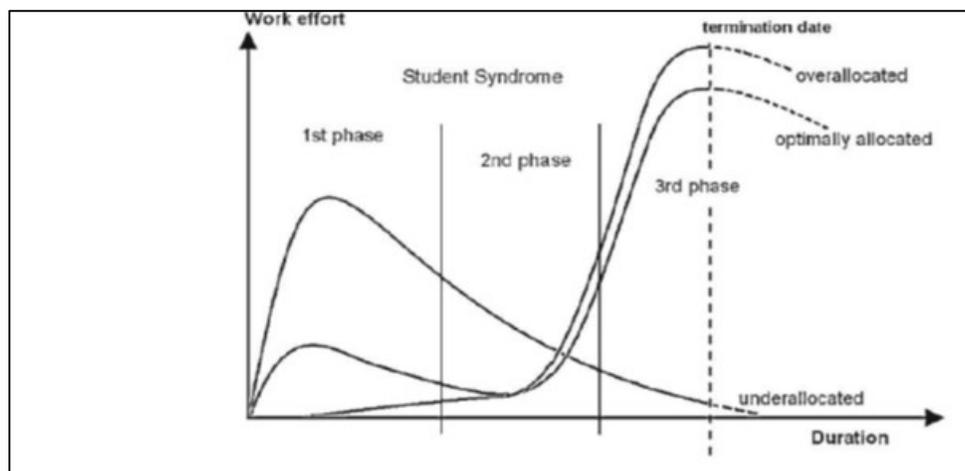
**Figure 7: Project Management Triangle (Snyder, 2013)(Atkinson, 1999, p. 338)**



When changing the time involved on a project, there is an associated increase in project cost. The change in time could also have an impact on the scope of the project. People are limited by time and can only control resources and cost. Project Managers or anyone working on project always begin with the idea that tasks will be carried out in the shortest amount of time using the resources available (Bartoska & Subrt, 2012; Snyder, 2013). It is in everyone's nature to relax during normal working time if one believes there is significant time left available to complete the project. Unless the person is under a significant amount of stress to complete the project, there is nothing there to motivate them to move forward. This situation exposes the human element in project management and is defined as "Parkinson's first law" (Parkinson,

1991). Extending this law to resource allocation states that “during any human activity, work intensity will be higher at the beginning and at the end and a greater decrease in work intensity in the second third of the duration is a feature which can always be expected” (Bartoska & Subrt, 2012, p. 373). Figure 8 outlines the three phases of work during Student Syndrome, which correlates directly to any project (Bartoska & Subrt, 2012). The three lines in the graph represent three different scenarios. The

**Figure 8: The variability of work effort for different resource allocation (Bartoska & Subrt, 2012, p. 372)**



under-allocated line represents the work effort put forth if everyone put the effort forward in a timely manner throughout the project. The over-allocated and optimally allocated lines display how projects are typically executed. In a perfect project scenario, the resources required in the 3<sup>rd</sup> phase would be minimal. However, in a typical project, the 3<sup>rd</sup> phase or closing phase requires that the project team use maximum effort. Therefore, the termination phase should have more emphasis placed on the closing of the project rather than being an afterthought. This attention should apply to both completed and terminated projects (Bartoska & Subrt, 2012).

Project termination is often overlooked by project managers and senior managers even though it can determine to overall success of the project. This can be the case even if the technical aspects of the project are considered to be met. Ineffective closing of a project can prevent the ability to obtain the total contractual value of the project, causes project schedule overruns, tarnish the image and creditability of the project team and possibly the organization, lockup valuable human resources that could be used elsewhere, and create unnecessary stress on the project personnel (De, 2001).

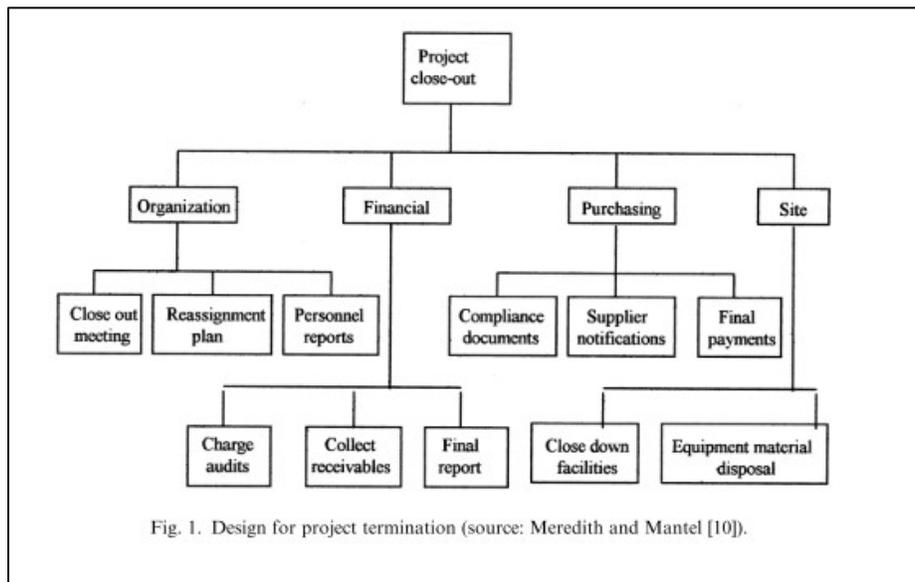
When closing out a project, there are typically one of four reasons that caused the termination: addition, integration, starvation, and extinction (Mantel & Meredith, 2009; Meredith & Mantel, 2000). Institutionalizing a project as part of the organization is considered addition and distributing personnel, equipment, knowledge, or functions to the organization is defined as integration. The starvation strategy is used when projects are considered unsuccessful or obsolete and the organization wishes to cut its' losses by reducing the funding required to complete the project. Starvation will be used by management when they do not wish to admit project failure. Extinction of the project is usually because the goals were met and the endeavor was considered successful. These reasons can be the result of the appearance of a competitor that causes a threat by providing more robust solutions, failure to conform to required test results, changes to the probability of success, and changes to the external market environment (De, 2001). Regardless of the reason, organizations must develop a plan to terminate a project. The termination entity is almost considered a project unto itself because it has to be planned, budgeted, and scheduled just like any other part of a project lifecycle. Project Managers need to ensure project completeness, delivery and acceptance, final documentation, release of personnel and material resources, and assign responsibility for ongoing support (Mantel & Meredith, 2009;

Meredith & Mantel, 2000). The ideal scenario for the closing of a project after the physical completion of the defined scope within the contractual agreement is to complete it in the shortest amount of time possible. Even though stakeholders could be negatively impacted, they desire quick turnaround on terminations to improve profitability (De, 2001).

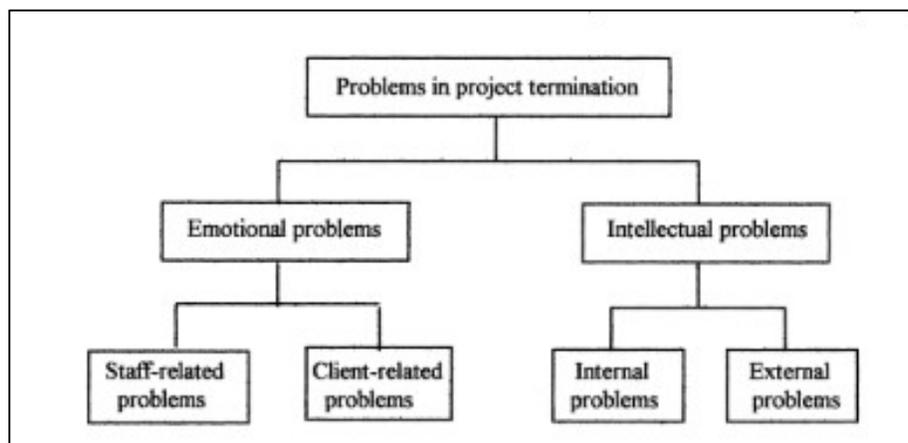
Most of the limited literature available that discusses project termination focuses on premature closures and not on successful project outcomes. The decision to terminate a project early has very little impact on the technical success or failure, however, the decision to end the project early may be more important than continuing. The decision to end a potentially failed project has a significant effect on the attitude towards the project and organization. The taste left with the client, senior management, and the project team members can have a tremendous influence on the success of future projects (Dvir, 2005).

Even with the limited amount of literature supporting project closing activities, there have still been a few checklists and models proposed outlining the activity. Archibald in 1976 started the model development by creating an extensive check-list for what it is expected during a project termination (Archibald, 2003). This model identifies elements of a checklist that should be incorporated during the termination process. It breaks the elements into organizational issues such as the reassignment of personnel, financial aspects to ensure the project meets its budgetary obligations and maximizes potential profits, the handling of suppliers, and lastly managing issues related to the closing down of the project site (De, 2001). Meredith and Mantel, 2000 proposed a model that is still applicable today and is shown in Figure 9 (Mantel & Meredith, 2009; Meredith & Mantel, 2000). Stallworthy and Kharbanda (1983) outlined problems that occur during project termination and categorized them into emotional and intellectual problems shown in Figure 10 (Stallworthy & Kharbanda, 1983). This model viewed

**Figure 9: Model for Project Termination (De, 2001, p. 120)**



**Figure 10: Problems during Project Termination (De, 2001, p. 121)**



the impact from a personnel point of view and outlines problems such as the fear of no future work, employees losing interest in remaining tasks during closure, and loss of motivation and team identity. The Stallworthy and Kharbanda model also points to problems with the client's change in attitude towards the project. This new attitude includes loss of project interest,

personnel shifts, and lack of availability of key team members. The model also points to internal and external problems that need to be handled. Internal problems include certification requirements, remaining commitments, decisions on partially completed tasks, and disposal of unused material. The external problems include obtaining agreement from the client on the completion of the deliverable, obtaining required certificates, closing out payments with suppliers, communication of the project closure, and closing down facilities (Stallworthy & Kharbanda, 1983).

De 2001 performed a mixed study (quantitative and qualitative) to aid in identifying the main problems that need to be solved by project managers during the termination phase. The study also aimed at determining project success factors as the project moved through its' lifecycle. Based on the observations of the study it identified the problems most significant to project managers during a project closure. These results were similarly matched to the Meredith and Mantel [10] and Stallworthy and Kharbanda (1983) models. The top five problems were identified as "1) Negotiating claims with clients, 2) Compliance of statutory requirements, 3) Receipt of the final installment of payment, 4) Performance guarantee tests, and 5) Handling claims of suppliers" (De, 2001, p. 121).

Most of the limited literature available that discusses project termination focuses on premature closures and not on successful project outcomes. The decision to terminate a project early has very little impact on the technical success or failure, however, the decision to end the project early may be more important than continuing. The decision to end a potentially failed project has a significant effect on the attitude towards the project and organization. The taste left with the client, senior management, and the project team members can have a tremendous influence on the success of future projects (Dvir, 2005).

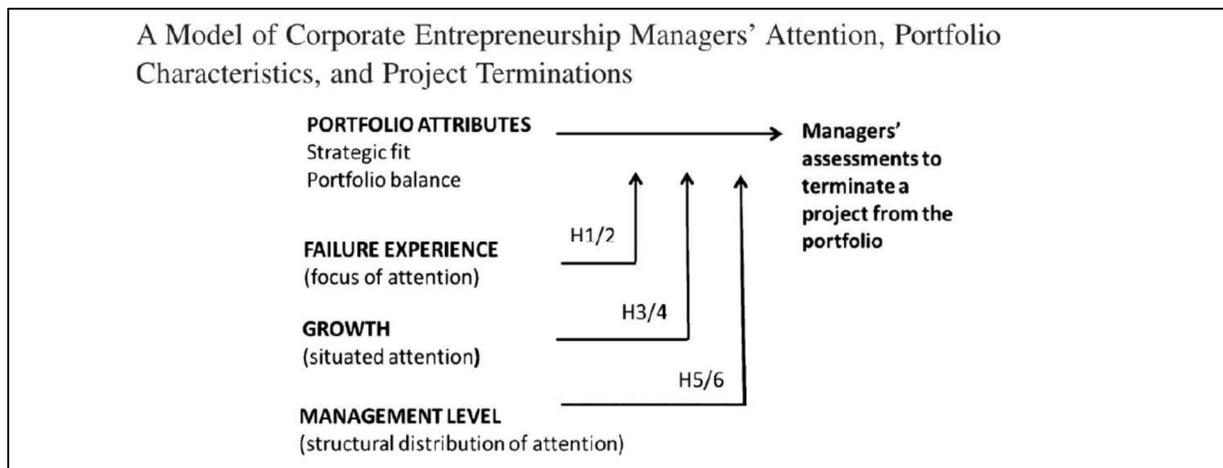
Project termination decisions are extremely difficult to make because of the fact that there are many considerations that need to be taken into account. In the study performed by Guan, 2002, the research team identified twelve variables similarly identified in other studies that aid in determining the success or failure of a project. These variables included commitment from the project team and management, feasibility, strategic fit, project capability, and the potential for market success (Guan, Liu, & Peng, 2002). Not all of the variables need to be positive for projects to be successful. However, these variables are indicators that need to be monitored during the different phases of a project (Guan et al., 2002).

When a project is terminated, the firm needs to begin releasing project resources and start reassigning team members to other groups or functions. Many times, it has been found that managers understand this effect and make termination decisions based on bias. Because of this phenomenon, it is important for firms to employ a portfolio project strategy so that resources can be shifted where needed and not have an impact on a firm's performance. The decision to terminate a project is difficult for managers because it is an admittance of failure and could reflect poorly on the project team (Vaculik et al., 2019). The article by Behrens, 2016 utilizes a cognitive psychology and attention-based view (ABV) that contends managers should draw insights from past project failures and utilize this information across the firm's portfolio when making termination decisions (Behrens & Patzelt, 2016).

