Abstract

One source of confusion around the factors[1] that influence *project manager efficacy* already identified in the literature is the lack of clear agreement on definitions of success as viewed by different stakeholders in the context of *project success*, *project management success*, and *project manager success*. These are not subtle differences when making decisions related to hiring, professional development efforts, and curriculum development. The purpose of this phenomenological research was to identify what Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as *the most important attributes*[2] for *project manager efficacy* as it relates to *project success*. The first sub-question is whether there are differences in expectations between Senior IT Leaders who hire, assign, and develop their project managers, and Certified Project Management Professionals who execute projects. The second sub-question is whether contextual factors such as industry or organizational culture affect stakeholder skill rankings. The final sub-question is whether new project management modalities such as *agile* create different demands on project managers, resulting in new or changing perceptions of necessary skills and knowledge for project manager efficacy. Using a comparative focus group design with participants from three industry sectors, this study provides clear evidence of the factors these two stakeholder groups consider the most important contributors to *project manager efficacy* as it relates to *project success* and *application of project management tools/knowledge*. Contributions of findings extend beyond providing a list of skills project managers must acquire by providing a deeper understanding of priorities and contextual

[1] A factor is a circumstance, fact, or influence that contributes to a result or outcome (Collins English Dictionary, 2013). I use the term *factor* when referencing the combination of a project manager's individual attributes and influences outside of a project manager's individual attributes.

[2] An attribute is a quality or feature regarded as a characteristic or inherent part of someone (Collins English Dictionary, 2013). I use the term *attribute* when referencing a project manager's individual qualities or characteristics.

influences on perceived value in three categories; 1. IT knowledge and skills, 2. Interpersonal skills and 3. Project management methodology knowledge and application. The key lessons learned from this thesis research contribute to the overall body of knowledge in IT project management, as well as to practice. Key Finding 1: There is a clear skill category preference for project managers in an IT-centric project environment for both stakeholder groups, adding to our understanding of the potential conflicts and agreements between hiring, delegating or development managers and project managers. Key Finding 2: The skill category priorities related to factors that contribute to *project success* and attributes that contribute to *project manager efficacy* strengthened through collaborative discussion with peers, suggesting that research methods need to engage participants. Key Finding 3: Four specific attribute categories emerged as most important for *project manager efficacy*: facilitation skills, communication skills, leadership skills, and individual personality traits. Key Finding 4: While Senior IT Leaders considered IT knowledge and skills as "moderately important" contributors to *project success*, descriptions suggested a preference for general, or basic, IT knowledge rather than a specialized area of IT expertise. This finding may influence practitioners' decisions on resource allocation for project manager development. Key Finding 5: There were suggestions of industry influences on attributes influencing *project manager efficacy* during the initial group brainstorming. However, stakeholders did not include those attributes that varied between industries when ranking attributes in order of perceived importance, adding support for a group of key attributes that are expected of project managers for them to be effective across industries. Key Finding 6: Similarly, while the participants' suggest *project manager efficacy* is situational; this did not influence their skill category rankings or attributes most important for *project manager efficacy*. This reinforces support for key attributes of effective project managers. Key Finding 7: Agile

project management approaches do create a different demand on project managers; however, participants were unanimous in their assertion that the attributes most important for *project manager efficacy* do not change in an agile project management environment. This is an important finding as it contradicts early anecdotal evidence. Each of these findings contribute to the body of research on project manager success, project success and project management success, as well as providing insights for practice and new thoughts for future research.

A Phenomenological Study of Factors that Influence Project Manager Efficacy: The Role of Soft Skills and Hard Skills in IT-Centric Project Environments

by

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[3] Please do not copy or quote without written permission of the author.

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Contents

Tables

Figures

A Phenomenological Study of Factors that Influence Project Manager Efficacy: The Role of Soft Skills and Hard Skills in IT-Centric Project Environments

Chapter 1. Factors[4] Influencing Project Manager Efficacy

The purpose of this study was to identify what Senior IT Leaders and Certified Project Management Professionals perceive as the most important attributes[5] for project manager efficacy as it relates to project success within IT-centric project environments. The Society for Information Management (SIM) identified attracting, developing, and retaining IT[6] professionals among top management concerns for over three decades (Luftman & Kempaiah, 2007; Luftman & Zadeh 2011). Developing the IT workforce falls to academic institutions, employers, and professional organizations that offer certifications. The costs for an IT person's professional development are born by the individual in effort, time, and financial costs, but are also a major part of Human Resource expenditures. In a global study of IT budgets, Luftman and Zadeh (2011) found that staffing is overwhelmingly the largest component of IT budgets (65% in Europe, 48% in SE Asia, 54% in Latin America, and 68% in the US), exceeding that spent on hardware and software. As a manager responsible for your teams' professional development, how do you know if your organization's investment in your IT human resources, including IT project managers, is focused on the correct skills? Are decisions project manager professional development related to those attributes that most contribute to the practitioner's efficacy and the

[4] A factor is a circumstance, fact, or influence that contributes to a result or outcome (Collins English Dictionary, 2013). I use the term factor when referencing the combination of a project manager's individual attributes and influences outside of a project manager's individual attributes.

[5] An attribute is a quality or feature regarded as a characteristic or inherent part of someone (Collins English Dictionary, 2013). I use the term attribute when referencing a project manager's individual qualities or characteristics.

[6] Information Systems (IS) and Information Technology (IT) are often used interchangeably in literature. For consistency, I use IT to refer to hardware (computer systems and infrastructure) and software (systems) used to process, store, retrieve, and deliver information.

organization's success? This study addresses these important questions through lived experiences of two relevant stakeholder groups.

Project management encompasses all information management fields since ideas, solutions, and systems must be implemented to realize the intended benefit. In addition, many factors influence a project manager's efficacy in applying project management tools and techniques. As outlined by Danity, Cheng, and Moore (2003), there is a relationship between project success, individual project manager performance, and perceptions about project manager "performance criteria". Given that perceptions play a role in defining project success (Baker, Murphy, & Fisher, 1988), it stands to reason that project managers must possess skills in addition to the project management tools and techniques outlined in *The Guide to the Project Management Body of Knowledge* (Project Management Institute (PMI), 2013). In contrast, a professional certification's continuing education requirements are designed to encourage certified practitioners to remain current specifically in their respective bodies of knowledge. The results of this study challenge the assertion that continued study in a body of knowledge in which the practitioner has already demonstrated proficiency through earning the certification is an optimum approach for increasing efficacy. Without considering the many factors that contribute to project success and attributes most important for a certified practitioner's proficiency, organizations and individuals can hire for the wrong skills or expend a great deal of time, effort, and money on professional development that yields suboptimal results.

Problem Statement

> *Research Question: What do Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as the most important attributes for project manager efficacy as it relates to project success?*

This broadly worded question sought more than a laundry list of skills or other factors. The goal was to develop deeper understanding of how two relevant stakeholder groups perceive the value of these skills and under what conditions. There are diametrically opposing trends in both the public and private sector influencing professional development decision making for both organizational leadership and the IT professional seeking to improve their skills and knowledge. The first trend is the downturn in the economy faced by individuals and organizations alike. The combination of the difficulty in quantifying investments in professional development (Gale & Brown, 2003; Guskey, 2003; Hordle, 2002) and the shrinking global economy has put downward pressure on professional development budgets (Anderson 2009; Foster; 2009; Newgass, 2010). Simultaneously, the second trend is an increase in demand for practitioners with advanced certifications that demonstrate proficiency within a certain body of knowledge (Daniels, 2011; Gabberty, 2013). In addition to published research, the 2011 project management salary survey of over 30,000 respondents from 29 countries supported the value placed on certification through an average 16% compensation variance in favor of certified professionals when compared to non-certified practitioners (PMI, 2011). This growing demand for certified professionals is further evidenced by the increasing demand for certification preparation programs in higher education (Alam, Gale, Brown, & Khan, 2010; Daniels, 2011; Gale & Brown, 2003).

Professional certifications, such as the Project Management Professional (PMP®) through the Project Management Institute and the Certified Business Analysis Professional (CBAP®) through the International Institute for Business Analysis, require continuing education to maintain the certification. Continuing education requirements are designed to encourage certified practitioners to remain current in their respective bodies of knowledge. However, continued study in a body of knowledge in which the practitioner has already demonstrated

proficiency through earning the certification may be neither the best approach for their continued professional development, nor the optimum approach for enhancing their ability to contribute to their organization. Instead of centering professional development decisions on a generic body of knowledge for a given profession, this study provides information related to other contributing factors and dimensions of performance and capability that we should consider in sum to tailor professional development goals.

If we asked experienced project managers, how many of them would suggest that their depth of knowledge of the PMBOK processes or tools and techniques was the key to their success? Likewise, if we went to senior leaders and project sponsors, how many would suggest they needed project managers with a deeper understanding of the project management body of knowledge? This study contributes to both stakeholder groups' understanding of the attributes most important for a certified practitioner's proficiency to avoid hiring for the wrong skills or investing time, effort, and money on professional development that does not yield the desired results.

Background

Definition of Terms

There are slight variations in how authors define a project. Before addressing the complexity of evaluating findings on project success, project management success, and project manager success, there are standard terms that must be defined.

Oxford Dictionary defines a process as a natural progressively continuing operation or a continuing activity or function (Merriam-Webster Collegiate Dictionary, 2013). The PMI expands this definition in the project management context to include a series of activities that follow an organization's existing procedures as part of an ongoing work effort (PMI, 2013a, p. 1

& 550). The key differences between a project and a process reside in two key words - temporary and unique. For example, Gary & Larson (2000) include "complex" and "one-time effort" as descriptors for unique and non-routine activities in their definition of temporary. Knutson & Bitz (1991) replace "unique" with "introducing or producing a new product or service", and Lewis (2002) elaborates on both temporary and unique by including that *a project is a multi-task initiative that is only done one time*. For consistency, I define a project using the Project Management Body of Knowledge version of "a temporary endeavor undertaken to produce a unique product, service, or result" (PMI, 2013a, p. 553).

Project management includes the effort associated with planning, scheduling and controlling the activities to ensure the project objectives are achieved (Kerzner, 2004, p. 2), or according to the Project Management Institute, "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements" (PMI, 2013a, p. 554). I accept this latter definition for this paper because the definition includes knowledge and skills as part of project management application. Project management and operations management are similar; however, operations management focuses on overseeing, directing, and controlling the recurring, day-to-day business activities necessary to achieve an organization's business goals (PMI, 2013a, p. 11). Otherwise stated, operations management is primarily concerned with managing ongoing processes necessary to achieve business results (Dressler, 2001).

A project is "a temporary endeavor undertaken to produce a unique product, service, or result" (PMI, 2013a, p. 553). Project management is "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements" (PMI, 2013a, p. 554). Given these definitions, it follows that a project manager is the person charged with the responsibility to apply the project management tools and techniques to ensure the project objectives are achieved.

As stated by Kerzner (2004), the project manager is the person who oversees the project activities throughout project execution. Lewis (2002) includes soft skills in his definition by adding that a project manager is an enabler whose job is to help the project team, manage conflict, negotiate for resources, and buffer the team members from outside interference with the project activities. A PMP®, or certified Project Management Professional, is a project management practitioner that holds the Project Management Institute's PMP® credential designed to recognize an individual's competence to perform in a project manager role (PMI, 2012, p. 5). Table 1.1 summarizes these and other key terms discussed in this section.

Table 1.1: Key Definitions

Term	Source	Definition
Attribute	Collins English Dictionary	a quality or feature regarded as a characteristic or inherent part of someone or something
Effective	Merriam-Webster Collegiate Dictionary	producing the desired effect
Efficacy	Merriam-Webster Collegiate Dictionary	one's power to produce a desired effect
Factor	Collins English Dictionary	a circumstance, fact, or influence that contributes to a result or outcome
Project	Project Management Institute (2013)	a temporary endeavour undertaken to product a unique product, service or result
Project Manager	Kerzner (2004)	the person who oversees the project activities throughout project execution
Skill	Merriam-Webster Collegiate Dictionary	the ability to use one's knowledge or to perform a task with competence
Soft Skill	Collins English Dictionary	those qualities necessary for a practitioner that do not depend on acquired knowledge, or hard skills
Success	Merriam-Webster Collegiate Dictionary	favorable or desired outcome

Earning the PMP® certification demonstrates mastery of the hard skills, or technical competencies related to project management, specifically those skills and knowledge that can be measured through testing. These hard skills are teachable abilities that practitioners can learn in a

classroom setting. As has often been argued, however, the *soft* or interpersonal skills are also important. So then, what combination of skills, hard *and soft*, contribute to project manager efficacy, and how are those other skills developed? One definition of *soft skills*[7] is those qualities necessary for a practitioner that do not depend on acquired knowledge, or hard skills (Collins English Dictionary, 2013). This definition is incomplete and requires further refinement as it ignores the context of the project management knowledge. As such, in the project management context, I define soft skills as those abilities that a project manager must possess *to apply* the project management tools and techniques within the organizational context.

The Project Management Institute defines soft or interpersonal skills as "behavioral competencies that include proficiencies such as communication skills, emotional intelligence, conflict resolution, negotiation, influence, team building and group facilitation" (PMI, 2013a, p. 301). Simplified, hard skills in the project management context refer to the project manager's understanding and skills associated with the processes, tools and techniques in the Guide to the Project Management Body of Knowledge (2013), whereas soft skills refer to dealing with human issues (Azim, Gale, Lawlor-Wright, Kahn, & Alam, 2010).

The Project Management Practitioner

The information technology (IT) industry spans the commercial, educational, government and military sectors. As such, project management similarly is a critical element of all organizations, be they large or small, because IT solutions must be implemented to realize the intended benefit. Accordingly, one of the top certifications in IT for 2013 was the Project Management Institute's (PMI) *Project Management Professional or PMP*®. Tech Republic, an

[7] As detailed in Chapter 4, it became apparent that the interpersonal skills term was too limiting and two different themes related to soft skills emerged during the focus group discussions. The first soft skill theme was interpersonal skills, or people skills, a project manager uses to interact with various stakeholder groups. The second soft skill theme was the individual traits that influence the project manager's actions, attitudes, and behaviors. This differentiation was also addressed during data coding as outlined in Chapter 3.

online community dedicated to supporting IT decision-makers, cites the Project Management Professional (PMP®) certification as one of the top five in-demand IT certifications for 2013 in their career management blog (The top five in-demand IT Certifications, 2012). Similarly, Global Knowledge, a worldwide IT and business skills training organization, lists the PMP® first in their list of 15 top paying certifications in 2013 based on high demand (Muller, 2013).

Hiring managers seek project management practitioners who hold the PMP® certification. A quick search on any job search engine will demonstrate that a majority of project manager job postings list the PMP® certification as either required or preferred for project management positions. One of the leading reasons that the certification is valued is the effort required to earn the PMP® certification. To be eligible for the certification a candidate must provide evidence that demonstrated the minimum experience (up to 7,500 hours of project management experience), complete a formal project management education prerequisite, and then successfully complete an examination demonstrating their depth of understanding of the project management body of knowledge (PMI, 2012).