Manager's must make termination decisions through using evaluation tools and processes that monitor elements of the twelve variables identified by Guan (2002) that make a project successful (Guan et al., 2002). Ensuring a strategic fit is one of senior management's core responsibility in project portfolio management (Unger et al., 2012). Senior managers are financially responsible for each project and must take ownership of the project outcome. In a

portfolio perspective, the managers need to consider the strategic fit or alignment of the project with the overall corporate strategy. Another item to consider is the portfolio balance as it relates to R&D projects. The portfolio balance refers to having a diverse spread of projects that strengthens the overall value of the firm (Unger et al., 2012). When making the termination decisions, managers only have limited attentional resources as it relates to the success of a project. The ABV interprets firms as systems which focuses the time and effort by decision-makers on the 1) the problems, opportunities, and threats, and 2) the available actions or alternatives to solve the dilemmas presented (Behrens & Patzelt, 2016). Behrens (2016) contends that the manager's attention is regulated at three levels of analysis, as shown in Figure 11.

**Figure 11: Management Attention, Portfolio Characteristics, and Project Terminations (Behrens & Patzelt, 2016, p. 819)**



The management level, the situated attention provided by the project, and individual attention that moderates the decision to terminate a project (Behrens & Patzelt, 2016). The quality of the project termination is extremely important in a portfolio project-based firm. In the study

outlined in the Unger (2012) article, it contended that Senior Management Involvement was critical in making the proper termination decision (Unger et al., 2012).

Most of the project management discussions within literature focus on the planning and execution phases with very little thought on the methodology required for project closure. Managerial (Padalkar & Gopinath, 2016). Many problems emerge with project termination practices such as the failure to close non-value add projects or when project failure is imminent (Lechler & Thomas, 2015; Unger et al., 2012). More often than not the project terminations are not planned or budgeted due to the lack of a formal planning processes (De, 2001). Organizations with a strong culture of punishing failure and the internal competition created during the project closing inhibits the closing activity that is known to be useful, however, the opportunity to learn is intentionally lost (Williams et al., 2014). The insufficient attention to the closure phase tends to limit project managers ability to effectively close projects. The performance during the project closing phase has a direct relationship to benefit realization and stakeholder satisfaction (Dupont & Eskerod, 2016). When the culture is not supportive for closure activities it is of utmost importance for a competent and skillful project manager to drive the activity (Wen & Qiang, 2019).

The lack of insufficient attention and lack of guidance limits project managers' ability to effectively manage project closing activities and acts as the major cause of the above problems within the organization culture. Project closure includes critical activities that cannot be ignored when considering the success of projects and project management success. These activities include items such as, contract settlement, project delivery or transfer, experience accumulation, and strategic partnership development (Bakker, 2016; Davis & Venkatesh, 2004). The performance or quality of the termination phase directly relates to project benefit realization and

customer satisfaction, so there is a pressing need for competent management of project closing (Dupont & Eskerod, 2016). Because project managers are the first point of contact with the stakeholders, they assume the most pivotal role during project terminations (Felekoglu & Moultrie, 2014; Lechler & Thomas, 2015).

Von Zedtwitz (2002) specified that post-project reviews provide organizations with the opportunity to improve performance on future projects. However, his studies revealed that only one out of five research & development projects receive a post-project review (Von Zedtwitz, 2002). Post-project reviews have long been thought of as being beneficial to the organization. To improve the process Anbari (1985) maintains these reviews should be implemented throughout the entire project life cycle (Frank T Anbari, 1985). The post-project evaluation needs to be conducted during the termination phase to measure the success of the project based on its objectives. These evaluations will identify the project plan variances, lessons-learned from the project, recommendations to ensure future project success (Frank T. Anbari, Carayannis, & Voetsch, 2008). According to Cleland, 1985 suggests that project evaluations should consist of three parts 1) pre-project evaluation to improve the selection of a project that fits the organizations strategy; 2) ongoing evaluation during the project; and 3) post-project evaluation for the success or failure assessment to develop a lessons-learned profile for use on the management of future projects (Frank T. Anbari et al., 2008; Cleland, 1985). A project manager that neglects ongoing evaluations does not have a check as to whether the planning and execution phases of a project are effectively meeting the defined goals (Frank T. Anbari et al., 2008).

## 2.5 Organizational Learning

A simplistic view of organizational learning defines the process as the detecting and correcting of errors. Error is considered any aspect of knowledge that inhibits learning. Argyris (1977) & Basten (2018) outlines that when errors are detected and the organization carries on with its presents policies or achieves its objective the process is called single-loop learning (Argyris, 1977)(Basten & Haamann, 2018). A good example of single-loop learning is the operation of a thermostat. The thermostat that can detect or learn when it is too hot or cold and then turns the heat or cooling on or off. The thermostat was able to collect the information about the temperature of the room and make the necessary correction (Argyris, 1977).

For organizations to truly benefit from the detection of errors, they would need to employ the process of double-loop learning (Antunes & Pinheiro, 2020; Argyris, 1977). To further illustrate the concept, consider again the thermostat. What if the thermostat could question itself about what the temperature should actually be? It would not only detect the temperature error but it would question its own policies, procedures, and goals. The second question is a more comprehensive inquiry called double-loop learning. When factory personnel are working to detect and correct errors while manufacturing a product that is considered single-loop learning. When the personnel inquire as to whether the product should even be manufactured, that is considered double-loop learning, because they questioned the organization's current policies and objectives (Argyris, 1977).

For organizations to learn they must have a culture that embraces double-loop learning. Many organizations adhere to the notion of do-not-confront company policies and objectives, especially those that top executives or management are excited about. Thus, communicating the truth upward can be a serious problem for employees in organizations due to violation of the

organizational norms. These norms of hiding errors inhibit double-loop learning even though policy says to reveal errors (Antunes & Pinheiro, 2020). This creates a double-bind or moral hazard for employees who risk getting into trouble if they say something about the issue, or if they hide the errors and do not say anything. Because of these games and norms it is difficult for firms to implement double-loop learning because it would contradict organizational policy (Argyris, 1977).

Under the double-bind condition, double loop learning would typically occur because of three reasons: an event in the environment warranting some type of response (for example, a pandemic, competition releasing a new product); an internal organizational revolution (new management) or from outside influences (political interference or takeover); or an intentional crisis created by management in an effort to shake up the organization. These reasons present their own set of problems. The change required happens long after the issue has been realized. The delay teaches the organization their alertness is not valued. Also, those not involved are reinforced in their behavior of not reporting issues and continue to keep their reputation untarnished by waiting for others to step forward. Lastly, under a crisis situation the team members become exhausted reinforcing the factors that prevented double-loop learning. Therefore, organizational learning does not take place (Argyris, 1977).

Argyris (1977) created a model shown in Figure 12 (Theories of Actions) that outlines when single-loop learning and double-loop learning occur. Most people theorize their actions to be successful and are determined by the values that organizations or other people hold. There are four values people carry that operate under Model I of Argyris (1977). “They are (1) to define in their own terms the purpose of the situation in which they find themselves, (2) to win, (3) to suppress their own and others' feelings, and (4) to emphasize the intellectual and

deemphasize the emotional aspects of problems” (Argyris, 1977, p. 119). To satisfy these values, people employ behavioral strategies that include advocating a position and controlling others to maintain that position. They also want to control the tasks and secretly determine how much of the truth to tell. Model II of the “Theories of Actions” was created to help produce valid and reliable information, allowing for informed choices, and to create a commitment to those choices (Argyris, 1977). The basis of the model promotes the idea of double-loop learning by having reliable information from reliable sources, and continually monitoring the effectiveness of the choices. The key result of Model II was to combine advocacy and encouraging inquiry without negative confrontations. Lastly, Model II focuses on the building of trust, client satisfaction, and risk taking (Argyris, 1977). The “Theories of Action” Model II embodies what is required of the project termination aspect that enhances double-loop learning which is an element of project termination quality by satisfying the end customer, reducing risk, and showing a profit (Moynihan, 2002).

**Figure 12: Theories of Action (Argyris, 1977, p. 118)**

Exhibit I Theories of action				
Governing variables for action	Action strategies for actor	Consequences on actor and his associates	Consequences on learning	Effectiveness
I	II	III	IV	V
<b>Model I</b>				
1 Achieve the purposes as I perceive them.	1 Design and manage environment so that actor is in control over factors relevant to me.	1 Actor seen as defensive.	1 Self-sealing.	
2 Maximize winning and minimize losing.	2 Own and control task.	2 Defensive interpersonal and group relationships.	2 Single loop learning.	Decreased.
3 Minimize eliciting negative feelings.	3 Unilaterally protect self.	3 Defensive norms.	3 Little testing of theories publicly.	
4 Be rational and minimize emotionality.	4 Unilaterally protect others from being hurt.	4 Low freedom of choice, internal commitment, and risk taking.		
<b>Model II</b>				
1 Valid information.	1 Design situations or encounters where participants can be origins and experience high personal causation.	1 Actor seen as minimally defensive.	1 Testable processes.	
2 Free and informed choice.	2 Task is controlled jointly.	2 Minimally defensive interpersonal relations and group dynamics.	2 Double loop learning.	Increased.
3 Internal commitment to the choice and constant monitoring of the implementation.	3 Protection of self is a joint enterprise and oriented toward growth.	3 Learning-oriented norms.	3 Frequent testing of theories publicly.	
	4 Bilateral protection of others.	4 High freedom of choice, internal commitment, and risk taking.		
<small>Note: Exhibit I taken from Chris Argyris and Donald Schon, <i>Theory in Practice</i> (San Francisco: Jossey-Bass, 1974.)</small>				

Most project reviews typically occur through phases during the life of the project. However, the final review is exclusively focused only on the salient technical issues or dismissed entirely due to time constraints. Post-project reviews in theory are aimed at capturing process knowledge to enhance future projects (P. Duffy & Thomas, 1989; Neale & Holmes, 1990). The bottom line is that most companies have not defined a structured approach to learning from projects after the project is either prematurely terminated or completed. Surveys have shown that 80% of all R&D projects are never reviewed at all upon completion (Von Zedtwitz, 2002).

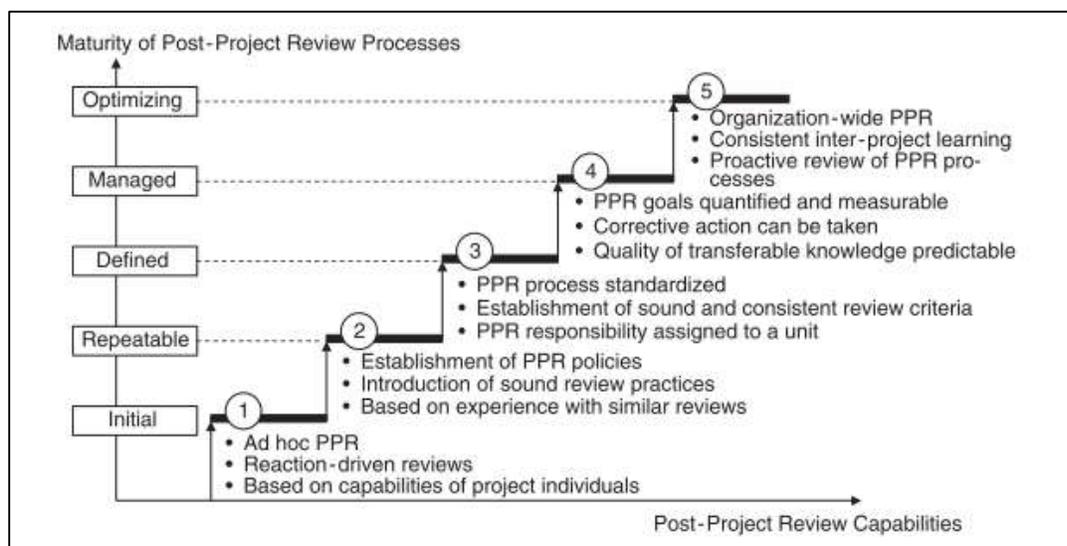
Research has shown that future project success is more likely to occur when companies incorporate reflective practices in their project management processes (DeFillippi, 2001). There

have been a number of the methodologies created for structured learning from projects, for example (Barker & Neailey, 1999; Collier, DeMarco, & Fearey, 1996) and (Kerth, 2003). These studies incorporated the ideas of identifying future risks, providing benefits to the role of the individual or group, and identifying recurring patterns as a result of the post-mortem review process. If these methodologies or guidelines were taken seriously, post-project reviews would occur more frequently with more attention detail. However, these reflective practices are typically viewed as non-value-add to the existing company practices and resisted unless the organization has reached a certain level of maturity that is open to knowledge sharing (Von Zedtwitz, 2002).

The Software Engineering Institute developed a capability maturity model (CMM) to describe the capabilities of software organizations to provide guidance on how to improve software development processes (Paulk, 2009). The Von Zedtwitz (2002) article leveraged this model and created a five-level maturity model for post-project reviews. This maturity model (Figure 13) is designed as a framework that outlines a progression from an immature review process to a process that is well organized and mature (Von Zedtwitz, 2002). “The maturity model (Fig. 13) is organized into five levels: Initial; Repeatable; Defined; Managed; Optimizing. Each level is described in terms of key processes that contribute to the degree of implementation and institutionalization of the review processes in place” (Von Zedtwitz, 2002, p. 264). Mistakes can be made worthwhile if organizations take the time to learn. Von Zedtwitz (2002) proposed a model for best practices in a post-project review and underlined the importance project closing events for organizational learning. Many projects at firms appear not to follow the optimization phase of the maturity model at all, and post-project reviews are not considered an important exercise. In portfolio-based organizations, the outcome of a post-project review must be

integrated into the organization capabilities and culture. If not, the entire exercise is wasted. Project managers assigned to upcoming projects should attend post-project reviews as observers to aid in transferring the knowledge between projects. Post review documentation should be stored in electronic data repositories and internal company newsletters. The maturity model supports post-project review practices and will become part of the organizations learning initiative (Von Zedtwitz, 2002).

**Figure 13: Maturity of Post-Project Reviews (Von Zedtwitz, 2002, p. 264)**

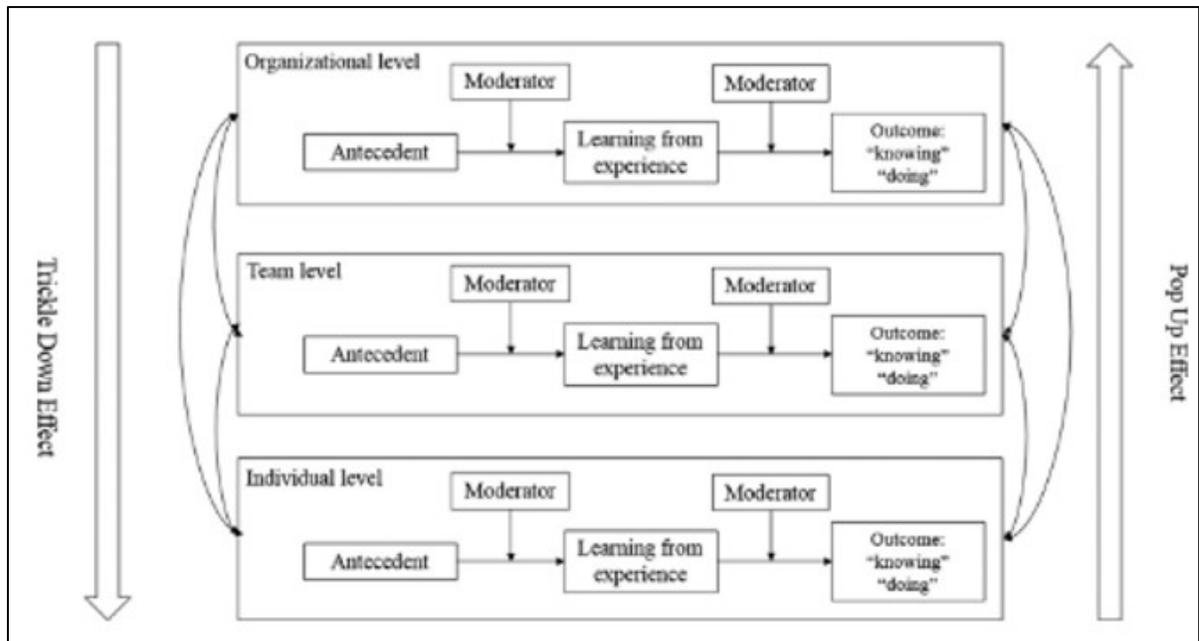


Organizations deal with many challenges due to continuously changing environments. These challenges exist at the individual, team, and organizational level and these past experiences can provide learning that can be used in future situations (Haunschild & Miner, 1997). Learning from experience can reduce uncertainty on current and future projects, cut research costs, increase the likelihood of success, and provide pathways for individual, team, and enterprise growth (Argote & Miron-Spektor, 2011). Even though there is extensive literature on learning from experience there are notable gaps and it is realized that experiential learning is a complicated process (Chen, Zhou, & Liu, 2017). There are many scattered studies that discuss elements that promote or prohibit learning generated by characteristics of the organization, team,

and individuals. These studies lacked framework and ignored the source of motivation for learning from experience (Chen et al., 2017).

Chen (2017) posits the source of motivation for experiential learning at the individual, team and organizational level is the motive to learn (Chen et al., 2017). The Chen (2017) article outlined two influencing factors (knowing and doing) that contribute to learning. These two groups contribute to changes in the subjective perception which refers to the fluctuation of emotion, attitude, and cognition as a result of an event that occurred with the organization. Objective experience refers to understanding the lessons learned from a particular event on what is that was learned, and how to deal with it. The changes caused by events that impacted the organization will influence the advancement of the learning process and affect the outcomes of “knowing” and “doing”. The multi-tier model shown in Figure 14 outlines how information is transferred between the individual, team, and organizational level. The moderators that impact the learning at these levels are the subjective perceptions and objective experience previously mentioned (Chen et al., 2017). In the Chen model, learning is shared at all levels based on what is deemed valuable at the outcome of each level with the model.

**Figure 14: Organizational Learning-Integrated Model-Learning from Experience (Chen, Zhou, & Liu, 2017, p. 151)**



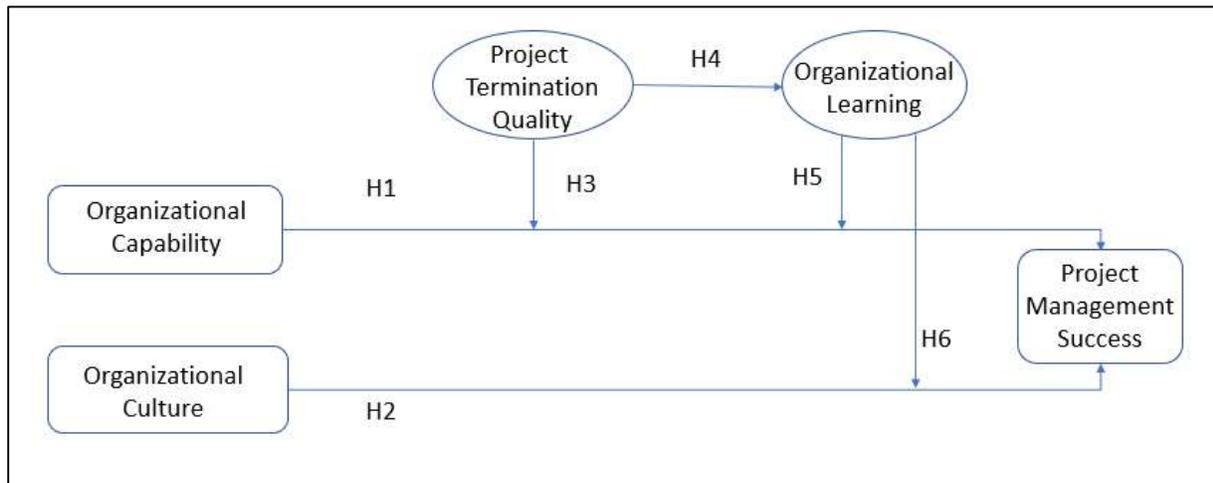
## 2.6 Research Model and Hypotheses Development

My research model utilizes the theory of resources and theories of actions to discuss the factors that promote project management success. First, I introduce my research model based on the theory of resources from the knowledge base view (KBV) perspective. Secondly, the model employs theories of actions to introduce moderating variables within the model. The constructs (organizational capability, organization culture, project termination quality, organizational learning, and project management success) are presented with the relationships defined by the aforementioned theories. Finally, I develop my hypotheses on the relationship between organizational capability and culture on project management success moderated by project termination quality and organizational learning. A summary of the hypotheses is shown in Appendix I, Table 2.

## 2.7 Research model

Figure 15 is a representation of my research model which is supported by the Knowledge Base View (KBV) of the firm, theories of action, and dynamic capabilities theory. Spender, 1996 discusses that prior to the 1990's firms rarely discussed terms such as organizational competence, tacit knowledge, intangible assets, organizational learning, or organizational capability, and most firms only looked at the tangible resources or assets (Spender & Grant, 1996). Today, firms view knowledge as the most important intangible asset and offers a competitive advantage (Spender & Grant, 1996). My research model supports the knowledge-based view of the firm by exploring the elements required for project management success utilizing the organizational learning construct identified as a dynamic capability that can enhance an organizations current capability and culture. My research model also incorporates the termination quality of a project as the lever required to enable organizational learning; which is a key element of project management that is typically overlooked. The Theories of Action is supported by highlighting termination quality as the event that triggers an organization to learn (Argyris, 1977). My research model represents the areas that impact project management success by exploring the impact that termination quality has on the firm's overall portfolio of projects. I seek to address the gaps revealed in the literature with regards to the impact project termination quality has on organizational learning and project management success. Also, extant studies have investigated and confirmed the positive effect of dynamic capabilities on firm performance or project management success (Meskendahl, 2010).

**Figure 15: Project Management Success Research Model**



## 2.8 Hypotheses Development

Organizations differ in many ways such as size, industry, levels of hierarchy, and employee skillsets. The constant is that most if not all organizations have projects designed to complete a specific task, or to provide a deliverable item to an end client. Within the organization, projects are viewed as singular in nature or are a part of a collection of projects that aligns with company's overall project portfolio. The concepts that are considered when discussing projects are project success and project management success (Toor & Ogunlana, 2010). Project success considers whether the overall goals of the assigned task are met. Whereas, the success of project management is determined by the constraints of time, scope, budget, stakeholder satisfaction, and the realization of benefits obtained from past lessons learned (Radujković & Sjekavica, 2017). Organizations can have multiple projects as part of an overall portfolio. Past research has shown a strong relationship between the success of project portfolios, firm success, and project management success (Saeed et al., 2021). The elements

required to achieve project management success will be analyzed as part of the research model presented in Figure 15.

Garengo (2007) proposed that organizational capability is the firm's ability to manage managerial processes (Garengo & Bernardi, 2007). In other words, these processes determine how management will operate when making decisions and controlling responses to environmental change, changing product portfolios, and adapting operational activities (Garengo & Bernardi, 2007; D. J. Teece et al., 1997). These management processes determine how a competitive advantage is maintained and how new requirements are identified and integrated (Garengo & Bernardi, 2007; Porter, 1987).

In today's fast paced business environment organizations need to augment existing capabilities in order to react and be flexible to internal and external changes. This increased reaction time represents the dynamic capabilities of a firm and are an important part of innovation process management (Vaculik et al., 2019). These dynamic capabilities are closely related to existing management capabilities and require a deeper understanding of the uncertainty and the ability to quickly readjust competencies and resources (D. J. Teece et al., 1997). Dynamic capabilities are considered beneficial when dealing with innovation or project termination activities. Without dynamic capabilities after closing a project or innovation activity could result in a slow recovery, reduce profitability, and even the ultimate survival of the firm (Vaculik et al., 2019).

When considering the success of project portfolio management, firms must have the organizational project capability or organizational capability to create a portfolio that aligns with the corporate objectives (Snyder, 2013). The organizational capability must be adaptable to business environment changes, provide transparency in decision making, offer predictable

project delivery, and offer short and long term stakeholder value (Petro & Gardiner, 2015). The role of a project manager is to utilize the capabilities of an organization to have a positive impact on his or her success to achieve project objectives, and aid in the integration of new capabilities so as to enhance the opportunity of future project success (Serra & Kunc, 2015). In summary, I hypothesize:

***Hypothesis 1 (H1): Organizational capability is positively associated with project management success.***

In an organization culture where there is unclear authority, perceptions about who is in control can have a negative effect on employees emotions (Morrison et al., 2006). Certain cultures reinforce the functional manager as the project authority, however, for the purpose of the study we will assume the project managers will be the primary authority on active projects. However, the project manager will still need to rely on the functional expertise of the team members, accounting systems, information systems, and upper managements decision-making processes (Morrison et al., 2006).

The reliance on the rest of the organization is an integral piece of project success. For project management to be successful they will require a culture of collaboration and trust for knowledge sharing to occur (Abubakar, Elrehail, Alatailat, & Elçi, 2019). When the organization recognizes the value obtained from collaboration, it paves the way for knowledge management programs such as the lessons learned from project terminations (J. Duffy, 2000; Pfister & Eppler, 2012). This recognition creates a learning culture which promotes organizational flexibility. A flexible culture is supported by the dynamic capability theory in that it promotes the redistribution of resources and knowledge based on the current business

needs (Saeed et al., 2021). A flexible organizational culture enhances firm's innovativeness, improves performance on project portfolios and efficient use of resources (Saeed et al., 2021).

Lastly, organizational project success is completely dependent upon satisfaction of internal and external stakeholders (Alhiddi et al., 2019). Without collaboration and a degree of flexibility in organizations, firms will struggle to satisfy stakeholder requirements. This stakeholder management culture must be embraced to handle all knowledge exchanges, communication requirements, and follow protocols on client engagement requirements and can have a positive influence on project management success (Alhiddi et al., 2019). Based on the aforementioned cultural qualities, I hypothesize:

***Hypothesis 2 (H2): Organizational culture that promotes collaboration, flexibility, and stakeholder management practices is positively associated with project management success.***

When closing a project, a firm must consider the effects associated with the event. Once the project is terminated or successfully completed, the project managers are left with the remaining artifacts. The Project Managers are typically strapped with limited resources to complete any remaining open tasks (Havila et al., 2013). These tasks sometimes include the re-direction of resources, negotiations with suppliers, payable issues, and any other concerns that have arisen as a result of the project. Providing a quality project termination on the remaining tasks offers organizations the ability to realize benefits derived from past experiences and improvement in customer satisfaction (Wen & Qiang, 2019).