Seeking certified project managers also influences a manager's decisions related to their professional development budgets as the PMP designation may be a condition of employment for IT project managers. Once a practitioner earns the PMP® certification, they must earn a minimum of 60 Professional Development Units (PDU) every three years to retain their certification. One PDU is earned for one hour of professional development related to the project management body of knowledge, or 60 hours of professional development activities must be completed within three years from the date of certification (or last recertification) to retain the PMP® credential (PMI, 2012). Not all organizations fully sponsor the recertification

requirements, but whether the individual or the employer pays, we must weigh professional development costs against the benefits for both the individual and the organization.

The PMP designation also sets expectations on the part of hiring managers and their organizations. In addition to pre-screening of potential job candidates, after making a hiring decision, hiring managers and IT leaders expect certified practitioners to join their teams prepared with the skills needed to lead projects effectively within their organizations. Earning the certification may provide evidence of experience and knowledge; however, holding the certification does not always provide evidence of the project manager's skill and efficacy. The difference between having a skill, effectiveness in its use, and efficacy are more than semantics. A skill is defined as the ability to use one's knowledge or to perform a task with competence (Merriam-Webster Collegiate Dictionary, 2013). Effectiveness is defined as producing the desired effect (Merriam-Webster Collegiate Dictionary, 2013), and efficacy is one's power or ability to produce that desired effect (Merriam-Webster Collegiate Dictionary, 2013). (See Table 1.1 in Definitions and Terminology for a collection of key terms.) This is not a subtle difference when considering where to invest in the professional development of the IT professional. It speaks to the root issue of differences between having project management skills/knowledge, having a successful project management outcome, or having a project manager who knows what to do and when.

Given the definitions of effective, a project, and a project manager provided in Table 1.1, an *effective* project manager leads a temporary endeavor that not only meets defined objectives, but also produces the desired effect, or result. This distinction becomes even more important when we consider how organizations (and individuals) evaluate when, where, and how to invest their IT budgets in professional development activities.

A Pressing Concern for the Project Management Profession

Published research and conceptual papers reflect inconsistencies in definitions about what successful project management is all about and what skills are needed by project managers (Millhollan & Kaarst-Brown, 2013). Through a rigorous review of the literature, this study identifies the potential conflict in goals and measurement of success from three different perspectives: the process of project management, the project manager, and the project outcomes. Each of these perspectives of success shifts the focus on what skills and knowledge are most relevant and suggests that a "tri-focal" view is needed for holistic decision making about professional development. This new tri-focal lens, coupled with the study findings, offers managers and practitioners a new way to focus their professional development budgets, lends insight to hiring criteria, and informs project management related curriculum development. This study also introduces the potential impact of the shift from traditional to agile project management approaches.

Figure 1.1 presents a Venn diagram that illustrates the relationships between the tri-focal lens and ties this concept to the study.

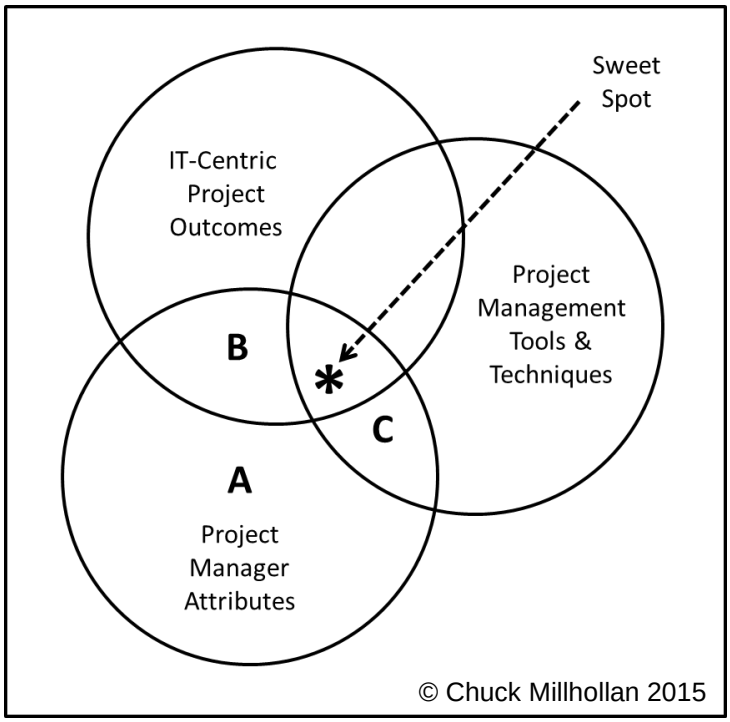

Figure 1.1 Tri-Focal Lens Interrelationships

This phenomenological study moves beyond the current literature and develops a deeper understanding of the "sweet spot" where these three aspects of success come together, as well as identifies project manager attributes that contribute to IT-centric project outcomes and application of the project management tools and techniques. It is important to note that the overlap between the IT-centric project outcomes and project management tools and techniques was outside the goals of the study as it does not include the project manager. There is not an assumption that the sweet spot is always within the intersection of the three success views. On the contrary, this study provides evidence that the sweet spot is a moving target based on varying stakeholder expectations. The project manager must understand stakeholder perspectives and have the ability to not only modify their personal views on key project success factors, but also manage their stakeholders' expectations.

Skill Sets and Skill Acquisition

Earning the PMP® certification provides evidence of baseline knowledge; however, holding the certification does not necessarily mean that the project management practitioner is more efficient. Experience indicates that there are certified project management practitioners who do not possess advanced, or enhanced, abilities needed to successfully lead projects. The contrary is also true in that there are non-certified project management practitioners who do possess advanced skills and abilities that contribute to their efficacy throughout the project management process. Starkweather & Stevenson (2011) support this experience in research that demonstrated no significant difference in project success rates between PMP® certified practitioners and project management practitioners without the certification.

Earning the PMP® certification only demonstrates mastery of the hard skills, or technical competencies related to project management, specifically those skills and knowledge outlined in *The Guide to the Project Management Body of Knowledge* (2013) and that can be measured through testing. These hard skills are teachable abilities that practitioners can learn in a classroom setting. As has often been argued, however, the "soft" or interpersonal skills are also important. So then, what combination of skills, hard *and soft*, contribute to project manager efficacy, and how are those skills developed? One definition of soft skills is those qualities necessary for a practitioner that do not depend on acquired knowledge, or hard skills (Collins English Dictionary, 2013). This definition is incomplete and requires further refinement. In the project management context, I define soft skills as those abilities that a project manager must possess *to apply* the project management tools and techniques within the organization (Alam et al., 2010; Gillard, 2009; Pant & Baroudi, 2008).

An interesting observation from conversations with both Senior IT Leaders and certified project management practitioners is that when asked about interpersonal skills most important

for project manager efficacy, they focused on what they referred to as social skills. When rewording the question to elicit important soft skills, the list expanded to include individual proficiencies and traits, such as critical thinking skills and emotional intelligence. While there is not a clear, agreed upon definition for the term soft skills, practitioners from both groups regularly used the term. It is also important to note that the project management body of knowledge (PMI, 2013a) and the scholarly literature related to both project manager success and project manager skill sets uses the broader, more general term *soft skills*.

An extended definition provided by the Project Management Institute defines soft or interpersonal skills as "behavioral competencies that include proficiencies such as communication skills, emotional intelligence, conflict resolution, negotiation, influence, team building, and group facilitation (PMI, 2013a, p. 301)". This is consistent with research that positions soft skills in relation to dealing with human issues (Azim et al., 2010).

The hard skills in a project management context can be learned and demonstrated through the study required in formal certification. Applying the six levels of learning from Bloom's Taxonomy of the Cognitive Domain, Asplund (2006) explains that the first three levels are knowledge, comprehension, and application. These levels align with the project management hard skills demonstrated through certification. The next three levels are analysis, synthesis and evaluation (Asplund, 2006). (See Table 1.2.) In context, this requires mastery in pragmatic application of the project management body of knowledge and requires that project managers possess interpersonal, or soft skills, as well.

Table 1.2: Asplund's (2006) Adaption of Blooms Taxonomy

	Hard Skills	**Soft Skills**
Blooms Taxonomy of the Cognitive Domain	Knowledge Comprehension Application	Analysis Synthesis Evaluation

This leads to the following question. What combination of skills contributes to an organization's effective use of its development budget, as well as IT professionals becoming successful project managers? The answer to this question is founded in how success is defined by the project management community and related stakeholders. This study began with a review of current literature and the different perspectives of success, specifically understanding the differences between project success, project management success, and project manager success; or outcome, process, and application, respectively. A thorough review of the literature highlights a potential conflict and raises further questions about necessary trade-offs in application of the HR-IT training budget, recruiting criteria, development strategies for IT professionals, and project management curriculum development associated with hard and soft skills.

Purpose of the Study

The purpose of the phenomenological study was to gain a deeper understanding of the attributes most important for project manager efficacy in IT-centric project environments through an exploration of the lived experiences of senior practitioners who have first-hand knowledge of IT projects, specifically Senior IT Leaders and Certified Project Management Professionals. This study neither intended to address every factor that influences a certified practitioner's knowledge, skills, and abilities, nor intended to address every potential stakeholder groups' perceptions. In addition, this study did not address how effectively the certification process measures a professional's understanding of their body of knowledge. Instead, this study sought specifically to elicit and describe factors that the two stakeholder groups perceive to contribute to a project manager's efficacy in an IT-centric project environment, and any context specific conditions.

Significance of the Study

It is important to note that the author is a PMP with over twenty-five years of experience as a project manager and IT leader, and is active in curriculum development and professional development programs for students and project management practitioners. From a practitioner perspective, one of the challenges commonly experienced is how to allocate limited training and education dollars for certified practitioners. Is continued investment in a capability that the practitioner has already demonstrated advanced knowledge of through certification the best way to allocate training dollars? Is spending related to maintaining a team member's certification aligned with the manager's fiduciary responsibility to maximize the return on their training investment? This study informs this decision-making process with recommendations on how certified practitioners should focus their professional development efforts once they have achieved advanced knowledge within their professional domain. Prior to this study, there was little empirical evidence that addressed perceptions about attributes most important for a project manager's efficacy in IT-centric project environments. There is further value in that the researcher that conducted this study has significant personal experience with project management and professional development in a variety of public and private industries and firm sizes (Table 1.3).

Table 1.3: Summary of Author's Experience in IT and Project Management

For profit	Not for profit	Government
Large fortune 150 company ~ > 35,000 employees	Project management professional organization	Military
Medium sized publicly-traded company ~ < 5000 employees	Business analysis professional organization	City government
Small Limited Liability Corporations with < 10 employees	Community and youth development organization	
Medium sized cooperative with ~ < 1500 employees		

Why this Study is Important

Experience indicates that an increasing number of organizations are requiring practitioners to earn and maintain professional certifications to be eligible for, or as a condition of, employment, or advancement. The assumption is that professional certification demonstrates a minimum proficiency level for a specific skill-based role, such as project management, business analysis, and quality management. Consequently, practitioners invest a great deal of time and money in earning and maintaining their certification, often subsidized in part or in whole by their organization.

Since many certifications require continuing education in the form of Professional Development Units (PDUs), Continuing Education Units (CEUs), and the like, practitioners tend to focus their professional development efforts on this defined, measured requirement. Continued study and learning in one professional dimension, at the expense of the others, will have a less beneficial impact than targeting professional development efforts across professional, business, and human interaction acumen domains based on measurements related to stakeholder perceptions about a practitioner's proficiency.

Many factors influence a certified professional's proficiency and efficacy. As outlined by Danity, Cheng, and Moore (2003), perceptions about performance criteria for project managers can be used to define individual performance and development goals that encourage project success. Without considering each contributing factor, organizations and individuals can hire for the wrong skills or expend a great deal of time, effort, and money on professional development that yields suboptimal results.

Agile methodologies are another important trend in the project management profession that supported revisiting factors influencing project manager efficacy. The Agile Manifesto lauds

individuals and interactions over processes and tools, which places even more emphasis on a project manager's soft skills due to more frequent, less structured interactions with various stakeholder groups (www.agilemanifesto.org). For example, agile project management requires project managers to leverage frequent collective problem-solving methods, engage in continuous change management, facilitate participative design, and create an environment of mutual trust within the team (Alaa & Fitzgerald, 2013; Cavaleri, Firestone & Reed, 2012). Research also provides evidence that people skills present a primary obstacle to moving to agile methodologies (Gandomani, Zulzalil, Ghani, Sultan & Nafchi, 2013).

What Other Studies Address About This Topic

As I will detail in Chapter 2, published research and conceptual papers reflect inconsistencies in definitions about what successful project management is all about and what skills project managers need. Through a rigorous review of the literature, this study identified the potential conflict in goals and measurement of success from three different perspectives: the process of project management, the project manager, and the project outcomes. This study highlights the differences and the overlap in current research and identifies new opportunities for future research.

To Whom is the Study Important

Findings from this study have potential implications for each of the following groups, as will be discussed in detail in Chapter 5.

1. Senior IT Leaders / IT Executives
2. Hiring managers and resource managers
3. Certified Project Management Professionals (PMPs) & practitioners
4. Academia (project management curriculum)

The next chapter reviews existing literature on the topic and addresses gaps and paradoxes relevant to the research question.

Chapter 2. Literature Review

This research was motivated by decades of experience as a Project Manager in different organization types, structures, and sizes (see Table 1.3) and was supported by gaps in empirical research and definitional confusion. Two well accepted approaches were used to identify the generally accepted knowledge in the project management field and further subsets relevant to the IT discipline and research question:

- Citation chain beginning with expert subject matter starting with top project management journals, books, and educational texts (Catalano, 2013; Vezzosi, 2009). This, by nature of the topic, led to the top project management journals.
- A traditional keyword search and bibliometric analysis focused on top IT journals, including the Journal of Information Technology, MIS Quarterly, Information Systems Research, Journal of Computer Information Systems, Communications of the ACM, Journal of Management Information Systems, and Journal of the American Society of Information Science and Technology (Kaarst-Brown and Kelly, 2005; Ridley, 2012; Thanuskodi, 2010).

Approach 1: Citation Chain

The first exploration of the literature began by reviewing several textbooks and professional books for top cited articles used in educational settings on project management (Ridley, 2012). The books included textbooks used in project management undergraduate and graduate courses, books published by the Project Management Institute and included as references for The Guide to the Project Management Body of Knowledge (2013a), and professional books written by expert project management practitioners. These sources tend to be more dated than journal articles and focused on project management theory and application;

however, these sources were useful in providing a foundation for accepted theory, definitions, and terminology covered in the next section.

The review then progressed into researching scholarly articles leveraging ProQuest Central and EBSCOhost databases, supported by SULinks and privileges associated with Project Management Institute membership to access full text versions of all source articles. Initial search combinations on 1) project management, 2) project manager, or 3) project, *and* success led to over 100,000 results. To narrow the search and ensure a focus on current research, the search was limited to publications within the last 3 years. The journals that tend to contain articles related to the literature review topic included primarily project management industry publications, specifically the *International Journal of Managing Projects in Business*, the *Project Management Journal*, and the *International Journal of Project Management*. To a lesser degree, additional journals included various engineering, management and information technology focused publications. This initial search identified a gap in published research in industry specific publications.