The most critical issue is how to deal with disappointed project stakeholders, such as employees, customers, and suppliers. These stakeholders now face a situation that can have severe financial and emotional consequences and they desire a resolution (Havila et al., 2013;

Unger et al., 2012). Organizations have the ability to improve their project termination efficiency, cleaner transfer of the deliverables to stakeholders, better understanding of the budget impacts, and make quality improvements (De, 2001). Whether a project succeeds or fails, a quality closing event offers organizations valuable learning opportunities which can improve the chances of future project endeavors and project management success (Vaculik et al., 2019). The impact of organizational capabilities on project management success is positively enhanced, since it is expected that a quality project termination leads to increased stakeholder involvement and the realization of lessons learned that can aid in final and future project deliverables.

Therefore, I hypothesize the following:

***Hypothesis 3 (H3): Project termination quality has a positive moderating effect on the relationship between organizational capability and project management success.***

Organizational learning defined by the literature is a process adapted by the organization to create, transfer, and to integrate knowledge within the organization (Tohidi, Seyedaliakbar, & Mandegari, 2012). Eris and Ozmen (2012) found that organizational learning influences the company's performance. The research by Eris and Ozmen (2012) provided distinct proof about organizational learning, market orientation's role, and the innovation required to improve the company's performance (Eris & Ozmen, 2012). For organizations to learn, there is typically an event or crisis that forces the learning to occur (Argyris, 1977).

In a project portfolio environment, the quality of the project termination or post-project review is considered a key part of the organizations continued growth and success (Von Zedtwitz, 2002). The project termination becomes the event that triggers organizational learning. The closing process becomes a method that enables Model II of the Theory of Actions

(Moynihan, 2002). This project termination activity is the source of reliable information that enables double-loop learning and has a positive direct effect on organizational learning.

Double-loop learning occurs when processes or decisions are changed based on past experiences (Argyris, 1977). Conversely, poor project termination quality significantly reduces the chances for organizational learning. Accordingly, I hypothesize the following:

***Hypothesis 4 (H4): Project termination quality has a positive direct effect on organizational learning.***

The project closing process becomes the source of motivation for the organizational learning to occur. The process creation or improvements identified during the project closing process enable stakeholder satisfaction, reduce future risk, and produce a long-term profit (Moynihan, 2002). The knowledge obtained during the closing process can enhance innovativeness, competitive and environmental adaptability, and create stakeholder trust (Uddin et al., 2014). This process draws from the dynamic capability theory, and is linked to increased organizational performance (Teece, 2007). By incorporating quality reflective practices, the likelihood of future project success and project management success is significantly increased (DeFillippi, 2001).

The knowledge-based view (KBV) of the firm points at knowledge as being the most important intangible asset of a company due to enhancement of capabilities, deeper senior management support, capture of new technological requirements, and information regarding past failed practices. This learning from project termination enhances an organization's ability to create, transfer, and integrate new knowledge and provides value in the sense new inimitable and irreplaceable assets are added to a firm's capabilities, thus increasing the opportunity of project

management success (Grant, 1996; Nonaka, Byosiere, Borucki, & Konno, 1994; Spender & Grant, 1996). Therefore, I hypothesize the following:

***Hypothesis 5 (H5): Organization learning has a positive moderating effect on the relationship between organizational capability and project management success.***

In a project portfolio-based organization, learning from past efforts is considered a process that can provide valuable information necessary for future project success. An organization that recognizes and acknowledges required areas of improvement is a result of successful project management. Learning that occurs during a quality project termination increases the effect that trust, collaboration, what is valued internally, environmental adaptability have on the ability to meet the needs of all stakeholders (Weber & Menipaz, 2003). In a portfolio environment, stakeholder requirements are constantly changing, and an organizational culture willing to adapt is required to build relationships and reduce client conflict (van Marrewijk & Smits, 2016). Positive engagement with stakeholders can determine whether projects will be successful, or whether future project opportunities will be offered (Alhiddi et al., 2019; Bond-Barnard et al., 2018). A culture that focuses on stakeholder satisfaction, relies on adaptability, and where trust across the organization is pervasive and can be obtained by true organizational learning will increase the likelihood of project management or project success.

***Hypothesis 6 (H6): Organization learning has a positive moderating effect on the relationship between organizational culture and project management success.***

## **CHAPTER 3: Methodology**

### **3.1 Overview**

This chapter details the methodology used to investigate the relationships and test the hypotheses developed as a result of the research model (Figure 15). The initial section discusses the reasoning for the method selected to perform the research. The second section discusses the actual survey used to collect the data and the survey approach in reaching the target population. Lastly, I present the measures of the individual constructs.

This study proposes the use of an empirical method to test the hypotheses of the proposed research model. The empirical studies are typically performed using surveys or available data from previous studies, followed by correlation analysis to evaluate the proposed relationships (Campbell & Stanley, 2015). Descriptive research measures a sample at a specific moment in time and describes the demography of the population that has been queried (Creswell & Creswell, 2017). For this study, since the objective is to test the hypotheses, I proposed to use the survey data collection method and partial least squares analysis.

### **3.2 Survey Method**

Data to test the research model was collected by convenience samples from project managers across many different industries. The survey was released to industry peers as well as the North Carolina Project Management Triad Chapter that is comprised of approximately 900 members. Due to time constraints, a paid panel survey administered by Qualtrics Experience Management (XM™) was also utilized. The final survey consisted of 50 questions (Appendix I, Table 5) that were derived from previous research models with validated scales, and slightly modified to align with this research. The minimum sample size required for the multiple

regression was calculated using the G\*Power version 3.1.9.7 software tool. The sample size was determined using an effect size of 0.15, a statistical power of 0.80, and a significance level of 0.05 using 9 predictors (2 independent variables, 2 moderators, and 8 control variables). The minimum sample size required for the study was 114. The survey questions along with an application were submitted to the University of North Carolina at Charlotte Institutional Review Board (IRB) for Research with Human Subjects and was formally approved.

An initial pilot release of the survey was sent to five project management peers that work in different industries spread across the county. The pilot release revealed minor issues with a couple of questions that were resolved prior to mass deployment. The initial peer response including snowball respondents yielded 47 responses of which 29 of them provided useable data. The North Carolina Project Management Triad Chapter required that I receive board approval and will not be released to the Chapter members until the beginning of April '2022. The slow response rate led to the utilization of the Qualtrics (XM™) services which yielded 137 responses. By combining the peer and Qualtrics (XM™) responses there were a total of 166 responses from project managers that were utilized in this study.

### **3.3 Analysis**

A Partial Least Squares-Structural Equation Modeling (SmartPLS platform) was used to perform statistical analysis and to create weighted composites of the items associated with each construct. Based on the composite measures we calculate the internal consistency reliability (Cronbach's  $\alpha$ ) and composite reliability scores to evaluate the reliability of the reflective constructs (Wen & Qiang, 2019). SmartPLS also offers the capability to conduct tests for moderation separately from the main regression. The participants of the survey were project managers and functional managers from all over the United States that are associated with

project management activities. As a result, there were a wide range of management levels and participants from different industries represented in the survey results.

### **3.4 Measures**

#### **3.4.1 Dependent Variable:**

##### **Project Management (PM) Success**

Project Management Success can be viewed differently depending on the perspective of the person or group providing the assessment (Freeman & Beale, 1992; Jugdev & Müller, 2005). Typically, the client or internal and external stakeholders are considered to hold the perspectives that can provide useful information about an organization's projects (Bond-Barnard et al., 2018; Koelmans, 2004). A stakeholder's perception is a result of responsiveness to their requests, overall project communication, and the level of collaboration and/or trust established during the project. The success of an individual project is determined on how closely the intended goals of the project were met, whereas PM success is measured by the quality of the project deliverable or project performance across time and multiple projects (Cooke-Davies, 2002; De Wit, 1988; Jugdev & Müller, 2005). Project performance is measured with the traditional key performance tools of budget, schedule, and quality but, also include "people-related" criteria such as communication, collaboration, and trust (Koelmans, 2004). Outside of the normal measurement criteria of project performance, is the requirement of knowledge integration and innovation that bridges the gap between the traditional performance scales and their related items with people-related factors (Bond-Barnard et al., 2018). Project performance coupled with knowledge integration and innovation is the true measure of project management success (Bond-Barnard et al., 2018).

Project performance is concerned with the continuous measurements of time, cost, and quality to establish relative project success. These project measures determine the internal efficiency of project management activities (Dalcher, 2009). The project performance factors are measured using a Likert-scale of 1 (to an extremely small extent) to 7 (to an extremely large extent) (Bond-Barnard et al., 2018). Project performance is considered to be an important element of PM success to the ongoing effectiveness of project management (Dalcher, 2009; Mir & Pinnington, 2014).

Knowledge integration is considered to be how well a project team makes effective use of new ideas and information (Bond-Barnard et al., 2018). Innovation is the application of information and involves the imagination and initiative to derive greater value from existing or new resources (Bond-Barnard et al., 2018). Knowledge integration and innovation is a result of collaboration and trust that enhances knowledge transfer to aid in reducing costs, decreasing the probability of failure, and create an ongoing environment of innovation and learning (Ahola, 2009; Dubois & Gadde, 2000; Ingram & Baum, 2001). The idea of knowledge integration and innovation has been shown to improve project performance and that knowledge acquisition and sharing creates a learning environment that enhances the chances of success on future projects (Yang, 2005). The knowledge integration and innovation factor is also measured using a Likert-scale of 1 (to an extremely small extent) to 7 (to an extremely large extent) (Bond-Barnard et al., 2018).

### 3.4.2 Independent Variables:

#### Organizational Capability

There is significant empirical evidence linking the roles of organizational learning and organizational capability as critical elements in positively impacting firm performance (Mikhailitchenko & Lundstrom, 2006; Salim & Sulaiman, 2011; Sony & Naik, 2012).

Knowledge management as a capability needs to be continuously supported because of the relationship with existing resources and the overall success of the organization (Hindasah & Nuryakin, 2020). Also, the Lee, Lee, and Penning study examined the relationship on the internal and external capabilities on company performance (Lee, Lee, & Pennings, 2001). Internal abilities are operationalized as the entrepreneurial tendencies, technological ability, and the investment in resources. External abilities were enhanced as a result of the information system capabilities in that customer loyalty can be significantly enhanced (Lawson-Body & O'Keefe, 2006).

Overall, the organizational capability allows the company to respond to changes in their environment, improve product lifecycle reduction, alter operational activities, and provide faster response in a competitive landscape (Garengo & Bernardi, 2007). The measures associated with organizational capability are based on a 7-point Likert scale with 1 being “strongly disagree” and 7 “strongly agree” (Hindasah & Nuryakin, 2020). The questions associated with organizational capability used six indicators and are a subset of measures derived from the Garengo, 2007 study: 1) the information technology used to complete work, 2) the executive management selected to develop the organization, 3) the involvement of the customers to develop the business, 4) the involvement of suppliers in the business process, 5) discovery of creative ideas to develop the business, and 6) coordination of activities across all business units (Garengo &

Bernardi, 2007; Hindasah & Nuryakin, 2020; Lawson-Body & O’Keefe, 2006; Mikhailitchenko & Lundstrom, 2006; Salim & Sulaiman, 2011).

## Organizational Culture

There have been many studies performed by many authors on the topic of organizational culture as shown below in Table 3. With the different studies comes many different characterizations and questions on how organizational culture should be defined. Weber, 2000 stated that the subjective and perceptual nature of culture has led to an infinite number of cultural dimensions. There exist as many sets of dimensions of culture as the number of different instruments (Weber & Menipaz, 2003). Even with the large amount of literature on the subject there is very little congruence. Also, it has been noted that culture lies in the social construction of the members interpreting its attributes and may not be a true reflection of the actual culture (Ghosh & Srivastava, 2014).

**Table 3: Organizational Culture Dimensions Considered by Various Studies (Ghosh & Srivastava, 2014, p. 587)**

Reference	Organizational Culture Dimensions
Denison (1990)	(a) Involvement, (b) Consistency, (c) Adaptability, (d) Mission
Rousseau (1990)	(a) Team or satisfaction-oriented norms, (b) Security-oriented norms
Calori and Sarnin (1991)	Work-related values (12 dimensions) and management practices (17 dimensions)
Gordon and DiTomaso (1992)	(a) Strength of culture, (b) Adaptability, (c) Stability
Kotter and Heskett (1992)	(a) Strength of culture, (b) Strategy culture fit, (c) Adaptability
Marcoulides and Heck (1993)	(a) Organizational structure, (b) Organizational values, (c) Task organization, (d) Organizational climate, (e) Employee attitudes
Denison and Mishra (1995)	(a) Involvement, (b) Consistency, (c) Adaptability, (d) Mission
Petty et al. (1995)	(a) Teamwork, (b) Trust and credibility, (c) Performance improvement and common goals, (d) Organizational functioning
Koene (1996)	(a) Process vs. results orientation, (b) Employee vs. job orientation, (c) Professional vs. parochial orientation, (d) Open vs. closed culture, (d) Tight vs. loose control, (f) Normative vs. pragmatic

**Source:** Authors' findings.

Ghosh (2014) utilized the work of anthropologists Kluckhohn and Strodtbeck (1961). The Handbook of Organizational Culture and Climate (edited by Ashkanasy et al., 2000) proposes the theory that all societies seek to answer five universal value-based questions related to human nature, their relationship with their surroundings, the nature of all human activity, their relationship with each other, and their temporal orientation (Kluckhohn & Strodtbeck, 1961). While the answers to the previous questions are available, each society has its own preferred set of solutions. These solutions reflect what each entity values and forms the basis for cultural differences across societies. Ghosh (2014) suggested the five fundamental concerns facing all human societies may be true for organizations as well, and is a comprehensive method for viewing organizational culture Ghosh (2014) outlined in Table 4, a range of outcomes across societies and organizations with the corresponding culture dimension shown in the last column (Ghosh & Srivastava, 2014).

**Table 4: Kluckhohn and Strodtbeck (1961) Model Applied to Organizational Context (Ghosh & Srivastava, 2014, p. 589)**

<b>Table 2. Kluckhohn and Strodtbeck (1961) Model Applied to Organizational Context</b>			
Concerns/Orientations	Societal Context	Organizational Context	Culture Dimension
Human nature: What is the basic nature of people?	Ranging from good to evil	People can be trusted/ cannot be trusted	Trust Openness Constructive dissent
Man-nature relationship: What relationship does man share with nature?	Subordinated to nature; in harmony with nature; dominant over nature	Do situations control people? Human initiative, risk-taking behaviour	Action orientation Result orientation Experimentation
Temporal orientation: How do people relate to time?	Ranging from past to present to future orientation	Preserving past traditions; seeking new things to replace the old	Experimentation Risk taking
Activity: What is the best mode of activity?	From 'being' to 'becoming' to 'doing'	Result or achievement orientation	Result orientation
Social relations: What is the best form of social organization?	Ranging from hierarchical to individual centric	Emphasis on hierarchy and control versus consensus, versus autonomy	Participation Openness Constructive dissent Individualism

**Source:** Authors' findings.

Based on this model, Gosh, 2014 identified seven dimensions that adequately characterize organizational culture specifically impacting project management activities. Each item reflects the behavior and beliefs of an organization. The culture dimensions are defined as follows: trust; openness; freedom to experiment; individualism; attitude towards constructive dissent; participation; and result or action orientation. A 7-point interval scale was used, with 1 as 'strongly disagree' and 7 as 'strongly agree' (Ghosh & Srivastava, 2014). For the purposes of the study, the number of dimensions or factors was reduced to five since the participation and action orientation elements are part of the effect that is being studied.

### **3.4.3 Moderating Variables:**

#### **Project Termination Quality**

Very little literature exists regarding the research associated with the project termination phase of a project lifecycle. Current literature on project portfolio management and project performance provides elements required to conceptualize what is required for quality project terminations (Wen & Qiang, 2019). Studies on portfolio management emphasize the importance project closing decisions and the integration of resultant project benefits into the overall organizational strategy (Dupont & Eskerod, 2016). Also, terminating non-value add projects is a primary focus in portfolio management in maintaining strategic project alignment (Cooper, 2008). Terminating non-value add projects, improving strategic alignment, and maintaining strategic partnerships are important considerations when closing a project (Unger et al., 2012). Most of the previous studies seek to close projects as soon as possible, and overlook the managerial aspect required as part of the last phase of the project lifecycle (Williams et al., 2014).

Many studies on project performance include management efficiency as a performance indicator during the project closing phase. Part of the measurement includes the asset transfer and control of the budget during the closeout of the contract (Joslin & Müller, 2016). Understanding of project performance has extended well beyond the iron triangle for project execution (Jugdev & Müller, 2005). Lechler & Thomas, 2015 argue that project closing efficiency should be a key metric in the analysis of the overall project life cycle performance (Lechler & Thomas, 2015). However, direct explorations of project closing efficiency are rather limited.

The aforementioned literature streams discuss the importance of organizational strategy and project efficiency in closing projects, however, experience or knowledge accumulation required for future projects is ignored (Joslin & Müller, 2016). Shepherd, 2014 pointed out there is an established relationship between project closing and organizational learning but, very little information developed to support the notion (Williams et al., 2014). Shepherd, 2014 identified a tradeoff of project closing efficiency and effort required for knowledge accumulation. Rapid closing of projects provides little time for reflective efforts, and lengthy closures can be considered an opportunity cost. However, the importance of the knowledge accumulation aspect is still considered and important element of the termination process (Stingl & Geraldi, 2017; Williams et al., 2014).

Based on the supporting literature Wen, 2019 identified three dimensions of project termination quality: organizational strategic value integration, project closing efficiency, and knowledge asset accumulation. The 7-point Likert scale was used to measure the project closing efficiency and was adapted from De (2001) (De, 2001). Organizational strategic value integration was created as a result of combined scales from Unger, 2012 and Dvir (2005) and knowledge asset accumulation was extracted from Joslin and Müller (2016) (Dvir, 2005; Joslin & Müller, 2016; Unger et al., 2012). Organizational strategic value integration includes: alignment to organizational strategy; termination of non-value-adding efforts; and strategic partnership development and maintenance. Project closing efficiency includes: timely project closure and transfer to end user; budget control in the closing phase; quality defect detection and elimination; and key customer satisfaction. Knowledge asset accumulation includes: organization knowledge base augmentation; accumulation of project experience; and improvement in the capability of delivering future projects (Wen & Qiang, 2019).

## **Organizational Learning**

Organizational Learning is the process of collecting, creating, transferring, and the integration of the knowledge and skills obtained during business processes (Tohidi et al., 2012). Studies on organizational learning have identified there is a correlation to market orientation, improved innovation capabilities leading to increased organizational performance (Eris & Ozmen, 2012; Kropp, Lindsay, & Shoham, 2006; Michna, 2009). The Eris and Ozmen (2012) study substantiated the role of organizational learning in market orientation and innovation toward positive firm performance (Eris & Ozmen, 2012). The measures of the construct were created as a result of the information provided in the Tohidi, 2012, and Eris, 2012 studies. Tohidi, 2012 created an organizational learning capability construct that creates a framework of organizational and managerial characteristics that facilitate the organizational learning process (Tohidi et al., 2012). The measures associated with organizational learning are based on a 7-point Likert scale with 1 being “strongly disagree” and 7 “strongly agree” (Hindasah & Nuryakin, 2020; Tohidi et al., 2012). The questions associated with organizational learning used five indicators: 1) strong commitment to change, 2) open attitude with regards to suggestions, 3) culture of sharing information, 4) open interaction, and 5) willingness to take risks (Hindasah & Nuryakin, 2020; Tohidi et al., 2012).

### **3.4.4 Control Variables**

The Portfolio Project Management Office (PPMO) is a group within an organization designed to meet the demands of specialized tasks requested by stakeholders. These groups are created in response to challenges presented to management as a result of project portfolios. These groups are similar in nature to the Project Management Office (PMO) and only differ in the fact the PPMO is responsible for processes and management activities across multiple

projects. PMO's are usually concerned with single project performance and limited stakeholders (Unger et al., 2012).

There are three roles of the PPMO which includes the assessment of the Iron Triangle dimensions and project management success. There is the coordinating role, which handles resource allocation across multiple projects and safeguards against rapid changes (Atkinson, 1999; Shenhar, Dvir, Levy, & Maltz, 2001) This central collaboration aids in reducing power struggles as result of resource conflicts. The controlling role of the PPMO is to maintain a re-useable database of information that increases transparency and improve the information quality. The final role of support is to focus on management standards, enhancing project management, and improving knowledge transfer. There is a significant benefit to the success of project management and should be identified within the organization if the PMO or PPMO exists.

Jonas (2013) identified multiple control variables to aid in identifying the predictive influence of management quality on project management success. The first is project management maturity or years of experience that indicates the effectiveness of the quality of managing a single project. Second, was the size of the portfolio budget and the overall annual revenue may have an impact on the success factor and should be evaluated. The third item is the firm size measured by the number of employees. The elements of budget and firm size are an important measure due to the fact smaller organizations may be less relevant in the measure. Lastly, Jonas (2013) chose an industry dummy variable and asked whether the project deliverables physical goods (1) or services (0), or both (2) (Jonas et al., 2013). A complete summary of the variables, variable names, and survey questions used to support the research model in this study are provided in Appendix I, Table 5.

## Chapter 4: Data Analysis and Findings

### 4.1 Model Results with Moderators and Control Variables

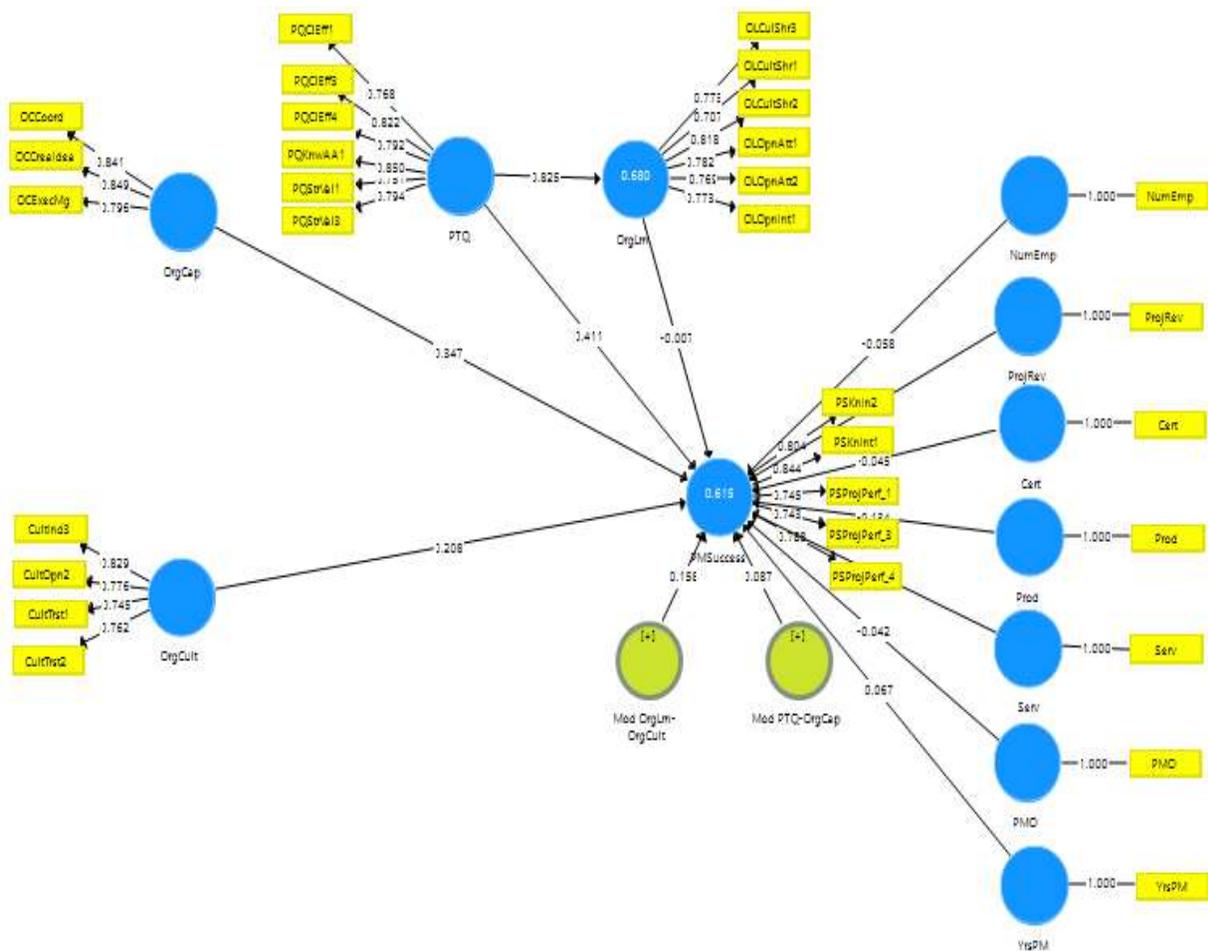
The initial model was analyzed using SmartPLS (v.3.3.7) Partial Least Squares regression analysis on all the latent and control variables, which included all the original reflective indicators. Utilizing SmartPLS's PLS Algorithm tool to determine  $R^2$ , factor loading, construct reliability and validity, collinearity, and statistical significance produced results of multiple indicators (See Table 6) scoring below the 0.70 threshold for construct reliability (Hair, Hult, Ringle, & Sarstedt, 2016, p. 113). It was also noted that the Cronbach's Alpha on three of latent variables scored below the 0.5 target threshold indicating poor reliability (Hair et al., 2016, p. 112). To improve on the results, a factor reduction process was performed by removing low factor loadings highlighted in Table 6. Multi-collinearity was analyzed by observing the Variance Inflation Factor (VIF) (Table 7) to determine if all values were less than "5". It was discovered that Annual Revenue, and the Moderating effect of Organizational Learning between Organizational Capability and Project Management Success needed to be removed from the model due to collinearity (Hair et al., 2016, p. 145). A list of the removed survey items or reflective indicators are reported in Appendix I, Table 23. Once the low factor loadings and collinearity items that scored higher than "5" were removed from the model, the PLS Algorithm tool was utilized again to determine that all the construct reliability thresholds were met. (Figure 16 and Table 8) (Hair et al., 2016, p. 145).