From this narrowed list of potential sources, over thirty articles were chosen that closely align with the research topic. Articles not selected for inclusion may have included the key words, such as project success, in their abstract or findings; however, the article content was not related to perceptions of project success or factors that contributed to the project's success. Selected refereed articles were used to identify a citation chain to previous seminal works. The citation chain was followed back to the late 80s, when it appears the first scholarly articles were published on factors affecting project success.[8] Through this process, approximately fifty (50)

[8] An article by that title, written by Baker, Murphy, and Fisher (1988) was included in the Project Management Handbook, a compilation of that era's scholarly research in project management.

additional peer-reviewed articles were selected that addressed project, project management, and project manager success.

Approach 2: Bibliometric Analysis

A second search method based on key words was then used as a cross check for literature that may be specific to IT projects or IT project management. The top Information Technology and Project Management scholarly journals were selected for the bibliometric analysis with the following constraints:

a. **Constrain by ProQuest Central Database**[9]
b. **Constrain by Years**: The search was limited to the previous three years, which was the same constraint used to narrow the initial results to current, relevant literature.
c. **Constrain by Scholarly Publications only, Article type, and Peer Reviewed**
d. **Constrain by Journals** by conducting searches based on select leading Journals
    i. Journal of Information Technology (JIT),
    ii. MIS Quarterly (MISQ),
    iii. Information Systems Research (ISR),
    iv. Computer Information Systems,
    v. Communications of the ACM (CACM),
    vi. Journal of Information Management Systems,
    vii. Project Management Journal,
    viii. International Journal of Project Management,
    ix. International Journal of Managing Projects in Business.
e. **Constrain by Abstract** to ensure articles were primarily focused on the research topic.
f. **Variety of terms** for each journal to ensure capturing all options (see the bibliometric analysis section below).

Table 2.1 below presents the search results across the top Information Technology and Project Management scholarly journals. Similar to the initial search, using the following generic

[9] The PMI's scholarly publication, the Project Management Journal, is only accessible through the Wiley Online Library or through the Project Management Institute with associated privileges. Accordingly, the Project Management Journal search was conducted through the Wiley Online Library with the same constraints and full text versions of selected articles were procured through the Project Management Institute. The only constraint variance was the exact date range due to a system limitation; the date constraint was full years from 2010 - 2013; however, that variance does not influence the bibliometric analysis.

terms proved too broad and produced results unrelated to the research topic. (Table 2.2 provides the bibliometric codes.)

1. Project
2. Success
3. Management
4. IS and IT.

Research then focused on the following exact word combinations:

1. Project management
2. IT/IS project success
3. Information technology/systems project success
4. Project success (removing the IT constraint)
5. Successful IT/IS projects
6. Successful projects (removing the IT constraint)
7. Project management success
8. Successful project management
9. Project manager success
10. Successful project manager
11. IT project manager

These combinations, considered in isolation, produced 24 (6 %) articles in the seven IT journals within the last three years, as compared to 375 (94 %) articles in the three project management journals. It is important to note that articles could be represented in the counts more than once if the abstract contained more than one of the search terms.

To ensure the exact word combinations were not too constraining, especially for the IT journals, the following word combinations were added to the search:

1. Information technology/systems + project management
2. Project manager + success
3. Project management + success
4. Project + success

This increased the total number of articles in IT and project management journals to 58 (9.6%) and 544 (90.4%), respectively. Again, since articles could be represented in the counts more than once if the abstract contained more than one of the search terms, duplicates were removed from the counts to produce the total unique articles published in each journal within the defined constraints.

Table 2.1: Bibliometrics

	Search terms	Journal of Information Technology (JIT)	MIS Quarterly (MISQ)	Information Systems Research (ISR)	The Journal of Computer Information Systems	Communications of the ACM (CACM)	Journal of Management Information Systems	Journal of the American Society of Information Science & Technology (JASIST)	Project Management Journal	International Journal of Project Management	International Journal of Managing Projects in Business	Totals
PMT	"Project Management"	5	0	1	3	3	1	0	81	91	68	**253**
	"IT Project Manager" or "IS Project Manager"	0	0	0	1	0	0	0	8	0	1	**10**
	"Information Technology" or "Information Systems" + "Project Management"	2	0	0	0	0	0	0	4	4	4	**14**
PJTS	"IT Project Success" or "IS Project Success"	0	0	0	1	0	0	0	5	2	1	**9**
	"Information Technology" or "Information Systems" + "Project Success"	1	0	0	1	0	0	0	0	1	2	**5**
	"Project Success" (removes IT constraint)	3	1	0	3	0	0	0	26	22	9	**64**
	"Successful IT Projects" or "Success IS Projects"	0	0	0	0	0	0	0	0	0	0	**0**
	"Successful Projects" (removes IT constraint)	0	0	0	0	0	0	0	8	2	0	**10**
	Project + Success	15	2	1	3	2	1	3	26	56	19	**128**
PMTS	"Project Management Success"	0	0	0	0	0	0	0	19	2	1	**22**
	"Successful Project Management"	0	0	0	0	0	0	0	4	1	0	**5**
	"Project Management" + Success	1	0	0	2	0	0	0	19	17	13	**52**
PMRS	"Project Manager Success"	0	0	0	0	0	0	0	9	0	0	**9**
	"Successful Project Manager"	0	0	0	0	0	0	0	3	0	0	**3**
	"Project Manager" + Success	0	0	0	2	0	0	0	9	4	3	**18**
Totals (including duplicates)		**27**	**3**	**2**	**16**	**5**	**2**	**3**	**221**	**202**	**121**	**602**
Total unique articles		**19**	**2**	**2**	**4**	**5**	**2**	**3**	**39**	**61**	**20**	**157**

For the project management journals, the key word combination "project management" was too generic to include those articles in the analysis; however, the totals are presented in the bibliometrics for comparison. Note that the "project management" search term is not included in the number of total unique articles for the three project management publications, leaving 157 potential relevant scholarly articles.

Table 2.2: Bibliometric Coding

PMT	Project management (general project management related articles not otherwise coded used to set a baseline)
PJTS	Project success
PMTS	Project management success
PMRS	Project manager success

Reflecting on Table 2.1, the following observations are presented based on the results[10]:

a. Of the 253 scholarly articles published in the 9 selected journals focusing on project management, only 13 (3.6%) were published in IT journals, indicating a lack of attention to the topic in Information Sciences research, as well as a specialized niche publication arena.

b. In the last 3 years, project management scholarly journals published research related to project success, project management success, and project manager success at a 7.5:1 ratio over the selected six IT journals (279/36)

c. There appears to be a complete lack of published research within the last 10 years focusing specifically on IT project success in the selected IT journals. Interestingly, IT project success received only slightly more attention within the identified project management scholarly journals.

[10] It is important to note that having the search terms in the abstract does not imply the article contributed to the research topic. I used these search terms for trend analysis, to identify potential scholarly articles contributing to the topic, and then selected key articles based on alignment after a detailed review.

d. Project success and project management success appear to be well-researched topics, specifically in the project management publications; however, this does not imply a universal definition for, or agreement on the primary factors that influence either project success or project management success.

To understand the publishing trends over the last 10 years in the IT scholarly journals, I conducted the same searches with the same constraints going back ten years to articles published on or after 2003[11]. The results are provided in Table 2.3. The total number of articles containing the search terms in the abstract exactly doubled, from 58 to 116, by opening the search from the past 3 years to articles published on or after 2003 (almost 10 years on the date of the search in August 2013). A comparison between Table 2.1 and Table 2.3 demonstrates that the same gap in published research exists. It is also important to note there were no identifiable trends in publication date ranges across the seven selected *IT scholarly journals* in that results were either flat or non-existent.

Since the perception of project manager efficacy is typically based on perceptions related to project success, the first step is to review the literature on project success factors. Understanding attributes most important for an IT project manager's efficacy begins with an understanding of how success is defined, specifically from the tri-focal lens of literature on project success, project management success, and project manager success.

[11] The goal with the 10-year bibliometric search was to identify publishing trends specific to IT scholarly journals. Accordingly, the 10-year bibliometric analysis is limited to the selected IT journals.

Table 2.3: Bibliometrics (On or after 2003)

	Search terms	Journal of Information Technology (JIT)	MIS Quarterly (MISQ)	Information Systems Research (ISR)	The Journal of Computer Information Systems	Communications of the ACM (CACM)	Journal of Management Information Systems	Journal of the American Society of Information Science & Technology (JASIST)	Totals
PMT	"Project Management"	11	0	2	13	8	2	1	**37**
	"IT Project Manager" or "IS Project Manager"	0	0	0	1	0	0	0	**1**
	"Information Technology" or "Information Systems" + "Project Management"	2	0	0	1	0	0	0	**3**
PJTS	"IT Project Success" or "IS Project Success"	0	1	0	1	0	0	0	**2**
	"Information Technology" or "Information Systems" + "Project Success"	1	0	0	2	0	0	0	**3**
	"Project Success" (removes IT constraint)	4	2	0	4	1	0	0	**11**
	"Successful IT Projects" or "Success IS Projects"	0	0	0	0	0	0	0	**0**
	"Successful Projects" (removes IT constraint)	0	0	0	0	0	0	0	**0**
	Project + Success	15	3	4	8	14	5	4	**53**
PMTS	"Project Management Success"	0	0	0	0	0	0	0	**0**
	"Successful Project Management"	0	0	0	0	0	0	0	**0**
	"Project Management" + Success	1	0	0	3	0	0	0	**4**
PMRS	"Project Manager Success"	0	0	0	0	0	0	0	**0**
	"Successful Project Manager"	0	0	0	0	0	0	0	**0**
	"Project Manager" + Success	0	0	0	2	0	0	0	**2**
Totals (including duplicates)		**34**	**6**	**6**	**35**	**23**	**7**	**5**	**116**

Experience, supported by scholarly research, indicates that perceptions about project-related success are a moving target (Baker et al., 1988; Baccarini, 1999; DeWit, 1988; Judgev & Muller, 2005; Lipovetsky, Tishler, Dvir & Shenhar, 2002; Muller & Turner, 2007; Wateridge, 1995). This phenomenon is confounded by the fact that references to "project success" are often comprehensive terms that include factors related to project outcomes, the project management methodology, and the project manager's proficiency in applying project management tools and techniques to meet stakeholder expectations (Baccarini, 1999; Belassi & Tukel, 1996; Cooke-Davies, 2001; Ika, 2009; Ika, Diallo, & Thuillier, 2011; Pinto & Mantel; 1990; Pinto & Slevin, 1988b). The review focuses on how the literature addresses 1) project success, 2) project management success, and 3) project manager success; or to use simpler terms – on the product (or outcome), the process, and the person.

One of the key findings highlighted in the literature is the only agreement on definitions of success as related to projects and project management is that there is no agreement on the definitions (Cooke-Davis, 2002; Hyvari, 2006; Mishra, Dangayach & Mittal, 2011; Shenhar & Levy, 1997; Wateridge, 1995). An additional complicating factor is that different stakeholder groups define success differently for the same projects (DeWit, 1988; Hadaya, Cassivi, Luc & Chalabi, 2012; Shenhar, Dvir, Levy & Maltz, 2001; Wateridge, 1988). Regardless of the accepted definition, it is important for the project manager to understand not only factors that influence project-related success, but also the varying stakeholder perceptions about project-related success. Only when success is defined and understood can we effectively manage towards that goal, select the metrics related to meeting that goal, and ensure that we are managing the right expectations. The following sections present research and conceptual work

on each of the three areas of success, as well as providing an overview of stakeholder theory, and the theoretical and methodological considerations influencing research design.

Area of Inquiry #1: Project Success

The earliest research dedicated to project success identified that focusing on more than schedule, budget, and technical performance measures was an absolute necessity (Baker et al., 1988; DeWit, 1988; Pinto & Slevin, 1988a). These three factors, referred to as the iron triangle (DeWit, 1988), or the triple measures identified in Kloppenborg & Opfer's (2002) review of published project management books between 1960 and 2002, are in fact more related to the project management process than meeting stakeholder expectations associated with project success (Atkinson, 1999; Munns & Bjeirmi, 1996; Shenhar & Dvir, 2007). Since understanding stakeholder perceptions and expectations is necessary for defining project success, and projects are by definition unique, it makes sense that there is not a single definition of project success or a universal set of criteria that one can use to predict project success. Accordingly, we must have a thorough understanding of the many *potential* factors that can influence project success and the ability to define and defend the critical success factors for each project in context (Ika, 2009; Ika et al., 2011; Judgev & Muller, 2005; Wateridge, 1995).

Project Success Factors

Freeman & Beale (1992) suggest the seven criteria for project success include technical performance, efficiency of execution, stakeholder satisfaction, project team member personal growth, project termination completeness, identifying and overcoming technical (includes procedural) problems, and a combination of project product's ease of use and performance. While the authors suggest specific criteria, their findings also conclude that success means

different things to different people. Shenhar & Levy (1997) present project success factors in three basic categories as follows:

1. Meeting design goals that tend to be objective and based on documented specifications and project constraints, such as budgetary limitations and schedules, (factors measured through product verification, actual costs, and actual completion dates).
2. The impact on the customer, such as meeting their needs and solving their problem; factors measured by satisfaction surveys or utilization rates.
3. Benefits to the organization in the form of meeting a strategic objective, such as increased market share and new product development.

In a later study, Shenhar et al. (2001) group project success measures into four dimensions; 1) project efficiency, 2) customer impact, 3) business impact, and 4) preparing for the future.

Figure 2.1 (Lally, 2004) provides a summary of IT project success factors identified in the scholarly literature between 1983 and 2002.

Although there are commonalities in the lists developed by the cited authors, there is neither agreement on any one set of factors, nor is there a single factor that appears consistently in each set of findings. The problem suggested is that identifying project success factors is a moving target. The absence of a clear pattern over the twenty-year period covered in the literature review indicates that there is a missing, critical component in identifying project success factors.