**Table 7: Inner Variable Inflation Factor (VIF) Before Variable Removal**

	AnnRev	Cert	Mod OrgL	Mod OrgL	Mod PTQ	NumEmp	OrgCap	OrgCult	OrgLrn	PMO	PMSuccess	PTQ	Prod	ProjRev	Serv	YrsPM
AnnRev												5.696				
Cert												1.46				
Mod OrgLrn-OrgCap												5.658				
Mod OrgLrn-OrgCult												2.658				
Mod PTQ-OrgCap												4.845				
NumEmp												2.321				
OrgCap												2.736				
OrgCult												2.428				
OrgLrn												4.384				
PMO												1.367				
PMSuccess																
PTQ									1			4.676				
Prod																
ProjRev																
Serv																
YrsPM																

**Figure 16: Measurement Model with Retained Items**



**Table 8: Final Model Factor Loading Results**

	Cert	Mod OrgL	Mod PTQ	NumEmp	OrgCap	OrgCult	OrgLrn	PMO	PMSucces	PTQ	Prod	ProjRev	Serv	YrsPM
Cert	1													
CultInd3						0.829								
CultOpn2						0.776								
CultTrst1						0.745								
CultTrst2						0.762								
NumEmp				1										
OCCoord					0.841									
OCCreaidea					0.849									
OCExecMg					0.796									
OLCulShr3							0.773							
OLCultShr1							0.707							
OLCultShr2							0.818							
OLOpnAtt1							0.782							
OLOpnAtt2							0.769							
OLOpnInt1							0.773							
OrgCap * PTQ			1.218											
OrgCult * OrgLrn		1.216												
PMO								1						
PQCIEff1										0.768				
PQCIEff3										0.822				
PQCIEff4										0.792				
PQKnwAA1										0.85				
PQStrVal1										0.751				
PQStrVal3										0.794				
PSKnIn2									0.804					
PSKnInt1									0.844					
PSProjPerf_1									0.745					
PSProjPerf_3									0.743					
PSProjPerf_4									0.788					
Prod											1			
ProjRev												1		
Serv													1	
YrsPM														1

The reliability and validity of the variables were tested using Cronbach's Alpha , Average Variance Extracted (AVE's) and Discriminant Validity. All of the results for reliability and validity are presented in Table 9. All of the Cronbach's Alpha values were higher than the threshold value of 0.700, and the AVE's were all greater than the threshold 0.500 which confirms reliability for all of the constructs (Hair et al., 2016, pp. 112, 115). Discriminant validity was assessed through the Fornell-Larcker Criterion (FLC) (Table 10), and the Heterotrait-Monotrait Method (HTMT) (Table 11). Discriminant validity was established for all variables except for Project Termination Quality (PTQ) and Organizational Learning (OrgLrn)

with a measure of 0.94 from HTMT and 0.825 from FLC. This measure identifies these two constructs (PTQ and OrgLrn) as not being empirically different (Hair et al., 2016, pp. 118-119).

**Table 9: Reliability and Validity**

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Cert	1	1	1	1
Mod OrgLrn-OrgCult	1	1	1	1
Mod PTQ-OrgCap	1	1	1	1
NumEmp	1	1	1	1
OrgCap	0.772	0.773	0.868	0.687
OrgCult	0.783	0.788	0.86	0.606
OrgLrn	0.863	0.865	0.898	0.595
PMO	1	1	1	1
PMSuccess	0.846	0.858	0.89	0.618
PTQ	0.885	0.886	0.912	0.635
Prod	1	1	1	1
ProjRev	1	1	1	1
Serv	1	1	1	1
YrsPM	1	1	1	1

**Table 10: Fornell-Larcker Criterion**

	Cert	Mod OrgL	Mod PTQ	NumEmp	OrgCap	OrgCult	OrgLrn	PMO	PMSucces	PTQ	Prod	ProjRev	Serv	YrsPM
Cert	1													
Mod OrgLrn-OrgCult	-0.122	1												
Mod PTQ-OrgCap	0.061	0.603	1											
NumEmp	0.045	0.007	0.036	1										
OrgCap	0.186	-0.251	-0.402	-0.027	0.829									
OrgCult	0.063	-0.416	-0.31	-0.098	0.618	0.779								
OrgLrn	0.097	-0.321	-0.286	-0.04	0.665	0.635	0.771							
PMO	0.408	-0.037	0.024	0.02	0.12	0.055	0.126	1						
PMSuccess	-0.009	-0.039	-0.131	-0.127	0.639	0.581	0.576	-0.002	0.786					
PTQ	0.065	-0.342	-0.389	-0.048	0.67	0.666	0.825	0.133	0.652	0.797				
Prod	0.278	-0.05	-0.03	0.137	0.004	0.006	0.114	0.222	-0.137	0.05	1			
ProjRev	0.032	-0.016	0.034	0.673	-0.005	-0.068	-0.045	0.111	-0.11	-0.035	0.183	1		
Serv	-0.134	0.008	0.024	0.106	0.001	0.046	-0.063	-0.031	0.008	-0.008	-0.324	0.105	1	
YrsPM	-0.018	0.064	0.196	0.265	-0.072	0.046	-0.138	-0.172	0.018	-0.097	0.05	0.283	0.122	1

**Table 11: Heterotrait-Monotrait Ratio**

	Cert	Mod OrgL	Mod PTQ	NumEmp	OrgCap	OrgCult	OrgLrn	PMO	PMSucces	PTQ	Prod	ProjRev	Serv	YrsPM
Cert														
Mod OrgLrn-OrgCult	0.122													
Mod PTQ- OrgCap	0.061	0.603												
NumEmp	0.045	0.007	0.036											
OrgCap	0.212	0.287	0.456	0.031										
OrgCult	0.123	0.463	0.348	0.115	0.799									
OrgLrn	0.103	0.347	0.305	0.097	0.814	0.767								
PMO	0.408	0.037	0.024	0.02	0.135	0.123	0.133							
PMSuccess	0.114	0.071	0.139	0.135	0.775	0.71	0.652	0.115						
PTQ	0.069	0.362	0.414	0.098	0.811	0.797	0.94	0.154	0.742					
Prod	0.278	0.05	0.03	0.137	0.041	0.079	0.123	0.222	0.162	0.059				
ProjRev	0.032	0.016	0.034	0.673	0.036	0.145	0.094	0.111	0.116	0.101	0.183			
Serv	0.134	0.008	0.024	0.106	0.091	0.102	0.071	0.031	0.101	0.056	0.324	0.105		
YrsPM	0.018	0.064	0.196	0.265	0.083	0.057	0.17	0.172	0.066	0.119	0.05	0.283	0.122	

Utilizing the Bootstrapping tool within SmartPLS, the statistical significance ( $p$ -value  $\leq 0.5$ ) of each path was measured. Statistical significance of all paths is shown in Table 12, and the path coefficients shown in Table 13 provides the weight of each path in the model. As shown in Table 12, the direct effect of Project Termination Quality (PTQ) on Organizational Learning is significant, and that Organizational Learning (OrgLrn) positively moderates the relationship between Organizational Culture (OrgCult) and Project Management Success (PMSuccess). Other identified positive significant relationships include Organizational Project Capability (OrgCap) and OrgCult to PMSuccess. The proposed moderating effect of OrgLrn on the relationship between OrgCap and PMSuccess was not statistically significant. The moderating effect of PTQ between OrgCap and PMSuccess was not significant. However, the data does show that the direct relationship between PTQ and PMSuccess is significant, though it was not part of the hypotheses. Table 14 provides a breakdown of the hypothesis results.

The coefficient of determination ( $R^2$ ) provides the predictability of the model. The dependent variables Project Management Success and Organizational Learning had  $R^2$  values of 0.615 and 0.68 respectively. These values indicate that over 61.5% of the variance on Project Management Success can be explained by Organizational Capability and Culture, and that 68% of the variance on Organizational Learning can be explained by Project Termination Quality.

The aforementioned measures support the predictive power of the model (Hair et al., 2016, p. 199).

**Table 12: Statistical Significance**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Cert -> PMSuccess	-0.045	-0.04	0.057	0.788	0.431
Mod OrgLrn-OrgCult -> PMSuccess	0.158	0.152	0.067	2.352	0.019
Mod PTQ-OrgCap -> PMSuccess	0.087	0.09	0.074	1.165	0.244
NumEmp -> PMSuccess	-0.058	-0.057	0.062	0.937	0.349
OrgCap -> PMSuccess	0.347	0.34	0.084	4.13	0
OrgCult -> PMSuccess	0.208	0.211	0.095	2.188	0.029
OrgLrn -> PMSuccess	-0.007	-0.007	0.115	0.065	0.948
PMO -> PMSuccess	-0.042	-0.04	0.064	0.661	0.509
PTQ -> OrgLrn	0.825	0.829	0.025	33.254	0
PTQ -> PMSuccess	0.411	0.412	0.098	4.183	0
Prod -> PMSuccess	-0.134	-0.129	0.059	2.258	0.024
ProjRev -> PMSuccess	-0.024	-0.027	0.073	0.332	0.74
Serv -> PMSuccess	-0.054	-0.052	0.05	1.067	0.287
YrsPM -> PMSuccess	0.067	0.064	0.064	1.056	0.291

**Table 13: Path Coefficients**

	Cert	Mod OrgL	Mod PTQ	NumEmp	OrgCap	OrgCult	OrgLrn	PMO	PMSucces	PTQ	Prod	ProjRev	Serv	YrsPM
Cert									-0.045					
Mod OrgLrn-OrgCult									0.158					
Mod PTQ-OrgCap									0.087					
NumEmp									-0.058					
OrgCap									0.347					
OrgCult									0.208					
OrgLrn									-0.007					
PMO									-0.042					
PMSuccess														
PTQ							0.825		0.411					
Prod									-0.134					
ProjRev									-0.024					
Serv									-0.054					
YrsPM									0.067					

**Table 14: Significance of Hypotheses**

<b>Hypothesis</b>		<b>Result</b>
H1	Organizational project capability is positively associated with project management success.	<b>Supported</b>
H2	Organizational culture that promotes collaboration, flexibility, and stakeholder management practices is positively associated with project management success.	<b>Supported</b>
H3	Project termination quality has a positive moderating effect on the relationship between organizational project capability and project management success.	Not Supported
H4	Project termination quality has a direct effect on organizational learning.	<b>Supported</b>
H5	Organization learning has a positive moderating effect on the relationship between organizational project capability and project management success.	Not Supported
H6	Organization learning has a positive moderating effect on the relationship between organizational culture and project management success.	<b>Supported</b>

#### 4.2 Demographic Results from Control Variables

The control variables used within this study were utilized to obtain demographic data related to Project Manager respondents experience level, company's capabilities, and the relative size of the organization. Out of the 166 responses the mean number of years of experience was between 5 and 10 years, with the largest category being 5 to 7 years. Table 15 provides the count of the Project Manager responses by each years-of-experience category. When you review the less than ten years' experience category, 69% of the respondents held a project management certification and 30% work under a Project Management Office (PMO) governance.

**Table 15: Count by Years of Experience**

<b>Years of Experience</b>	<b>Count</b>	<b>Percentage</b>
Less than 2 years	30	18.1%
2 to 4 years	32	19.3%
5 to 7 years	35	21.1%
8 to 10 years	22	13.3%
10 to 12 years	13	7.8%
13 to 15 years	12	7.2%
Greater than 15 years	22	13.3%

Out of the 166 responses, most of the respondents indicated they hold a project management certification. The 72% certification rate stresses the importance of securing the formal training to improve the likelihood of project management success. The percentages are shown by company size in Table 16 reflect a high certification percentage, and is not dependent on the size of the company. Table 17 is an account of the statistical significance associated with each control variable. One of the control variables was to measure whether projects managed were focused more on products, services, or both. In this case, there were 60 respondents that focused on products which yielded a significant negative effect ( $p \leq 0.5$ ) on the dependent variable (Project Management Success). When managing product related projects, there was a strong negative effect on Project Management Success (PMSuccess). Thus, PMSuccess is less likely when managing product projects versus service projects. All of the other control variables did not exhibit a statistically significant effect on the dependent variable.

**Table 16: Number of Employees and Certification Participation**

# of Employees	Count	# of Employees with Certification	Percentage
Less than 500	72	56	77.8%
Between 500 and 999	21	14	66.7%
Between 1000 and 1499	12	5	41.7%
Between 1500 and 1999	6	5	83.3%
Between 2000 and 2499	6	4	66.7%
Between 2500 and 2999	2	2	100.0%
Greater than 2500	47	33	70.2%

**Table 17: Control Variable Statistical Significance**

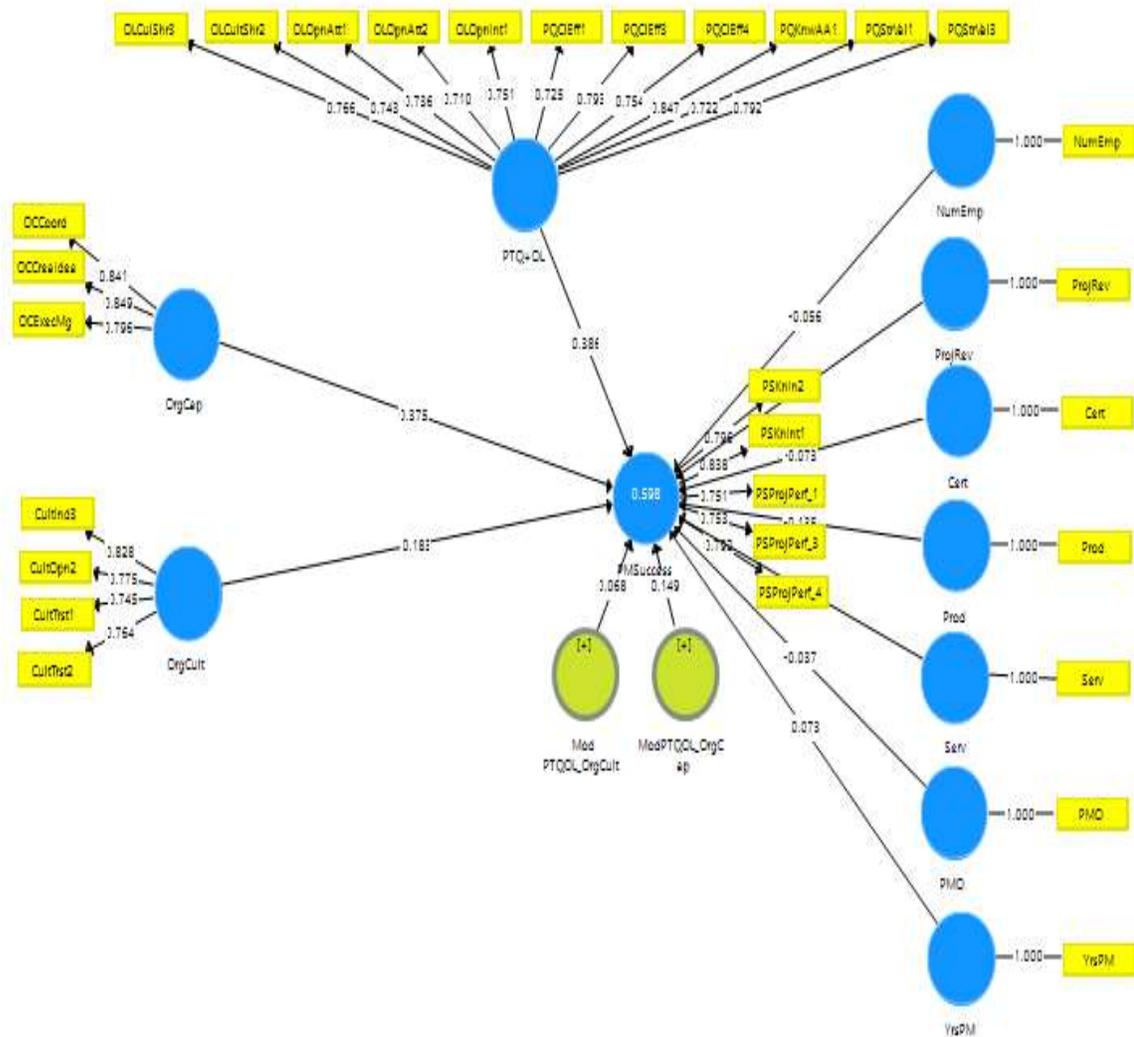
Control Variable	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Certification	-0.053	-0.051	0.064	0.824	0.41
Number of Employees	-0.052	-0.055	0.065	0.803	0.422
Product	-0.131	-0.123	0.062	2.118	0.035
Project Revenue	-0.043	-0.042	0.073	0.586	0.558
Services	-0.055	-0.055	0.049	1.131	0.259
Years as a Project Manager	0.068	0.07	0.064	1.062	0.289

#### 4.3 Post-hoc Analysis of the Model (Combining Project Termination Quality and Organizational Learning)

Due to the inability to see a statistically significant moderating effect of Organizational Learning on Organizational Project Capability and the presence of a statistically significant relationship between Project Termination Quality and Organizational Learning, a secondary model was created to further analyze the relationships. The same methodology as before was followed to analyze the statistical significance of all the relationships outlined in Figure 17. Once again, utilizing SmartPLS's PLS Algorithm tool to determine  $R^2$ , factor loading, construct

reliability and validity, collinearity, and statistical significance produced only one factor (OrgCultShr1) that score below the 0.70 threshold indicating there is not sufficient variance from that factor.

**Figure 17: PTQ Model with Combined Moderators (PTQ and OrgLrn)**



**Table 18: Heterotrait-Monotrait Ratio- post-hoc model**

	Cert	Mod PTQOL_OrgCult	ModPTQOL_OrgCap	NumEmp	OrgCap	OrgCult	PMO	PMSuccess	PTQ+OL	Prod	ProjRev	Serv	YrsPM
Cert													
Mod PTQOL_OrgCult	0.109												
ModPTQOL_OrgCap	0.041	0.637											
NumEmp	0.045	0.003	0.049										
OrgCap	0.212	0.308	0.469	0.031									
OrgCult	0.123	0.496	0.327	0.115	0.799								
PMO	0.408	0.053	0.024	0.02	0.135	0.123							
PMSuccess	0.114	0.098	0.106	0.135	0.775	0.71	0.115						
PTQ+OL	0.091	0.386	0.39	0.105	0.828	0.777	0.155	0.703					
Prod	0.278	0.054	0.039	0.137	0.041	0.079	0.222	0.162	0.086				
ProjRev	0.032	0.029	0.07	0.673	0.036	0.145	0.111	0.116	0.105	0.183			
Serv	0.134	0.022	0.042	0.106	0.091	0.102	0.031	0.101	0.068	0.324	0.105		
YrsPM	0.018	0.078	0.209	0.265	0.083	0.057	0.172	0.066	0.151	0.05	0.283	0.122	

As with the initial model, all of the Cronbach's Alpha values were higher than the target value of 0.700, and the AVE's were all greater than the target 0.500 which confirms convergent validity across all the constructs (Hair et al., 2016, pp. 112,115). Discriminant validity (Table 19) was established across the model due to the combination of PTQ and OL variables. Multi-collinearity was analyzed by observing the Inner Variance Inflation Factor (VIF) to determine if all values were less than "5" (Hair et al., 2016, pp. 119,145). Utilizing the Bootstrapping tool within SmartPLS, the statistical significance ( $p$ -value  $\leq 0.05$ ) of each variable was measured. Statistical significance of all variables is shown in Table 20, and the path coefficients are shown in Table 21 which provides the significance of each path in the model. As shown in Table 20, "PTQ and OrgLrn combined" positively moderates the relationship between Organizational Project Capability (OrgCap) and Project Management Success (PMSuccess) at the  $p \leq 0.1$  level. Other identified positive significant relationships include Organizational Project Capability (OrgCap) and Organizational Culture (OrgCult) to PMSuccess. In this model, the moderating effect of "PTQ and OrgLrn combined" between OrgCult and PMSuccess was not significant. Table 17 provides a breakdown of the hypothesis results.

The  $R^2$  values for Project Management Success 0.60 for the post-hoc model. This indicates that over 60% of the variance on Project Management Success can be explained by Organizational Capability and Culture (Hair et al., 2016, p. 199). This measure also supports the

predictive power of the model. Collinearity was not an issue with this model as shown in the Heterotrait-Monotrait Method (HTMT) data shown in Table 18.

**Table 19: Discriminant Validity - Post-hoc model**

	Cert	Mod PTQOL_OrgCult	ModPTQOL_OrgCap	NumEmp	OrgCap	OrgCult	PMO	PMSuccess	PTQ+OL	Prod	ProjRev	Serv	YrsPM
Cert													
Mod PTQOL_OrgCult	0.109												
ModPTQOL_OrgCap	0.041	0.637											
NumEmp	0.045	0.003	0.049										
OrgCap	0.212	0.308	0.469	0.031									
OrgCult	0.123	0.496	0.327	0.115	0.799								
PMO	0.408	0.053	0.024	0.02	0.135	0.123							
PMSuccess	0.114	0.098	0.106	0.135	0.775	0.71	0.115						
PTQ+OL	0.091	0.386	0.39	0.105	0.828	0.777	0.155	0.703					
Prod	0.278	0.054	0.039	0.137	0.041	0.079	0.222	0.162	0.086				
ProjRev	0.032	0.029	0.07	0.673	0.036	0.145	0.111	0.116	0.105	0.183			
Serv	0.134	0.022	0.042	0.106	0.091	0.102	0.031	0.101	0.068	0.324	0.105		
YrsPM	0.018	0.078	0.209	0.265	0.083	0.057	0.172	0.066	0.151	0.05	0.283	0.122	

**Table 20: Statistical Significance – Post-hoc model**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
Cert -> PMSuccess	-0.072	-0.066	0.065	1.098	0.273
Mod PTQOL_OrgCult -> PMSuccess	0.068	0.057	0.069	0.989	0.323
ModPTQOL_OrgCap -> PMSuccess	0.149	0.153	0.081	1.829	0.068
NumEmp -> PMSuccess	-0.057	-0.058	0.06	0.948	0.344
OrgCap -> PMSuccess	0.376	0.371	0.085	4.395	0
OrgCult -> PMSuccess	0.182	0.179	0.098	1.86	0.063
PMO -> PMSuccess	-0.036	-0.036	0.069	0.524	0.601
PTQ+OL -> PMSuccess	0.388	0.388	0.093	4.152	0
Prod -> PMSuccess	-0.134	-0.129	0.058	2.331	0.02
ProjRev -> PMSuccess	-0.037	-0.037	0.068	0.54	0.59
Serv -> PMSuccess	-0.043	-0.046	0.054	0.806	0.42
YrsPM -> PMSuccess	0.072	0.077	0.064	1.132	0.258

**Table 21: Path Coefficients – Post-hoc model**

	Cert	Mod PTQOL_OrgCult	ModPTQOL_OrgCap	NumEmp	OrgCap	OrgCult	PMO	PMSuccess	PTQ+OL	Prod	ProjRev	Serv	YrsPM
Cert								-0.072					
Mod PTQOL_OrgCult								0.068					
ModPTQOL_OrgCap								0.149					
NumEmp								-0.057					
OrgCap								0.376					
OrgCult								0.182					
PMO								-0.036					
PMSuccess													
PTQ+OL								0.388					
Prod								-0.134					
ProjRev								-0.037					
Serv								-0.043					
YrsPM								0.072					

**Table 22: Significance of Hypotheses – Post-hoc model**

<b>Hypothesis</b>		<b>Result</b>
H1	Organizational project capability is positively associated with project management success.	<b>Supported</b>
H2	Organizational culture that promotes collaboration, flexibility, and stakeholder management practices is positively associated with project management success.	<b>Supported at the (p&lt;0.1) level</b>
H3	Project termination quality and Organizational Learning have a positive moderating effect on the relationship between organizational project capability and project management success.	<b>Supported at the (p&lt;0.1) level</b>
H4	Project termination quality has a direct effect on organizational learning.	<b>Not Tested</b>
H5	Organization learning has a positive moderating effect on the relationship between organizational project capability and project management success.	<b>Not Tested</b>
H6	Project Termination Quality and Organization learning have a positive moderating effect on the relationship between organizational culture and project management success.	<b>Not Supported</b>

## **Chapter 5: Discussion and Conclusions**

### **5.1 Overview**

This study focused on the closing activities that occur at the end of a project and sought to confirm that a quality project termination (PTQ) can be a trigger for organization learning. The study also provided a model framework that proposed the organizational learning that occurs during PTQ can enhance the possibility of Project Management Success by strengthening its' relationship between Organizational Project Capability and Organizational Culture. This framework was created based on previous research that emphasized that successful project management must utilize and commit to the termination phase of a project (Von Zedtwitz, 2002). One of the activities associated with project closing is the lessons learned element after a project finishes. Many of the organizations tend to put minimal effort in the learning activity, and assign existing resources to future projects. Even if the lessons learned are collected, project managers must capture the new knowledge obtained through the experiential learning from project closing activities and assist in the organizational integration that can improve a company's dynamic capabilities. Enhancing the organization by learning from project activity is the cornerstone of project management success (Radujković & Sjekavica, 2017; Winter, 2003). The goal of this research is to heighten awareness of the opportunity that exists for organizations to improve at the end of projects.

### **5.2 Model Results and Findings**

Based on the results of the initial and post-hoc study, Organizational Project Capability(OrgCap) and Organizational Culture (OrgCult) have a significant positive direct impact on Project Management Success. The effect that Project Termination Quality (PTQ) had on Organizational Learning (OrgLrn) was also significant but, presented difficulties in the

analysis because the variables were so highly correlated. This correlation created collinearity issues when attempting to measure the moderating effects of PTQ and OrgLrn on the relationships of the independent variables (OrgCap and OrgLrn) with Project Management Success (PMSuccess). Also, discriminant validity of the two variables could not be established because they are empirically similar. The collinearity assessment was made by measuring the Inner VIF to dismiss critical levels greater than “5” (Hair et al., 2016, p. 145). To account for the collinearity issue that existed in the initial model, the moderating effect that OrgLrn had on OrgCap and PMSuccess was removed so the hypotheses presented could be effectively tested. The collinearity issue did not impact the statistical significance of any of the direct effect measurements. Prior to removing the moderating effect of OrgLrn on OrgCap and PMSuccess, none of the moderating effects were significant. However, once it was removed the moderating effect that OrgLrn had between OrgCult and PMSuccess was seen to be statistically significant. The statistical non-significance of the moderating effect of PTQ between OrgCap and PMSuccess was somewhat surprising but, the true significant effect would most likely come from the moderating effect of Organizational Learning (OrgLrn) between OrgCap and PMSuccess.

Due to the statistically non-significant moderating effect of OrgLrn, the reflective factors associated with PTQ and OrgLrn were combined into one latent variable and address the collinearity issue experienced in the initial model. The new variable labeled PTQ+OL was tested in a post-hoc model as a single moderating variable within the model to measure the effect that Organizational Learning influenced by Project Terminating Quality has between Organizational Project Capability, Organizational Culture and Project Management Success. In this model the direct effect between PTQ and OrgLrn was removed because of the combination

of the variables. Also, the moderating effect of OrgLrn between OrgCap and PMSuccess was also removed and combined with PTQ. This study's results confirmed prior expectations of OrgCap having a significant direct effect ( $p \leq 0.05$ ) on PMSuccess. However, the significance of OrgCult was lessened to  $p \leq 0.1$  during the post-hoc analysis. The initial model results confirmed a significant moderating effect by OrgLrn between OrgCult and PMSuccess. In the post-hoc model with the addition of PTQ+OrgLrn as the moderating effect the results are considered insignificant. Also, the initial model did not support PTQ as having a positive moderating effect between OrgCap and PMSuccess. With the addition of PTQ+OrgLrn in the post-hoc model, a positive moderating effect of PTQ+OrgLrn on the relationship between OrgCap and PMSuccess is supported. In each model, Organizational Learning appears to exhibit a significant positive moderating effect on the relationships between OrgCap and OrgCult on PMSuccess. The expectation was that PTQ and OrgLrn would each have positive moderating effects on the relationship between OrgCap, OrgCult and PMSuccess.