Baker et. al. (1983)	*Morris and Hough (1987)*	*Pinto and Slevin (1989)*	*Turner, J. R. (1993)*
• Clear Statement of Requirements • Proper Planning i.e. cost and time estimate • Competent Staff • Clear vision & Objectives (Business Case and Scope) • Hard-Working, Focused Staff • Leadership • Adequate Resources and Funding • Minimum start-up difficulties • Absence of bureaucracy and politics	• Clear statement of requirements • Proper planning • Focussed and competent staff • Adequate resources and funding • Minimum start-up difficulties • Absence of bureaucracy and politics	• User Involvement • Executive Management Support • Competent Staff • Hard-Working, Focused Staff • Delivered to budget, on schedule, and to technical specification • Satisfies the needs of the owners, users, project team and stakeholders • Leadership • Communication and teamwork • Absence of bureaucracy and politics	• User Involvement • Executive Management Support • Focussed and competent staff • Delivered to budget, on schedule, and to technical specification • It satisfies the needs of the owners, users, and stakeholders • Leadership and Teamwork • Absence of bureaucracy and politics
CHOAS REPORT (1994)	*Wateridge, J. (1995)*	*Whitaker, B. 1999*	*Boehm, B. (2002)*
• User Involvement • Executive Management Support • Clear Statement of requirements • Proper Planning • Realistic Expectations • Smaller Project Milestones • Competent Staff • Ownership • Clear vision & Objectives • Hard-Working, Focused Staff	• Project achieves its purpose • It provides satisfactory benefit to the owner • It satisfies the needs of the owners, users, and stakeholders • It meets its pre-stated objectives • It is produced to specification, within budget and on time • It satisfied the needs of the project team	• Good project planning • A strong business case • Top management support and involvement • Schedule time keeping • Keeping within budget • Good estimates • Strong definitions of requirements • Vendor's ability to meet requirements	• Complete requirements • User involvement • Resources • Realistic Expectations • Executive Support • No Scope Extension

Figure 2.1: Lally (2004) Literature Review of Project Success Factors

Consistent with the evidenced lack of agreement on the topic, Judgev & Muller's (2005) analysis from their literature review does suggest a trend over four specific eras. In the first era, from the 1960s through the early 1980s, project success literature focused on project delivery and transitioning the product or service into operations. They observed a shift in focus during the second era, 1980s – 1990s, to things that must go right for a project to be considered successful. These "must go right" factors, or Critical Success Factors, are those elements that must be present for project to be considered successful (Kerzner, 1987). Examples include understanding of the project management processes, executive commitment to those processes, and the project

manager's approach to leading the project and project team. The third era, from the 1990s – 2000s, the literature shifts to developing frameworks to measure project success based on stakeholder expectations. This included the interfaces between the internal organization, or the organization delivering the product or service, and the external organizations, such as vendor relationships and customer groups. Literature from the forth era, labeled the 21st century, expanded research related to project success to include elements from ideation through product or service retirement. The latter implying a more end-to-end product lifecycle view of the project undertaken to produce the product. While Judgev and Muller's (2005) analysis suggest an evolution in project success related research, they still highlight that project success has both an objective and subjective component and different stakeholder groups interpret project success differently (Judgev & Muller, 2005).

Paradoxes in Literature on Successful Projects

The challenge of project success comes with balancing differing expectations and perceptions (Judgev & Muller, 2005; Shenhar et al., 2001). Perceived success is defined by not only meeting the technical requirements and providing a product, service, or result as defined in the project objectives, but also by achieving high levels of satisfaction from the stakeholder groups (Baker et al., 1988). Analysis of the literature supports that the challenges related to these different sets of project success factors and different categories or groupings are threefold:

1. Some of the factors that contribute to project success are realized during a project, such as meeting project related constraints like budget and schedules and creating new products or services.
2. Other project success factors might not be realized until long after project completion, such as customer satisfaction or commercial success.

3. The factors influencing project success measurements and perceptions are often in conflict. For example, meeting a budgetary or schedule constraint can have a negative impact on satisfying technical or functional requirements.

These points also highlight that a successful project is a function of metrics not usually considered in the literature on project success: effective outcomes associated with stakeholder analysis, decision-making, negotiation, conflict resolution, change management, and politics of change.

Area of Inquiry #2: Project Management Success

Understandably, since the literature treats the project management process as a contributing factor to project success (Baccarini, 1999; Cooke-Davies, 2001; Freeman & Beale, 1992; Han, Yusof, Ismail, & Aun, 2012; Muller & Turner, 2007; Nicholas & Hidding, 2010;Pinto & Mantel, 1990; Pinto & Slevin, 1988a; Prabhakar, 2008; Shenhar & Levy, 1997), there is less published research dedicated to project management success. One dissention from this trend was de Wit (1988) that purposefully addressed the differences between project success and successful project management, holding that project management can contribute to project success; however, effective project management cannot prevent project failure. Where the literature does agree is that successful project management, emphasizing the methodology by using the term project management, is focused on the process. The PMI (2013a) defines project management as the "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" (p. 554). This definition highlights the specific attention to how project management is applied to achieve the desired results. Pollack (2007) refers to this as emphasis on delivery efficiencies, leadership by an expert in the application of project

management tools and techniques, and control related to keeping the work on track to deliver on pre-existing, agreed upon goals.

If project success and project management success is assessed separately, there must be more targeted factors related specifically to project management success than those presented for a more holistic view of project success. Munns & Bjeirmi (1996) present a list of project management success factors that focuses on the methodology and typical project constraints such as schedule, budget, and quality requirements. This narrowed list of factors relating specifically to project management success includes:

1. Project manager assignments, implying that the assigned project manager must be versed in applying the project management processes, tools, and techniques.
2. Organizational support for the project management methodology, specifically executive leadership.
3. Effective task definition; a planning process.
4. Reliance on an established project management methodology or project management techniques.

There is quantifiable benefit in focusing on the delivery state of a project (Atkinson, 1999). Leveraging metrics such as schedule, budget, and quality requirements allow the project manager to determine if the project tasks are being completed according to plan. Of course, meeting communicated project plan goals is part of managing stakeholder expectations. A project methodology alone cannot guarantee project success; however, identifying gaps in project identification, planning and execution processes and dedicating effort to understanding how those procedural risks contributed to a project's failure can help identify enhanced project management processes that a project manager can apply to future initiatives (Sarantis, Smithson,

Charalabidis, & Askounis, 2009). This claim is supported by both Azim et al. (2010) and Massis' (2010) research that highlighted:

1. Hard project management skills can help with success factors related to planning and organizing effort and tracking and managing changes throughout a project.
2. A project management methodology can support a project manager with a library of tools and a blueprint for project success.

Paradoxes in Literature on Project Management Success

Williams (2005) states that project management has not provided the expected benefits; however, for this statement to be accurate in context of this paper, the expected benefits would need to be limited to factors influenced by effective project management. It is common for stakeholders to place blame on project management when projects fail. For this perception to be true, the failure would need to be rooted in the ineffective application of the project management methodology, failure to effectively plan, or a lack of structure related to managing delivery according to agreed upon constraints and objectives. My experience and the literature align with Munns and Bjeirmi (1996), Azim et al. (2010), and Lacerda, Ensslin and Ensslin's (2011) views that,

1. Effective project management methodology can contribute to project success because it provides a structured approach and standard tools or procedures.
2. Effective project management provides a structured approach, but does not ensure success of the project.
3. Absence of effective project management methodology contributes to project failure.

What is noticeably absent from the literature on successful project management is the decision making associated with the selection of tools and techniques. There are skill sets that we say are important and can tie back to various project success metrics, so why do our project management literature and the reputable project management standards not focus on this? As one example, the Guide to the Project Management Body of Knowledge, or PMBOK, identifies interpersonal skills as valuable assets for developing and managing a project team, and managing stakeholder engagement. Interestingly, the PMBOK does not provide guidance on how to acquire or develop these valuable assets. The latest version of the PMBOK, published in 2013, even added a new section to the first chapter to highlight the importance of project manager interpersonal skills and goes on to state that "effective project managers *require* a balance of ethical, interpersonal, and conceptual skills" (PMI, 2013a, p. 17). This claim is followed by a reference to Appendix X3 for descriptions of the important interpersonal skills.

How the PMBOK addresses interpersonal skills is contrary to the emphasis placed on their importance in not only the standard, but also the scholarly literature. Excluding the table of contents, figures, appendices and the index, the term "interpersonal skill" appears on 5 of 589 pages, and then with little more than a one-sentence description supplemented by a list of sample skills the project manager must possess to do project management. Appendix X3 (PMI, 2013a, pp. 513 – 519) provides the most detailed coverage of interpersonal skills, and then only lists eleven key interpersonal skills with a one to three paragraph explanation for each. The descriptions laud the skills as *mandatory* and *critical* skills for effectively leading teams (p. 517), overcoming a project manager's biggest challenges (p. 518), and enabling higher levels of competency (p. 519). A project manager's communication skill is even identified as "the single biggest reason for project success or failure" (PMI, 2013a, p. 515).

In 2007, the Project Management Institute began offering the Program Management Professional (PgMP) credential to recognize an advanced project management practitioner's experience and skill as they lead larger-scale initiatives with more than one component projects and make decisions that advance their organizations' strategic objectives. The Standard for Program Management (PMI, 2013b) provides a list of Core Knowledge Areas and Core Skills identified during a program manager role delineation study. The Knowledge Areas represent "a complete set of concepts, terms, and activities that make up a professional field, project management field, or area of specialization" (PMI, 2013a, p. 60). The Core Knowledge Areas focus primarily on techniques and procedures. The Core Skills are comprised exclusively of personality traits, or personal attributes, that support a project manager's ability to interact with project stakeholders. Examples of Core Skills include active listening, critical thinking, facilitation, managing expectations, and problem solving. It is important to note that the standard neither provides detailed descriptions for the Core Skills, nor guidance on procuring or developing the listed Core Skills. Yet, the standard does explicitly state that effective program management requires the mastery of knowledge and the application of these skills (PMI, 2013b, p. 146).

In 2011, as the project management profession evolved to embrace agile methodologies, the Project Management Institute added the Agile Certified Practitioner (PMI-ACP) certification process to their inventory of professional certifications.[12] To differentiate the certification from those that focus on specific agile methodologies, the certification tests the candidate's knowledge of the prevalent agile approaches, including Scrum, Extreme Programming, Feature Driven Development, Dynamic Systems Development Method, and Crystal. While each framework is slightly different, agile methodologies have the similar purpose of iteratively or incrementally

[12] The author of this thesis achieved his PMI-ACP certification in early 2014.

delivering product, engaging the users or owners to inspect and provide feedback on the product, and adapting an iteration to align development with the users' evolving needs. Unlike the PMP or PgMP certifications, the PMI-ACP, agile certification does not have a published body of knowledge or standard. The knowledge and skills required of an agile practitioner are only listed in the Examination Content Outline (www.pmi.org).

In summary, a key paradox in the project management, or process, success literature is that it implies dependence on skills outside the project management methodology.

Area of Inquiry #3: Project Manager Success

Project manager success is a much more elusive topic since perceptions related to project manager success are tied to how the project management methodology is applied and to perceptions of the overall project success previously stated. As evidenced in the bibliometric research presented earlier, there has been little research dedicated specifically to project manager success. However, there is agreement in the literature that project manager competencies are an essential ingredient for project success (Muller & Turner, 2010), and a project's success or failure is *influenced by* who manages that project (Patanakul, 2011). Pinto and Slevin (1988a) more specifically state that a project's success or failure is dependent upon who is selected to manage the project. Studies have also demonstrated that project managers tend to have certain personality traits as compared to the rest of the population and people with those personality traits tend to function well in a project environment with partial data and under ambiguity (Cohen, Ornoy & Keren, 2013). Even with these observations, the literature on project and project management success does not address project manager proficiencies, their leadership style and impact on the project, or the necessary skills and abilities required of a project manager (Turner & Muller, 2005).

The literature on project manager success focuses on the necessary project manager skill sets. It is not surprising that a focus on project management skills, specifically the project manager's depth of knowledge about and ability to apply project management tools and techniques, does not necessarily make a project manager successful (Fisher, 2011; Gillard, 2009; Muzio, Fisher, Thomas & Peters, 2007; Pant & Baroudi, 2008). Early literature on project manager competencies includes project management acumen amongst a much more comprehensive list of abilities. This list, captured by Gale and Brown (2003), includes:

1. Project management skills
2. Business and management skills
3. Knowledge of the project technical disciplines
4. Interpersonal skills
5. Managing the project sponsor
6. Situational awareness
7. Integration management, or integrating the previous skills and knowledge

The knowledge and application of the project management tools and techniques is a hard skill; however, many of the competencies outlined in the literature related to project manager abilities are soft skills. Mastery of those soft skills is necessary for practitioners to be successful in a project environment (McHenry, 2008; Muzio et al., 2007; Pant & Baroudi, 2008). Subsequent research indicates there is a statistical relationship between a project manager's leadership competencies and project success (Geoghegan & Dulewicz, 2009). Geoghegan and Dulewicz (2009) measured leadership dimensions with a combination of the practitioner's management, emotional, and intellectual competencies and compared these measurements with project results using Pinto and Slevin's (1988b) project success questionnaire, and identified

links between leadership competencies and variances in project success. More and more, it is becoming apparent that project manager interpersonal skills are requisite for project success (Gillard, 2009).

Napier, Keil, and Tan's (2009) continued research, specifically for IT project managers, reveals recurring patterns related to project manager skill sets in that project managers require a combination of project management acumen, general and business management acumen, technical knowledge or familiarity, and interpersonal skills. Chipulu, Neoh, Ojiako, and Williams (2013) expand the research beyond IT in an effort to identify key project manager competencies across different industries. (See Table 2.4 for a comparison.)

Table 2.4: Project Manager Skill Set Comparison

Categories	Gale & Brown (2003)	Napier, Keil, and Tan (2009)	Chipulu, Neoh, Ojiako & Williams (2013)
Project Management Acumen	Project management skills Integration management	Planning and control	Budget management Time management Methodology experience
Business Acumen	Business and management skills	General management	Commercial awareness
Technical Acumen	Technical knowledge	Systems development	Industry knowledge
Interpersonal Skills/Traits	Interpersonal skills Managing the sponsor Situational awareness	Leadership Communication Team development Client management Problem-solving Personal integrity	Communication Team management Leadership Stakeholder management Teamwork

These studies highlight the complementary relationship between skill sets, and that a project manager's soft skills enhance their ability to apply their knowledge of the project management tools and techniques. Conversely, Alam et al. (2010) also emphasize that a deeper understanding of the project management tools and techniques enable project management practitioners to leverage their soft skills to manage their project teams. Through a combination of

a literature review, interviews and focus groups, Fisher (2011) identifies a list of people skills perceived as most important for project managers, including 1) managing emotions, 2) building trust, 3) communication, 4) motivating others, 5) influencing others, 6) cultural awareness, 7) leading, and 8) team building. The literature highlights a complementary relationship between a project manager's mastery of project management tools and techniques, business and general management aptitude, and interpersonal skills.

These interdependencies were highlighted in a discussion with a Senior IT Leader that stated, *"Interpersonal skills, without project management skills and knowledge, would be as ineffective as a project manager with advanced project management knowledge without interpersonal skills".* [13]

Paradoxes in Literature on Project Manager Success

Given that perceptions of success are heavily dependent upon project outcomes and how the project management tools and techniques are leveraged to assist in producing expected outcomes, it becomes apparent that a project manager's ability to elicit, understand, and manage stakeholder expectations throughout a project lifecycle, and often even into the product lifecycle, is paramount for project success. The project manager's opportunity to influence perceptions about project success rests in their ability to understand what stakeholders value, manage the real-world factors that influence how the project delivers value, and ensure the reality delivered and expectations are aligned (Millhollan, 2008).

Based on the gaps presented in the previous sections and the author's experiences, it appears that application and decision making around the techniques (hard skills) of project

[13] Informal discussion with senior IT leader in November 2013.

management are the critical skills of the successful project manager. This begins with the following:

1. Skills associated with interpersonal interactions to elicit and understand stakeholder expectations related to a specific project so that one can use this information to identify and prioritize factors that will influence their perceptions of success.
2. Ensuring aligned expectations between different stakeholder groups through communication, negotiation and conflict resolution skills, as these expectations could not only be in conflict, but also evolve over time as the project progresses from early planning through execution and delivery.
3. Decision-making and negotiation skills to develop strategies to manage not only the project, but also stakeholder expectations about agreed upon end-state goals.

If research indicates a specific set of skills, or range of skills, is necessary to be an effective project manager, why do the professional standards not provide descriptions that are more detailed or provide guidance for procuring and developing these skills? If we know that successful project managers need a broader range of skills, why are we not including these skills in basic or advanced project management curriculum? Is it because it is too hard, or because we consider these dispositional skills rather than skills that can be taught? These are important questions to ask. Table 2.5 provides a summary of the key paradoxes related to the tri-focal success lens.

Table 2.5: Summary of Key Paradoxes in Literature

Project Success	1. The challenge of project success comes with balancing differing expectations and perceptions. 2. Some of the factors that contribute to project success are realized during a project, e.g. meeting budgets and schedules. 3. Other project success factors might not be realized until long after project completion, e.g. customer satisfaction or commercial success. 4. The factors influencing project success measurements and perceptions are often in conflict, e.g. meeting a budgetary or schedule constraint can have a negative impact on satisfying technical or functional requirements.
Project Management Success	1. Effective project management (the process) can contribute to project success, but does not ensure success. 2. Absence of effective project management contributes to project failure. 3. The literature does not address decision-making associated with the tools and techniques. 4. Project management, or process, success is dependent on skills outside the project management methodology and the body of knowledge does not provide guidance for procuring or developing skills required to apply the tools and techniques.
Project Manager Success	1. A project manager's ability to elicit, understand, and manage stakeholder expectations throughout a project lifecycle, and often even into the product lifecycle, is paramount for project success. 2. The application and decision making around the techniques (hard skills) of project management are the critical skills of the successful project manager.

Revisiting Figure 1.1 presented in Chapter 1, this Venn diagram illustrates the relationships between this tri-focal view of success. The "sweet spot" must be identified by the project manager for each project since, as evidenced in the literature, the critical success factors vary based on stakeholder expectations and context.

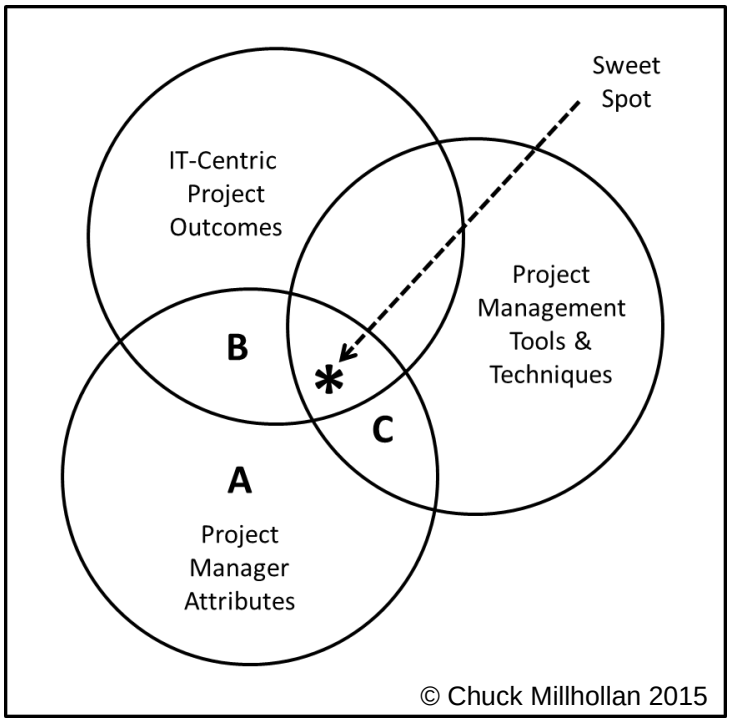

Figure 1.1: Tri-focal lens interrelationships

This phenomenological study moves beyond the current literature and develops a deeper understanding of the "sweet spot" where these three aspects of success come together, as well as identifies project manager attributes that contribute to IT-centric project outcomes and application of the project management tools and techniques. The project manager must understand stakeholder perspectives and have the ability to not only modify their personal views on key project success factors, but also manage their stakeholders' expectations.

Area of Inquiry #4: Stakeholder Theory

As noted in earlier sections, stakeholders and their potentially different needs and perceptions emerge repeatedly as potential considerations in skill prioritization for project managers. This section reviews important insights from stakeholder theory.

If we queried experienced project managers, how many of them would suggest that their depth of knowledge of the PMBOK processes or tools and techniques was the key to their success? Likewise, if we went to senior leaders and project sponsors, how many would suggest they needed project managers with a deeper understanding of the project management body of knowledge? My review of the literature highlights that the focus on acquiring project management tools and techniques related knowledge does not guarantee effective application of that knowledge. Being skilled in the application of project management techniques is a different issue that requires understanding of the stakeholder group, ability to elicit expectations of stakeholders, and versatility in ability to communicate with diverse groups of people.

Stakeholder theory, originally published by Freeman (1984), is a theory of management and business ethics that addresses the stakeholder-related complexities associated to value creation through business relationships, or project work in context of this study. Traditional views of business focused primarily on the fiduciary responsibility that the business had to owners, referred to as shareholders or stockholders, and management's obligation to make decisions solely with the objective of increasing value for these limited stakeholder groups. However, are those that stand to gain financially from business, or project work, the only viable stakeholders? Stakeholder theory extends management's responsibility to include other stakeholder groups' interests in their decision-making. Specifically, stakeholder theory suggests that management should understand the relationship between the business and all legitimate stakeholders, either groups or individuals, which can influence, or are impacted by, the value creation effort or outcome (Freeman, 1984; Freeman, Harrison, Wicks, Parmar, & DeColle, 2010). The last three words, "effort or outcome", encourages one to include both internal and external stakeholder groups in the stakeholder analysis process.

Stakeholder theory critics claim that attempting to balance multiple stakeholder groups' interests is contrary to a market-based economy and the responsibilities of the firm (Phillips, 2003). For example, if a manager's obligation is to increase owner value, in what situation would that manager make decisions that meet other stakeholder groups' needs at the expense of maximizing value? Freeman et al. (2010) counter this criticism by arguing an organization's sustainability is directly influenced by more stakeholder groups than those with financial interests in business outcomes. In fact, "value maximization and stakeholder theory are compatible since an organization must satisfy multiple stakeholder interests to ensure long-term sustainability" (Freeman et al., 2010, p. 12).

Identifying the premises of Stakeholder Theory begs the question, who exactly are, and are not, considered stakeholders in project management? The definition of a stakeholder has evolved since Freeman's seminal work in the early 1980s. As previous mentioned, a stakeholder was originally defined by Freeman (1984) as an individual or group that can affect, or is affected by, an organization meeting their objectives. Earlier definitions vary slightly; however, they highlight the same basic stakeholder group concepts. Concepts that permeate definitions of a stakeholder include (Friedman & Miles, 2006):

1. Those that can help or hurt the organization.
2. Those that have an interest in the actions of an organization and can influence it.
3. A human agency that can be influenced by, or can influence, the activities of an organization.
4. Anyone that stands to gain or lose as a result of organizational activity.

The seminal stakeholder text definition provided by Freeman (1984) is accepted as the foundation for this study; "any group or individual who can affect or is affected by the achievement of the organization's objectives" (p. 46).

Consistent with Stakeholder Theory, the Project Management Institute defines a Stakeholder as "an individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project" (PMI, 2013a, p. 563). The variations related to focusing the definition on project stakeholders do not change the meaning, or intent, of Stakeholder Theory. Prior to 2013, Stakeholder Management and related concepts, tools and techniques were treated as a subset of Communications Management related roles and responsibilities. Stakeholder Theory has become such an accepted concept in the project management profession, that The Guide to the Project Management Body of Knowledge, 5th edition (PMI, 2013a) added an entire chapter dedicated to Stakeholder Management. This chapter is now included as one of the ten primary knowledge areas in the project management body of knowledge.

As an experienced project management practitioner who develops project management curriculum ranging from fundamental to advanced practical application courses to PMP® Exam preparation courses, the author of this study has in-depth familiarity with the relationships between Stakeholder Theory, Stakeholder Management, and project-related success. The project management body of knowledge evolution related to stakeholders is linked to project management practitioners and academics' understanding and curiosity related to these relationships. For example, understanding different stakeholders' perceptions and ability to influence project outcomes was the theme of Kloppenborg, Stubblebine, and Tesch's (2007) research on sponsor behaviors. Their findings indicated substantial differences between

Executive Sponsors and Project Managers' perceptions about expected levels of engagement from the Executive Sponsors. Closing this gap is an exercise in stakeholder management. Central to the importance of this study, research indicates that the project management standards still do not adequately address stakeholder management as they focus more on "management of stakeholders to comply with project needs" than management for stakeholder interests (Eskerod & Huemann, 2013, p. 36).

To begin addressing this issue, this research focused on two stakeholder groups in IT-centric project environments; Senior IT Leaders and Certified Project Management Professionals. While business leaders may be excellent at providing their assessment of a project's overall success, they may be less knowledgeable about assessing skills that lead to a project manager's success in an IT-centric project environment. Additionally, the IT leaders will likely have extensive feedback from their business partners about dealings with particular project managers, as such the IT leaders would be able to synthesize across both specific and aggregated project experiences. Senior IT Leaders are also the ones responsible for development plans and recommendations on how development budgets are spent, an area to which this research contributes.

Area of Inquiry #5: Summary of Theoretical & Methodological Underpinnings and Implications

It is important to note that many of the articles reviewed have theoretical background sections; however, the studies are not based on specific academic theories. Instead, scholars outline the seminal research related to project management, or combined project management theory, and refer to contributing theories. For example, Cleland (2004) links management theory to the web of interpersonal relationships a project manager must maintain in a matrix organization. Anantatmula (2010) highlights the distinctions between classical management

functions and situational leadership theory and their application in project management while claiming that a project manager's role is more complex than most functional management roles. Supporting my finding in the literature review, Williams (2005) argued that the project management profession and related body of knowledge *lack* a comprehensive underlying theory.

Of the research with a theoretical basis, there are trends in using organizational theories, management theories, and leadership theories, which supports the observation that project managers must be a generalist in management and leadership, and a specialist in project management application (McHenry, 2008). This is also consistent with claims that theory in project management is implied through the combined body of knowledge that outlines the multiple processes, tools and techniques a project manager must apply in their profession (Pollack, 2007; Williams, 2005).

In terms of methodological approaches, studies on various aspects of project management use predominately quantitative questionnaires or surveys, or qualitative methods such as interviews and focus groups. The majority of research on project success uses positivist, quantitative methods with questionnaires and surveys (e.g. see Hyvari, 2006; Ika et al., 2011; Pinto & Slevin, 1988; Pinto & Mantel, 1990; Shenhar & Levy, 1997). This is consistent with the fact that most projects are measured using quantifiable metrics such as schedule, budget, and compliance to requirements. The majority of research on project manager success uses constructivist, qualitative methods with interviews and observation (e.g. see Alam, Gale, Brown, & Khan, 2010; Cheetham & Chivers 1998; Gale & Brown, 2003; Petter & Randolph, 2009). This is consistent with seeking to understand life experiences in a practical project environment, and factors that influence how people applied the project management theory in context. To a much

lesser degree, researchers used case studies with both qualitative and quantitative data (e.g. see Pivac, Pivac, & Ravlic, 2011; Shenhar et al., 2001; Wateridge, 1998).

Setting the Stage for Research Design

As evidenced through a detailed analysis of scholarly literature, there is absence of an agreed upon, or universally accepted, set of attributes contributing to project manager efficacy. This fact is compounded by not only the variances in how different stakeholder groups perceive success through the tri-focal lens of project success, project management success, and project manager success, but also by the lack of attention to success in IT-centric project environments. Given this, there was support for a focus group design as it allowed us to bring together these constructs while reaching the two different stakeholder groups, and further enabled us to capture the importance of different skills in various decision processes associated with training and development plans. The phenomenological focus group research design allowed us to deepen our understanding of attributes most important for project manager efficacy in an IT-centric project environment through the experiences of practitioners closest to the phenomenon of interest. It also allowed us to put those prioritized skills into context.

> *Research Question: What do Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as the most important attributes for project manager efficacy as it relates to project success?*

Chapter 3. Research Design and Methods

Given that my goal was to explore opinions and experiences of two populations by studying a sample from each population, the research design for the study was a qualitative focus group method (Creswell, 2006; Kruger & Casey, 2009; Tracy, 2013). Before providing details of the methodology, it is important to address my assumptions, both practical and epistemological.

Practical Assumptions

This research operated under the assumption that a professional certification's body of knowledge, coupled with a practitioner's ability to earn the certification, was an acceptable measure of their professional acumen. This is an important baseline of knowledge; however, I did not assume that the practitioner was skilled *at applying* the body of knowledge associated with the certification. I also assumed that project management practitioners and their organizations are incentivized to invest in professional development to realize an enhanced skill set and, subsequently, an enhanced ability to contribute to the organization within their assigned project management roles and responsibilities.

Ontological and Epistemological Assumptions

Ontological assumptions refer to the researcher's beliefs about the nature of being, or reality. Ontological views range from the belief that reality is a set of facts waiting to be discovered through experimentation, to a belief that reality is ever changing and can only be understood in specific context through people's perceptions (Creswell, 2009). I do not agree that things either are or are not. Instead, I view reality as a perception shaped by an individual's interpretations based on lived experiences (Starks & Trinidad, 2007).

Epistemological assumptions refer to the researcher's perceptions about the basis of knowledge and how knowledge is acquired (Creswell, 2009). My worldview is a blend between

post-positivist and pragmatic. Post-positivism extends the positivist belief that the researcher and research are independent to accept that the researcher's background and experience influence their observations (Creswell, 2009). As an experienced practitioner, pragmatism is appealing since I view knowledge in relation to practical use (Creswell, 2009). The following elaborates briefly on these points and their relationship to the focus group research design.

Postpositivist

As I read Cardwell's (2009) description of researchers that hold a postpositivist worldview, I found a direct applicability to my research interests and different approaches that I have considered for research design. The key descriptors that aligned with my thinking are that evidence provided through research can be imperfect, that research begins with a theory to be tested, and that researchers should seek to reduce researcher bias introduced in the research method and ultimately the data collection and analysis (p. 7). While applicable, the question then became which approach would best inform my specific research question. This journey is detailed later in my methodology comparison and outlined in Appendix A: Methods Comparison Table.