### **5.3 Practical and Theoretical Contributions**

As a project manager practitioner, the correlation between performing a quality project termination and organizational learning promotes the use of additional headcount or the maintaining resources to ensure all stakeholder requirements are met. Today, more than ever, companies are relying on project managers to deliver successful solutions. The lack of effort put forth in the past during the termination phase needs to be modified to improve organizations (Wen & Qiang, 2019). The direct effect of PTQ on PMSuccess identified within SmartPLS provides further justification. The overall significance of the project termination activity warrants the attention from senior management to aid projects managers in completing the items required

to successfully close a project. Improving organizational capability and strengthening the culture for future success is an obvious priority, and organizational learning obtained from project termination activities can provide the method.

From a theoretical point of view, this study supports Theories of Action by injecting a trigger event (PTQ) within the model and measuring the relationship to organizational learning. The Theories of Action is supported in that PTQ did have a significant positive impact on the learning construct. The PTQ framework provided in this research provides impactful, detailed dimensions of the PTQ and OrgLrn constructs influencing project management success. This research model proposes a framework that operationalizes the idea of combining the constructs due to the strength of the correlation between the two variables.

#### **5.4 Limitations and Future Research**

The sample group used for the study may not be completely random as much of the data used was from a panel survey administered by Qualtrics. Since the respondents were paid for their services the accuracy of the data is in question. However, approximately 25% of the data was collected through convenience sampling and the snowball effect that resulted from the initial contacts. With regards to the respondents, all surveys were targeted toward Project Management personnel who could have answered the questions to be more favorable towards a positive view of his or her performance. The respondents for the resultant data came from multiple states and industries. In both cases the dataset could be considered a limitation. Future research might include the involvement of management personnel or from operation personnel that could potentially be aware of new processes or changes that arose as a result of the information that was collected from project termination activity. Pursuing such data would

provide a perspective from outside of the individuals directly associated with the project activity. Another endogenous variable, employee emotions at the end of the project could also be added to the model due to the potential impact it has on the quality of the termination. Project managers are required to inspire the project staff, provide technical guidance, and offer career guidance at the closing of projects (Williams et al., 2014). This is tied to the Project Managers capability, however, survey respondents outside project management staff may offer a different perspective on the employees attitude during closing.

Because of the collinearity effect that existed between Project Termination Quality (PTQ) and Organizational Learning (OrgLrn) it prevented the effective testing of the moderating effects that each of the variables has between Organizational Capability (OrgCap), Organizational Culture (OrgCult) and Project Management Success (PMSuccess). Due to the limited impact Project Termination Quality had as a moderating effect, the model was modified to only test the moderating effects Organizational Learning has on OrgCap and OrgCult with regards to Project Management Success. A future study based on the initial model could be to examine the moderating effects of OrgLrn on OrgCap and OrgCult without PTQ as a moderator which was the focus of this study. Also, the model could be analyzed at different interim project ending phases by measuring the organizational learning effects while the project is still active. This could aid in increasing the number of opportunities for the learning to be assimilated by the organization.

Another study utilizing the framework presented that could prove useful with regards to the project termination quality, would be to measure the moderating effects the reason for termination of project occurred on the organizational learning aspect of the model. Mantel & Meredith, 2009 pointed to four reasons; addition, integration, starvation, and extinction that

could influence how well a project is terminated (Mantel & Meredith, 2009; Meredith & Mantel, 2000). The organizational capability construct utilized an existing study that focused on the overall capability of the firm, versus a model that is interested in understanding the enhancements to project capability. A specific model focusing on project capability may provide more insight on the effects from the moderators. The organizational culture construct that was utilized is a reduced set factors designed to focus more on issues that relate to project management. Bringing in other elements of culture outside of the ones chosen to test this model could also have an impact. Lastly, a study measuring the effects organizational learning obtained from project closing activities on future project success could also prove beneficial in stressing the importance of the termination quality.

## **5.5 Conclusion**

Project terminations are just one part of the overall project lifecycle. However, a quality project termination provides organizational learning and can have a positive impact on the overall capabilities and culture of a company. The knowledge obtained during a quality termination is often assimilated by the organization and can offer improvements in processes and technical knowledge that cannot be obtained elsewhere. The terminations also set expectations with the employees for future projects, enhancing their ability to cope with changes. In order to obtain positive project termination quality results, the management must learn to balance resources during project transitions. The project ending competencies, improvements in communication, and resource sharing can enhance the overall organization capability of the firm. Successful project terminations also builds the trust of all stakeholders, making them solid references for the future. Essentially, the project termination should be a direct link into the initiation and planning phases of subsequent projects. Firms should view the project termination

activity as an integral part of the execution phase of the project, and recognize the benefits it offers by measuring past results and assimilating the learning obtained from each project.

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## Appendix I (Additional Supporting Tables)

**Table 2: Hypothesized Relationships**

Hypotheses
<i>Hypothesis 1 (H1): Organizational capability is positively associated with project management success.</i>
<i>Hypothesis 2 (H2): Organizational culture that promotes collaboration, flexibility, and stakeholder management practices is positively associated with project management success.</i>
<i>Hypothesis 3 (H3): Project termination quality has a positive moderating effect on the relationship between organizational capability and project management success.</i>
<i>Hypothesis 4 (H4): Project termination quality has a direct effect on organizational learning.</i>
<i>Hypothesis 5 (H5): Organization learning has a positive moderating effect on the relationship between organizational capability and project management success.</i>
<i>Hypothesis 6 (H6): Organization learning has a positive moderating effect on the relationship between organizational culture and project management success.</i>

**Table 5: Summary of Measures with Survey Questions**

	<b>Main Reflective Indicator</b>	<b>Reflective Indicators</b>	<b>Survey Question (7-point Likert Scale)</b>	<b>Authors</b>
<b>Dependent Variable</b>			<b>Survey Questions Using a 7-point Likert Scale</b>	
Project Management Success (PMSuccess)	Project Performance	PSProjPerf_1	To what extent have projects been completed on time?	Bond-Barnard, Taryn, Jane Fletcher, Lizelle Steyn, Herman (2018)
		PSProjPerf_2	To what extent have projects been completed on budget?	
		PSProjPerf_3	To what extent have projects been complete with a high level of quality?	
		PSProjPerf_4	To what extent have projects satisfied all stakeholders?	
	Knowledge Integration and Innovation	PSKnInt1	To what extent has knowledge transferred from project activities to the rest of the organization?	
		PSKnIn2	To what extent have innovative ideas transferred from project activities to the rest of the organization?	
<b>Independent Variable</b>			<b>Survey Questions Using a 7-point Likert Scale</b>	
Organizational Project Capability (OrgCap)	Organizational Capability	OCInfTec	We use information technology systems to manage all aspects of our project	Garengo, Patrizia Bernardi, Giovanni (2007), Wen, Qi, Qiang, Maoshan (2019), Hinasah, Lela Nuryakin, Nuryakin (2020)
		OCExecMg	Senior management has the skillset to develop a project team and make project termination decisions	
		OCCustInv	We involve the client and/or stakeholder throughout the life of the project	

		OCSupInv	We involve the supplier when making critical decisions during the project	
		OCCreaIdea	Creative ideas discovered during the projects are integrated into the organizational processes	
		OCCoord	Communication and coordination of project activities happen across business units	
<b>Independent Variable</b>			<b>Survey Questions Using a 7-point Likert Scale</b>	
Organizational Culture (OrgCult)	Trust	CultTrst1	Most people in my organization can be relied upon to keep their promises	Ghosh, Somonnoy Srivastava, Bhupen K. (2014)
		CultTrst2	I believe that my boss will treat me fairly while appraising my performance	
		CultTrst3	I believe that my colleagues are well-intentioned individuals	
	Openness	CultOpn1	The top management believes in communicating important news and events with organizational members across all levels	
		CultOpn2	Most senior members in my organization are approachable/accessible	
	Freedom	CultFree1	In our meetings most final decisions are expected to be taken by the boss	
		CultFree2	If I do not agree with my supervisor, I feel comfortable voicing my views	
		CultFree3	Most members believe in maintaining status quo	
	Individualism	CultInd1	My boss trusts me to deliver on his/her expectations	
		CultInd2	My supervisor believes that good ideas and solutions to problems can come from any member of the group	
		CultInd3	My organization makes the best possible use of my intellectual capacity	
	Dissenting Attitude	CultAttD1	A confronting member in the group can stand to lose his/her social standing	
		CultAttD2	In group meetings most of the talking is done by the group supervisor	

<b>Moderating Variable</b>			<b>Survey Questions Using a 7-point Likert Scale</b>	
Project Termination Quality (PTQ)	Strategic Value Integration	PQStrVal1	Project closing activities align with the organizational strategy	Wen, Qi, Qiang, Maoshan (2019)
		PQStrVal2	Your organization quickly terminates non-value-add efforts	
		PQStrVal3	Your company's project closing activities adds to organizational knowledge	
	Project Closing Efficiency	PQCIEff1	Your firm closes and transfers projects to the end user in a timely manner	
		PQCIEff2	Your firm typically meets the budget requirements at the end or closing of a project	
		PQCIEff3	Your firm works to improve quality during the closing phase of a project	
		PQCIEff4	Customer satisfaction is a key component of the termination phase of your projects	
	Knowledge Asset Accumulation	PQKnwAA1	Your firm has systems and processes to augment the existing knowledge base during the closing phase of projects	
		PQKnwAA2	There is a data repository of the accumulation of project experience that is updated during the closing of a project	
<b>Moderating Variable</b>			<b>Survey Questions Using a 7-point Likert Scale</b>	
Organizational Learning (OrgLrn)	Commitment to change	OLStrCom	Employee learning is considered more of an expense than an investment	Tohidi, Hamid, Seyedaliakbar, Seyed Mohsen, Mandegari, Maryam (2012), Hinasah, Lela Nuryakin, Nuryakin (2020)
	Open attitude to change	OLOpnAtt1	Innovative ideas proposed by project team members and that work are captured for use in future projects	

		OLOpnAtt2	Experiences and ideas provided by external sources (advisors, customers, training firms, etc.) are received and captured for use in future projects	
	Sharing Information	OLCultShr1	Employees have the chance to talk among themselves about new ideas, programs, and activities that might be of use to the firm	
		OLCultShr2	New work processes that may be useful to the organization as a whole are usually shared with all employees	
		OLCulShr3	The firm has instruments (manuals, databases, files, organizational routines, etc.) that allow what has been learnt in past situations to be captured and used for future projects	
	Open interaction	OLOpnInt1	There are systems and procedures for receiving, collating and sharing information from outside the company	
		OLOpnInt2	People are encouraged to interact with the environment: competitors, customers, technological institutes, universities, suppliers etc.	
		OLOpnInt3	It is part of the work of all staff to collect, bring back, and report information about what is going on outside the company	
<b>Control Variables</b>	Indicator Description		Survey Questions requiring Multiple Choice or Yes/No responses	
	Number of Employees	NumEmp	Approximately, how many employees work at your company?	Jonas, D., Kock, A. Gemünden, Hans Georg (2013)
	Annual Project Revenue	ProjRev	What is your company's approximate annual project related revenue?	
	Overall Annual Revenue	AnnRev	What is your company's approximate overall annual revenue?	
	Industry Served	Indus	In what industry segment are you involved?	
	Project Management Certification	Cert	Do you hold a Project Management certification?	

	Product or Service	Prod or Serv	Does your company offer products, services, or both?	
	Project Management Office	PMO	Does your company utilize a Project Management Office in their project management activity?	Unger, Barbara Natalie, Gemünden, Hans Georg Aubry, Monique (2012)
	Years of Experience	YrsPM	How many years have you worked as a Project Manager?	

**Table 23: Factors Removed during Factor Analysis**

<b>Factors Removed from Initial Model post Confirmatory Analysis</b>	<b>Survey Question</b>
AnnRev	What is your company's approximate overall annual revenue?
CultAttD1	A confronting member in the group can stand to lose his/her social standing
CultAttD2	In group meetings most of the talking is done by the group supervisor
CultFree1	In our meetings most final decisions are expected to be taken by the boss
CultFree2	If I do not agree with my supervisor, I feel comfortable voicing my views
CultFree3	Most members believe in maintaining status quo
CultInd1	My boss trusts me to deliver on his/her expectations
CultInd2	My supervisor believes that good ideas and solutions to problems can come from any of the group
CultOpn1	The top management believes in communicating important news and events with organizational members across all levels
CultTrst3	I believe that my colleagues are well-intentioned individuals
OCInfTec	We use information technology systems to manage all aspects of our project
OCSupInv	We involve the supplier when making critical decisions during the project
OLOpnInt2	People are encouraged to interact with the environment: competitors, customers, technological institutes, universities, suppliers etc.
OLOpnInt3	It is part of the work of all staff to collect, bring back, and report information about what is going on outside the company
OLStrCom	Employee learning is considered more of an expense than an investment
Mod OrgCap * OrgLrn	Moderating Effect of OrgLrn between OrgCap and PMSuccess
PQCIEff2	Your firm typically meets the budget requirements at the end or closing of a project

PQKnwAA2	There is a data repository of the accumulation of project experience that is updated during the closing of a project
PQStrVal2	Your organization quickly terminates non-value-add efforts