Pragmatism

Pragmatism also aligns with my view of the world in that knowledge, particularly the application of knowledge, is influenced by individuals based on their experience and perspectives. Additionally, the use of open-ended questions in focus groups or individual surveys fits with the goals of soliciting meaning from participants to gain a deeper understanding of how they view the world based on their experiences. In terms of qualitative focus group designs, I had the opportunity to study various qualitative methods including focus groups in IST800: Advanced Qualitative Methods (Instructor – Dr. J. Stromer-Galley). As part of this course, I

selected a focus group methodology to execute as an informal pilot-study of the primary question posed in this paper. The stakeholder groups in the informal pilot-study included IT Leaders and Certified Project Management Professionals from a medium-sized publicly traded company in an IT-centric project environment. The sample included four representatives from each stakeholder group, or eight total participants. The salient learning from the findings included:

1. IT Leaders and Certified Project Management Professionals (PMPs) identified communication and leadership related skills as important contributors to project success based on their recent experiences. An important differentiation between the two groups is that the Senior IT Leaders' focused on stakeholder management, while the Certified Project Managers' focused on the project environment and project team interaction. This supports my observation from the literature review that while the project management standards acknowledge the importance of interpersonal skills, the body of knowledge focuses on project management theory, tools and techniques.
2. IT Leaders and Certified Project Management Professionals (PMPs) placed emphasis on interpersonal skills over project management knowledge and application. When asked to expand the list of skills and knowledge most important for project manager efficacy to include IT project management, both groups added a basic understanding of information technology systems and processes to the list; however, neither group included in-depth experience in IT as a requirement for IT project manager efficacy.
3. An interesting observation was that when participants in both groups were asked about interpersonal skills most important for project manager efficacy, they focused on social skills. When rewording the question to elicit important soft skills, the list expanded to

include individual proficiencies and traits, such as critical thinking skills and emotional intelligence.

4. While there are demonstrated benefits related to earning a project management certification (Muller, 2013), the informal pilot study provided initial evidence that the structured approach to learning the project management body of knowledge is only the foundation for a project manager's professional journey.

These findings piqued my curiosity associated with qualitative research designs and provided evidence that eliciting lived experiences from experienced practitioners close to the phenomenon being studied would inform the research topic.

The Journey to a Focus Group Design

To begin, I developed sub-questions related to the primary problem statement that was the overarching research question.

Research Question: What do Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as the most important attributes for *project manager efficacy* as it relates to *project success*?

Sub-Question 1: Are there variances between these two stakeholder groups' expectations and the related attributes most important for project manager efficacy?

Sub-Question 2: Do contextual factors, such as organizational or industry culture, influence how stakeholders rank skills in order of priority?

Sub-Question 3: How do agile project management approaches create different demands on project managers, resulting in stakeholders perceiving differences in required skills sets for project manager efficacy?

My observation is that we focus too much professional development on the application of tools and techniques, and we do not focus enough attention on developing other skills necessary to engage a diverse set of stakeholders with constantly evolving needs and perceptions. As I

consider the research topic, there are multiple ways to explore and inform the question and each approach has advantages and disadvantages. The following section presents an analysis of four potential research methods: a case study, survey research, interviews, and the selected approach of focus groups. (See Appendix A: Methods Comparison Table for a summary.) By reviewing the strengths and weaknesses of each approach in relation to the goals of the research and research questions, the justification for a focus group design becomes clearer. After this review, I present the details of the focus group design, sampling protocol, and process for data collection and analysis.

Case Study

In a seminal study from 1988, Baker, Murphy, and Fisher used case studies, coupled with qualitative interviews, to identify factors affecting project success with findings that perceptions play a strong role in defining success. As evidenced throughout the literature, one of the salient findings in their study was that there is no such thing as absolute success. A case study would have allowed me to coordinate a detailed analysis of attributes that contribute to a small sample of project managers' efficacy by identifying case study projects, observing the project managers in their daily interactions with team members, and interviewing project stakeholders to gain near real-time insight into their experiences and perceptions. One of the primary advantages to a case study approach would be that the observations and interactions are conducted in the participants' real world context. This would provide in-depth insight into factors that influence the studied project managers' efficacy in their particular organizational setting (Creswell, 2008; Yin, 2014).

The benefit is also the primary limitation in context of my research topic. A case study would limit the findings to the specific context and case study environment. Another constraint is that a case study would require immersion in the project environment to observe the project

manager(s) interactions with their stakeholders to document how their knowledge, skills, and behaviors influence their efficacy. This direct observation would require that I use my organization for the case study since I am a full-time practitioner, which would introduce challenges with objectivity and bias since the project managers in my organization are my direct reports (Creswell, 2008; Leedy & Ormrod, 2013; Yin, 2014).

Although a case study would have provided direct observation and the opportunity for a detailed understanding of factors that influence a project manager's efficacy during practical application, a case study was not a practical design for my research topic. My objective was to seek and compare 36 – 64 different stakeholders' experiences to identify different perceptions between stakeholder groups. While the results from a case study would be interesting and informative, the findings would be limited to an individual or small group in a specific context and heavily influenced by a small group of stakeholders' perceptions. (See Appendix A – Case Study)

Surveys

In comparison to a case study, a survey research design would have allowed access to a large population from both target stakeholder groups. I have access to the Project Management Professional stakeholder group through my affiliation with the Project Management Institute, and I have access to the Senior IT Leader stakeholder group through the Association of IT Professionals. This access would permit not only large participant groups, but also random sampling that would enable great finding generalization (Babbie, 1990; Creswell; 2008). In addition to access and sample size, surveys would have allowed me to contact hundreds of participants simultaneously through electronic survey tools such as Qualtrics. Survey tools are relatively inexpensive, present easy to understand tools to develop and distribute surveys, and

many also include basic data analysis functions. Surveys also demand less of the participant's time as compared to qualitative research methods, contribute to uniformity of data collected through structured questions and responses, and offer anonymity. One final advantage is that using a validated survey instrument would have lessened bias introduced through researcher presence (Babbie, 1990; Booth, Colomb & Williams, 2009).

There were also limitations associated with a survey research design for my specific topic. There is the potential of unnecessary delays and costs due to the bureaucracy associated with working through large professional organizations such as the Project Management Institute and the Association of IT Professionals. Survey simplicity is also a contributing factor to the next potential barrier; survey fatigue. These two stakeholder groups, especially when accessed through their association with professional organizations, are surveyed on a regular basis, which can lead to the risk low response rates. Since electronic surveys are anonymous, additional risks include not reaching the intended audience or dishonest responses to demographic qualifiers. The literature review highlights additional limitations to survey research. For example, the factors influencing project manager efficacy must be well understood to facilitate fair and unbiased ranking and there are natural barriers to addressing complex, conceptual, or subjective issues or words such as those related to soft skills (Babbie, 1990, Creswell, 2008; Leedy & Ormrod, 2013).

In relation to this study, a survey research design was not suitable or practical to capture the context and stakeholders' experiences related to attributes most important for project manager efficacy. Ranking attributes that contribute to project manager efficacy through a survey instrument would require the researcher to provide a list. As outlined in the literature review, there is not agreement on a set of factors that contribute to project success or set of

attributes most important for project manager efficacy and many of the terms are subjective. If a defined list is provided, participants may rank that list even if they identify that a critical attribute influencing project manager efficacy is missing, or they could choose to skip the question because they consider the missing attribute more important than those provided on the survey. Another survey constraint is that ambiguous definitions around soft skills and interpersonal skills would make identifying and ranking related skills challenging. Finally, variances in Likert scale interpretation & application can skew results. For example, does an eight (8) on a scale of 1 – 10 mean the same thing to different respondents (Babbie, 1990)? (See Appendix A – Surveys.)

Interviews

A qualitative interview research design could have provided benefits that address many of the quantitative survey limitations associated with the research topic. Interviews present an opportunity to gain a deeper understanding of individual and aggregated perspectives of Certified Project Management Professionals and Senior IT Leaders with specific experiences in context related to the research topic. Additionally, interviews allow the research to directly observe participant reactions to specific questions and take advantage of the non-verbal messaging. The Researcher can also elicit detailed descriptions of the participants' experiences with specific examples and analogy. If there are terms or responses that are not clear, the interviewer can ask follow-up questions to seek clarification, elaboration or test their understanding of the participant's response (Kvale & Brinkman, 2009). The two-way dialogue in a conversational interview can overcome the limitations related to surveys highlighted above. For example, participants can suggest additional attributes important for project manager efficacy, describe their perceptions about subjective concepts, and ask for clarification if they do not understand the question (Creswell, 2008; Kvale & Brinkman, 2009; Tracy, 2013).

A qualitative interview study completed in 2002 leveraged lived experiences elicited through user interviews to describe project success dimensions and revealed that focusing in customer expectations, such as meeting design goals and related benefits to the customer, are amongst the most important success dimensions (Lipovetsky, Tishler, Dvir & Shenhar, 2002). Since the participants were comprised solely of users, it is logical that the findings focused on success as defined by that stakeholder group. As viewed through the tri-focal success lens (see Figure 1.1), the Lipovetsky et al. (2002) study is limited to the outcome, or project success. Later, Petter and Randolph (2009) used qualitative interviews to identify the soft skills necessary to manage user expectations in IT projects focusing on knowledge transfer. In project management terms, the study was motivated by seeking an understanding of how best practices are transferred from one project to the next in the form of sharing lessons learned from one project manager to the next. One of the primary limitations of Petter and Randolph's (2009) study is that all of the participants were IT project managers, which neglects other stakeholders' perceptions.

While interviews overcome some of the limitations presented by a survey design, the interview approach is not without challenge. One of the challenges related to a qualitative interview study is determining how many interviews with each of two stakeholders groups is sufficient to reach data saturation (Baker & Edwards, 2012). As the number of interviews increase as the researcher seeks data saturation, the amount of time to conduct, transcribe, and analyze the data increases. Another potential challenge with one-on-one interviews is that participants can be limited by their ability to articulate their experiences (Kvale & Brinkman, 2009). For example, a single interviewee that is having difficulty putting their experiences into

words could create the potential for researcher bias as the researcher interprets and restates their understanding of the interviewee's comments.

While a qualitative interview research design would have informed the research topic, one-on-one interviews were not practical due to the amount of time required to ensure even modest generalizability and not optimal since the interviewee is limited by their ability to recall and articulate their experiences related to attributes most important for project manager efficacy. These two limitations were addressed through a qualitative focus group research design. (See Appendix A – Interviews.)

Focus Groups

The focus group research design provided all of the benefits related to a qualitative interview approach with the added advantage of an interactive discussion. The group interactions allowed participants to collaborate when addressing complex, or subjective, concepts such as the soft skills that contribute to a project manager's efficacy. While individuals can struggle with definitional confusion, a group can discuss concepts and work together to reach a consensus or general agreement (Kruger & Casey, 2009). Their dialogue not only contributed to interpretation, but also presented an opportunity for the researcher to observe and react to group responses such as body gestures and facial expressions. There was also the added benefit of group brainstorming and the related exchange of ideas that generated additional information (Kruger & Casey, 2009; Tracy, 2013). One of the limitations related to one-on-one interviews is the amount of time required to conduct and transcribe the discussions. The focus group design allowed access to more participants in less time and aided in reaching the number of participants required to produce quality data (Baker & Edwards, 2012). Finally, the focus group design served to reduce

researcher bias as the participants interacted and responded to each other instead of interacting only with the researcher in a structured question and answer interview.

Limitations related to the focus group research design include the relatively small sample size in comparison to a survey research design. The sample size does present the challenge of a non-representative sample; however, my research objective was not to generalize the findings to all project managers in all project environments. Instead, the objective was to discover and inform the research question based on the two stakeholder groups' perspectives in IT-centric project environments. Varying industry and organization size did not make the findings generalizable to all audiences, but did enhance the value of findings. While many of the limitations related to an interview research design apply to focus groups, there are additional challenges introduced that are unique to the interactive discussion approach. For example, individual participants can have their opinions suppressed by more vocal participants, or may self-censor. This risk was minimized by having senior people of approximately similar status and tenure. Conversely, the group discussion format also created the risk of different groups taking different directions with their dialogue, making the data analysis and comparisons more complex (Booth & Colomb, 2009; Krueger & Casey, 2009; Tracy; 2013). These instances are addressed in Chapter 4.

Considering the different approaches, their benefits, and their limitations, I selected qualitative focus groups as the best design to inform my research question, address gaps in the existing literature, and inform us on the attributes most important for project manager efficacy in IT-centric project environments. Leveraging the focus group design allowed me to realize benefits from qualitative interviews while overcoming many of limitations related to one-on-one interviews. For example, the six (6) focus groups with five (5) – nine (9) participants each

provided access to forty-five (45) total participants in a fraction of time related to facilitating & transcribing individual discussions. The groups collaborated to help articulate difficult to describe factors relating to project manager efficacy (e.g. soft skills), and divergence in interpretations were resolved or highlighted in real-time, face-to-face interactions.

I want to acknowledge that scholarly research with similar designs have been undertaken to address related topics. However, these authors did not attempt to identify or address differences of opinion between diverse stakeholder groups, disregarded the tri-focal success lens (see Figure 1.1), and focused on skills related to applying the project management methodology at the expense of alternative perceptions of success. Specifically, the literature review identified articles that used qualitative interviews and focus groups to elicit participant opinions in a project management context. A contribution of this design type was that one could have not only multiple groups, but also multiple stakeholder groups with different industry backgrounds.

Dainty, Cheng & Moore (2003) leveraged a focus group study to identify performance measures for project managers; however, their study focused on construction projects and findings related to how project managers build, develop, and maintain the project team. Dainty, Cheng, and Moore's (2003) study is in a context different from IT; however, it is also important to note that team leadership is not the only attribute important for project manager efficacy. Continuing the focus on people management, Fisher (2011) conducted a focus group study to identify the skills and behaviors of an effective "people" project manager. The study consisted of two focus groups, each with the same ten participants, conducted one year apart. The study focused on eliciting perceptions from project management practitioners and specifically addressed the skills that make project managers good "people managers". These two studies were both limited in scope by addressing only people management.

Finally, a recent study by Bentley, Richardson, Duan, Philpott, Ong, and Owen (2013) used two focus groups of 25 participants each comprised of postgraduates with project management experience. The study's purpose was to elicit perceptions about application of project management methodology within the participant's organizations, how the project management tools and techniques were being applied, and opinions about tool and technique effectiveness to inform curriculum development. Viewed through the tri-focal success lens (see Figure 1.1), the Bentley et al. (2013) study was limited to addressing perceptions about a practitioner's ability to leverage a methodology and the related benefits.

Qualitative Focus Group Research Design

The methodology comparison, coupled with gaps in the scholarly literature, led me to select a qualitative focus group to study the attributes that Senior IT Leaders and Certified Project Management Professionals identify as the most important for project manager efficacy. The objective with selecting a qualitative focus group method was to elicit thick descriptions from the two stakeholder groups that explained their experiences, in context, in such a way that became meaningful to someone who did not share the same experience (Geertz, 1973). Additionally, the focus group interview approach allowed me to leverage the cascading brainstorming benefit from the interaction between three or more participants (Tracy, 2013). By allowing two stakeholder groups, described in more detail below, to discuss factors that contribute project success and attributes most important for project manager efficacy in an IT-centric project environment, the data collection was enhanced by individual contributors piggybacking on each other's comments. The focus group analysis helped ensure a better understanding of the language related to project success and project manager efficacy used in different stakeholder groups. Additionally, the process helped fill gaps in individual experience

as peer groups shared their range of experiences and perceptions during the facilitated discussions and allowed new information to emerge through those shared experiences (Krueger & Casey, 2009).

Focus Group Process

In addition to the defined research objectives and participant groups previously defined, the following list of steps outlines the applied focus group process.

Step 1: Recruit participants. See Appendix B: Focus Group Recruiting Script.

Step 2: Secure consent. See Appendix C: Draft of Focus Group Consent Form.

Step 3: Secure locations.

Step 4: Schedule focus groups.

Step 5: Conduct focus groups. See Appendix D: Focus Group Discussion Guide.

Step 6: Transcribe focus groups.

Step 7: Analyze results.

Step 8: Prepare written summary for final defense.

The following provides a detailed systematic process used while conducting the focus group sessions. See Appendix D: Focus Group Discussion Guide for additional details.

1. Opening. Once the participants were in place and ready to begin, I shared my appreciation for their participation, covered the confidentiality agreement, reiterated that the session was being recorded, and reminded the participants that participation was voluntary. The opening concluded with collecting the signed consent forms and asking if there were any questions before we began.
2. Introduction. I explained the research purpose by stating, and explaining as necessary, the research question and sub-questions.

3. Focus group process. Since I could not assume every participant was familiar with focus groups, I explained the focus group process, logistics, and ground rules for participation.
4. Audio start. I announced that the audio taping was starting and signaled the observer to turn on the voice recorder.
5. Voice verification. I began with an icebreaker question that allowed the participants to introduce themselves and helped with voice recognition on the recorder.
6. Discussion / questions.
    a. Individual opening activity. Appendix E (Pre-Discussion): Focus Group Handout – Skill Category Ranking.
    b. Focus group questions.
    c. Individual closing activity. Appendix F (Post-Discussion): Focus Group Handout – Skill Category Ranking.
    d. Final activity: Appendix G: Demographic survey.
7. Conclusion. I thanked the participants for the time and for sharing their thoughts and opinions. I reviewed the research project's purpose and closed with letting them know they could contact me if they had any questions about the research or wanted to share additional information.

Potential Bias

It is important for the reader to understand that I am an experienced project manager who has earned the PMP designation and taught others the PMBOK tools, techniques, and methodology. In addition to focusing on pragmatic issues as a practitioner, I also cannot totally escape the learned bias from my considerable experience. To mitigate the risk related to this

natural bias, I used a dedicated observer and recorder. The observer listened to the discussions and took notes, observed and documented participant behaviors and responses to questions, and provided cues to me as the moderator if I missed an indicator that a participant is not engaged, a question remained unanswered, or a prompt for clarification was missed. With the dedicated effort to remain a silent participant, the observer used note cards and hand signals to highlight opportunities to improve the data collection and avoid situations where my focus on specific discussion topics would guide the conversations. For example, during brainstorming sessions when participants were generating lists of key factors or attributes, participants would speak at the same time, which created the opportunity to miss data. The observer would provide prompts via the note cards and gestures to assist in ensuring everyone's contribution was captured and included in the discussion.

Ethical Considerations

In addition to the risks, privacy and consent considerations outlined in the Focus Group Consent Form (see Appendix C), it is important to highlight the relationship between the researcher and the focus group participants. In addition to having a depth of experience in project management, information technology, and the research topic that precludes me from claiming neutrality, I must disclose that the participants may have known me through my professional network, my curriculum development, my public speaking, or engagement with professional organizations in the locale of the study. Due to the nature of this study, the relationship between the researcher and participants neither presented additional risk to the participants, nor introduced bias in the focus group findings. Project manager skill set requirements is a commonly discussed topic in both the scholarly literature and in practical application.

Using a focus group design was part of the risk mitigation strategy for researcher bias. I also mitigated risk through addressing the voluntary nature of participation, proactively identifying the risks, describing privacy considerations, and securing consent from each participant. (See Appendix C: Focus Group Consent Form). It is important to note that neither did I select the participants, nor did the participants know I was leading the focus groups until after they had volunteered to participate. I worked directly with senior leaders in the participating organizations to secure permission and access. Once access was granted, I worked with administrative assistants, or a representative the senior leader selected, to contact the candidates that met the selection criterion outlined in the recruiting script (See Appendix B). The first sentence in the background was omitted to remove my name. The contact information was omitted, and volunteers responded directly to the internal contact. As a rule, I did not know the specific participants until entering the conference rooms. To mitigate any perceived coercion risk, I explained the consent forms to ensure participants were fully aware that participation was voluntary and that they could withdraw their consent at any time during the focus group discussions.

Sample, Context, and Participants

The research began with recruiting participants (See Appendix B: Focus Group Recruiting Script) and grouping the participants into two primary stakeholder groups, (1) Senior IT Leaders and (2) Certified Project Management Professionals (PMP). The context was IT-centric project environments. IT-centric project environments were selected as the focus for this research for three primary reasons. The first factor leading to the IT-centric context was The Standish Group's (1994) Chaos Report. This study presented a list of potential causal factors for IT project failure; however, did not address the attributes most important for a project manager to

avoid these barriers to project success. The second reason was personal experience with IT project-related challenges and curiosity as to why knowledge of the factors that contribute to IT project failure has not substantially improved results. Finally, the concentration on IT-centric project environments allowed for a controlled scope for this research.

For the purpose of this study, and IT leader was defined as follows:

1. Is currently serving in a role with 5 or more direct reports.
2. Has a minimum of 10 years of IT experience.
3. Has a minimum of 5 years of experience as a project team member.
4. Has a minimum of 5 years of experience in a project leadership role (i.e. resource management, project sponsor, project manager) with accountability for project outcomes.

The project manager stakeholder group met the following criteria:

1. Hold the Project Management Professional (PMP®) certification, which indicates a minimum level of project management experience and demonstrated knowledge of project management theory, tools, and techniques.
2. Has a minimum of 10 years of experience in a project leadership role in an IT-centric project environment.

The justification for these criteria are that participants are considered senior leaders in IT or project management, have demonstrated subject matter expertise in IT project environments, and have experience working with project managers or leading projects in IT-centric project environments. The minimum requirement of 10 years of experience was used to increase the likelihood of participants' experience diversity, including exposure to different organizations, types of IT projects, and project management methodologies. This experience diversity is

demonstrated in the Participant Demographic Data included in the next section. Table 3.1 provides a summary of Focus Group Composition details, criteria for inclusion and rationale for these criteria.

Table 3.1: Focus Group Composition

Stakeholder Group	Number and Size of Focus Groups (total N = 45 participants)	Criteria for Inclusion	Rationale for Criteria
Certified PMP's (total N = 20)	3 focus groups (5 – 9 participants from each of 3 industry sectors)	PMP® Certification 10 years of experience in project leadership role in IT	Certification will increase the likelihood that participants have an in-depth knowledge of project management methodology, tools, and techniques. The 10 years of experience criteria will increase the likelihood that participants have exposure to wide variety of projects in IT, have applied a variety of project management methodologies, and have experience that would increase their knowledge of the attributes required for project manager efficacy.
Senior IT Leaders (total N = 25)	3 focus groups (7 – 9 participants from each of 3 industry sectors)	IT Leadership role 10 years of IT experience 5 years of project team member experience 5 years of experience in project leadership role	IT leadership will increase the likelihood that participants have direct responsibility for team member selection, resource management, and professional development for their team. The 10 years of experience criteria will increase the likelihood that participants have exposure to wide variety of projects in IT, have knowledge of a variety of project management methodologies, and have experience that would increase their knowledge of the attributes required for project manager efficacy. The 5 years of project team-member experience will increase the likelihood of direct working relationships with a variety of project managers, which would increase their knowledge of the attributes required for project manager efficacy. The 5 years of experience in a project leadership role (i.e. resource management, project sponsor, project manager) will increase the likelihood that participants have had accountability for project outcomes.

Stakeholder groups were selected based on the nature of the research question and the experiences that would inform the need to understand the attributes most important for project manager efficacy in IT-centric project environments. The number of focus groups per stakeholder type was based on the accepted rule of thumb (Krueger & Casey, 2009). During the data collection and analysis process, I tested for information saturation to determine if additional focus groups were required. Three focus groups with two different stakeholder categories allowed me to identify patterns and themes within and across stakeholder types.

Industry sectors that participated in the study included:

1. Financial services
2. Government
3. Academia

In addition to providing access to more participants, a benefit of recruiting in different industries was that the study identified experiential differences in different organizational contexts and increases generalizability beyond a single sector. These specific industry selections enabled comparing and contrasting participant experiences between for-profit and not-for profit organizational structures and public and private organizations. While recruiting across three industry sectors was not exhaustive, the objective was not to be able to generalize across all industry sectors but to inform about perceptual differences and similarities around factors that influence project manager efficacy in IT-centric project environments in various organizational contexts.

Participant Demographic Data

Stakeholder groups were selected based on the nature of the research question and the experiences that would inform the need to understand the attributes most important for project manager efficacy in IT-centric project environments. Table 3.2 outlines the coding used to identify participants by industry and stakeholder group. At the beginning of each focus group, participants would introduce themselves beginning at the left of the facilitator and going clockwise. Participants were numbered sequentially, starting at one (1). For example, the participant codes for the Financial Services Senior IT Stakeholder group are FS IT 1, FS IT 2, etc. continuing to the final participant in that session.

Table 3.2: Participant Codes

Code	Industry
FS	Financial Services
A	Academia
G	Government
Code	**Stakeholder Group**
IT	Senior IT Leaders
PM	Certified Project Management Professionals

It was possible for a participant to meet the inclusion criteria for both stakeholder groups. For example, a Senior IT Leader meeting the criteria for inclusion for that stakeholder group could also hold their PMP® certification and have 10 years of experience in project leadership roles. In this situation, participants were included in the stakeholder group associated with their current role and self-identified on the Demographic Survey (See Appendix G, Question 9).

The criteria for inclusion were purposefully defined to increase the likelihood that participants would have exposure to a wide variety of projects in IT, have applied a variety of project management methodologies, and have experience that would increase their knowledge of the attributes required for project manager efficacy. However, it is possible for a participant to

meet the criteria for inclusion and not have the diverse background and experience being sought. For example, a participant could meet the criteria for inclusion and only have served in one organization and been exposed to one culture, one project management methodology, etc. Two approaches to overcome this risk were following the accepted rule of thumb for number of participants in a focus group (Krueger & Casey, 2009) and using the Demographics Survey to identify industry diversity (See Appendix G, Question 8).

Table 3.3 provides a participant demographics summary. Demographics specific to each stakeholder group are covered later in this chapter. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table 3.3: Summary of Demographics of the Focus Groups

Total Participants N = 45			
Age	25 – 34: 35 – 44: 45 – 54: 55 – 64: 65 or older:	3 14 15 13 0	7% 30% 33% 29% 0%
Gender	Female: Male:	17 28	38% 62%
Primary Language	Arabic: English: Spanish:	1 43 1	2% 96% 2%
Highest Level of Education	High school or equivalent: Associate degree (2 years): Bachelor's degree: Master's degree: Doctoral degree:	3 1 21 19 1	7% 2% 47% 42% 2%
Ethnicity	Arab: Asian: Black: Caucasian/white: Hispanic: Native American	1 2 5 35 1 1	2% 4% 11% 78% 2% 2%
Representation by Industry	Academia: Financial Services: Government:	14 13 18	31% 29% 40%
Representation by Stakeholder Group	Senior IT Leaders: Certified PMPs:	25 20	55% 45%
Years in Current Organization	4 or less: 5 – 9: 10 – 14: 15 – 19: 20 or more:	10 12 7 5 11	22% 27% 16% 11% 24%

Figure 3.1 shows the participants' age ranges. Twenty-eight (28) of the participants were male, and seventeen (17) of the participants were female. The primary language, 96% of the participants, was English, with 2% Arabic and 2% Spanish. Figure 3.2 provides a representation of the highest level of education for all participants, with an 89% majority holding either a Bachelor's or Master's degree.

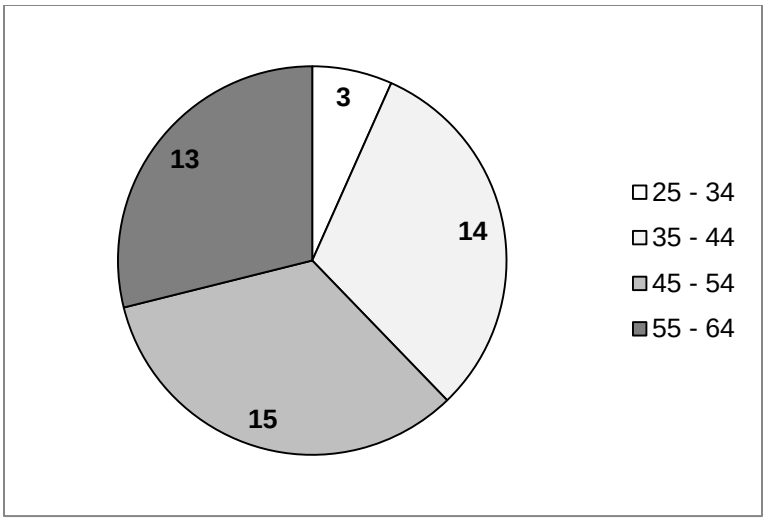

Figure 3.1: Total Participants by Age Range (N = 45)

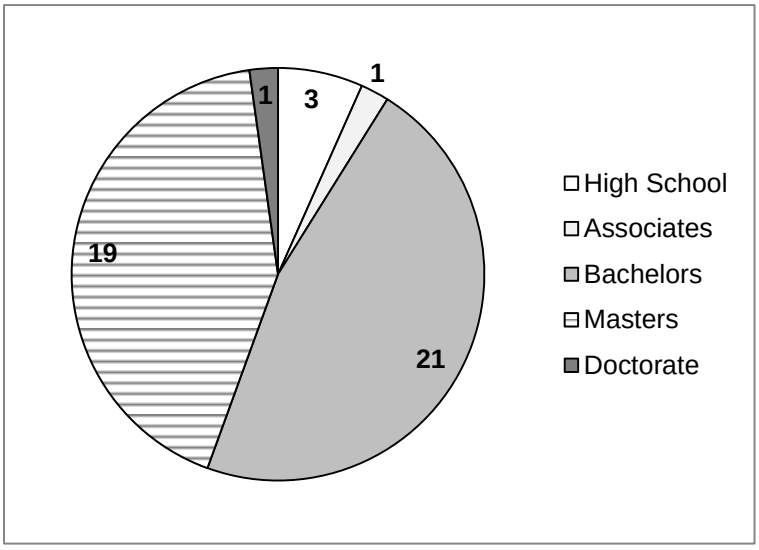

Figure 3.2: Total Participants' Highest Level of Education (N = 45)

Thirty-five (35), or 78%, of the participants classified themselves as Caucasian. Five (5), or 11%, of the participants classified themselves as Black. Two (2), or 4%, of the participants classified themselves as Asian. One (1), or 2%, of the participants classified themselves as Arab. One (1), or 2%, of the participants classified themselves as Hispanic. One (1), or 2%, of the participants

classified themselves as Native American. Figure 3.3 displays the representation by industry. Figure 3.4 represents the participants' tenure in their current organizations.

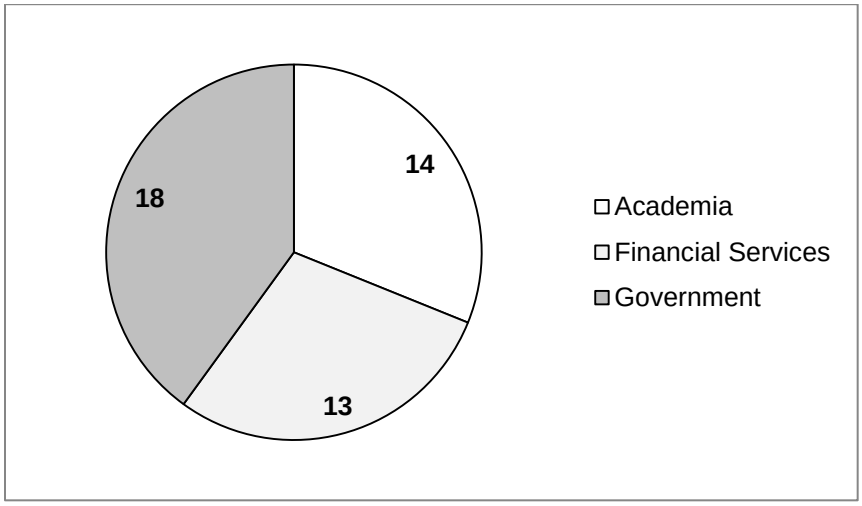

Figure 3.3: Representation by Industry (N = 45)

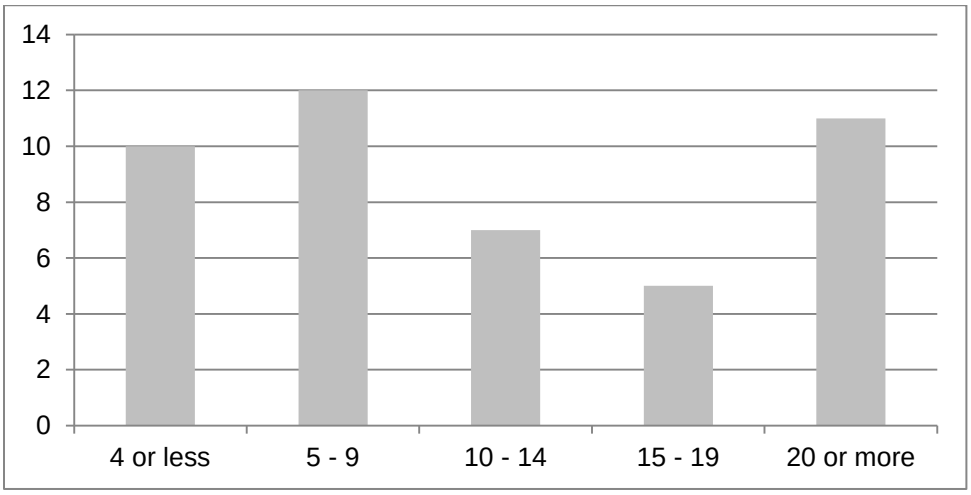

Figure 3.4: Total Participants' Years in Current Organization (N = 45)

Since experience was an important inclusion criterion for participants, the stakeholder groups' combined years of experience are provided. Figure 3.5 represents the combined years of IT experience represented in the Senior IT Leaders. Figure 3.6 represents the combined years of

experience as a project team member for the Senior IT Leaders. Figure 3.7 represents the combined years of project leadership experience for the Senior IT Leaders. Figure 3.8 shows the combined years of IT project management experiences for the Certified Project Management Professionals.

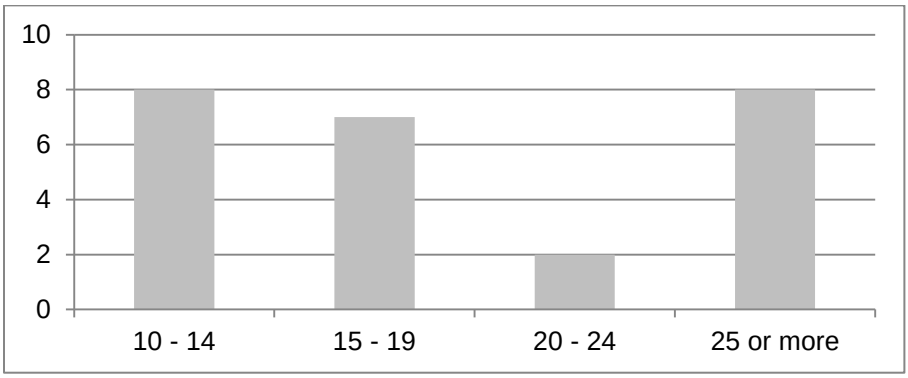

Figure 3.5: Senior IT Leaders - Years of IT Experience (N = 25)

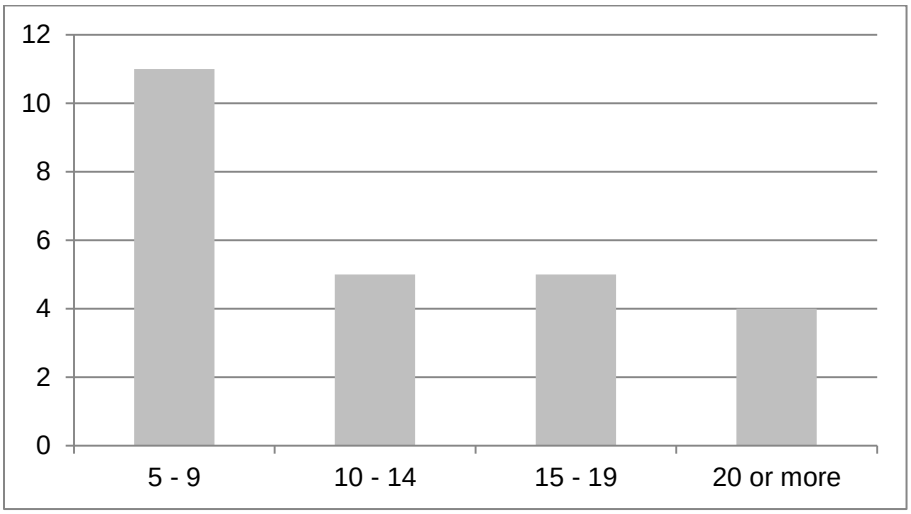

Figure 3.6: Senior IT Leaders - Years of Project Team Member Experience (N = 25)

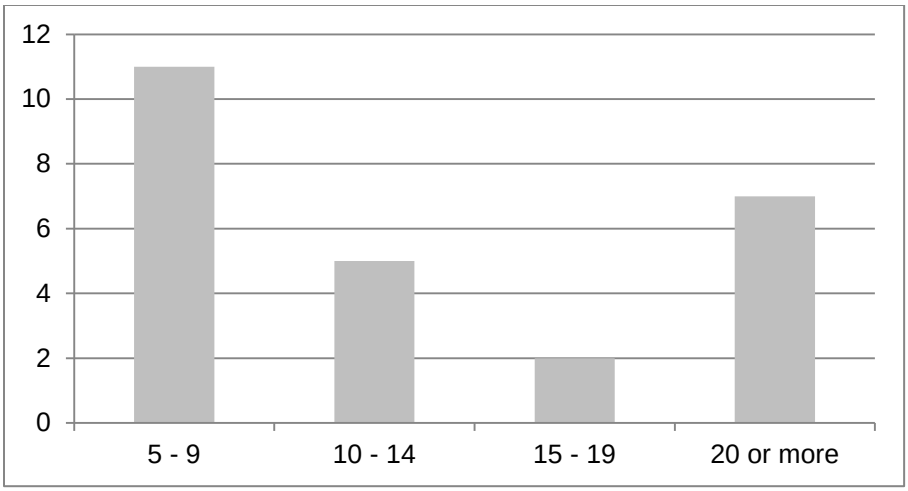

Figure 3.7: Senior IT Leaders - Years of Project Leadership Experience (N = 25)

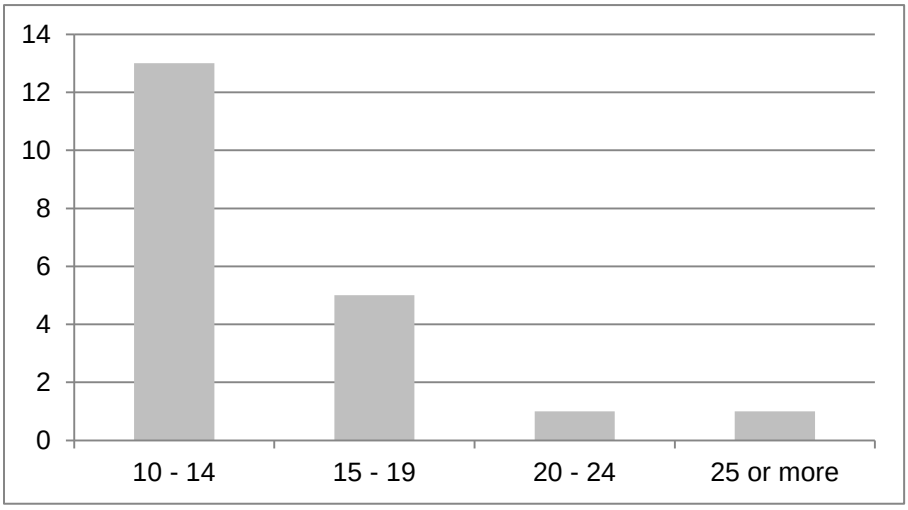

Figure 3.8: Project Managers - Years of IT Project Management Experience (N = 20)

Data Collection Procedures

One advantage of the qualitative focus group research design was that I have received training and have over twenty years of experience in facilitating group discussions. I have received training in observing group behaviors and dynamics, have experience in different approaches to addressing potential barriers to a collaborative discussion, and regularly facilitate

workshops ranging from requirements elicitation to team-building sessions as a part of my current employment.

The type of data collected during the focus groups was primarily the thick descriptions of participant experiences. The discussions were recorded to allow for verbatim transcripts. The tapes and interview notes were coded using a unique code only known to the observer and me to protect participant identities. During the discussions, I leveraged a white board for a visual representation of the lists generated by the participants. This approach has been proven effective for not only generating the list, but also engaging the participants in the discussion and leveraging each other's contributions (Krueger & Casey, 2009, p. 42). Photographs of the whiteboard notes supplemented the researcher and observer notes and the session transcripts.

The use of Skill Category Rankings before and after the focus groups provided the opportunity to identify changes in participants' perceptions about the skill categories based on the interactive discussion with their peers. Prior to each focus group, participants were asked to rank three skill categories (see Table 3.4 for the ranking scale) based on their perceived importance for project manager efficacy in an IT-centric project environment. The skill categories were 1) Information technology knowledge and skills, 2) Interpersonal skills, and 3) Project management methodology knowledge and application. As both a starting point for the discussion and additional data point for comparison, participants were also asked to list up to three top skills in order of perceived importance in each category.

Table 3.4: Scale for Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being the most important
1 = absolutely critical; most important for project manager efficacy
2 = very important
3 = moderately important
4 = somewhat important
5 = not important at all

A single focus group discussion guide was used for all the interviews. Table 3.5 details each question with the rationale and expected data or outcomes. Actual data and outcomes are detailed in Chapter 4.

Table 3.5: Focus Group Activities & Questions

Activity / Question	Rationale	Expected Data/Outcomes
Individual activity: How would you rank the following skill categories in order of importance for project manager efficacy: Interpersonal skills, project management methodology knowledge and application, and information technology knowledge? Include what you consider your top three skills in each category in order of importance. See Appendix E (Pre-Discussion).	Begin in broad categories to understand stakeholder groups' perceptions about sets of skills with the intent to elaborate within the broad categories to identify specific skills. The three categories are used to highlight that formal project management skills are only one skill category and that interpersonal skills and IT knowledge influence project manager efficacy in an IT-centric project environment. Identifying the top three skills in each category will support not only the categorization, but also begin the brainstorming process.	Individual rankings and a discussion on the differences to understand the rationale for individual preferences with examples and thick descriptions. The ability to compare between stakeholder groups within a sector and compare across sectors to see if context makes a difference.
1. Think back to a recent project that you were involved in that is now complete. What factors, characteristics, or ingredients contributed to that project's success?	Opening discussion to focus on characteristics of a successful "project" before describing traits specific to an individual.	Discussion, similar to the tri-focal success lens, on project outcomes, project management application and individual contributors. Different participants will focus on different reasons, with some addressing project outcomes, some addressing project management methodology, and some addressing project manager skills.

Activity / Question	Rationale	Expected Data/Outcomes
2. What about projects that were less successful? What factors contributed to a lack of success?	Asking the question focusing on reasons projects were not successful allows for a cross-comparison to see if a lack of the "success" factors are perceived as causes or if different factors surface as the cause of lack of success	There will likely be similarities between the factors that contribute to project success and the absence of those factors for projects that are perceived as less successful; however, this approach will either allow that confirmation or identify additional potential factors.
3. Let us expand on our list captured on the backboard. In your experience, what skills or knowledge are most important for project *manager* efficacy? Are there any project manager skills that might have helped generate a more positive outcome in those failed projects?	Elicit specific skills and abilities based on participant experiences.	List of categorized skills; stimulate discussion with descriptors and explanations.
4. There can be ambiguity in describing similar skills. What do we mean by each of these? What keywords would you use to define each skill we have identified?	Allow reflection, debate, and brainstorming to produce a more comprehensive list.	Descriptors to aid in coding skills within and across categories.
5. How would you rank the generated skill lists in terms of most important?	Allow participants to describe experiences related to relative importance of the listed skills. I purposefully did not guide the participants in how many skills or attributes to include in the ranking to avoid biasing the discussion towards too many or too few ranked skills. Each group was free to discuss ranking until they reached a consensus on the most important skills.	Further development and support of the ranked list; debate about specific contributing factors with contextual data.
6. How does leading an agile team influence attributes contributing to project manager efficacy? Does this change anything?	Identify potential changes in perceptions based on methodology and tie the findings back to the evolution of project management and the attributes most important for project manager efficacy in different contexts.	Shift in relative importance of both categories and specific skills based on project leadership role in agile environments.

Activity / Question	Rationale	Expected Data/Outcomes
7. Based on our discussions, are there any changes you would make to your rankings or factors or traits you would add to any of the categories?	Open-ended, final opportunity to participants to clarify or modify their contributions based on the discussion.	Further insight on categories, category ranking and justifications, skill ranking and justifications.
Individual activity: Based on our discussions, would you make any changes to how you ranked the skill categories or top three skills in each category? (See Appendix F (Post-Discussion)	Allow participants to modify their ranking based on the discussion.	Determine if thick descriptions provided by participants influenced perceptions. Provides crosscheck documentation of skill priorities and changes to compare to discussion transcripts.

Data Analysis Procedures

As discovered during the study conducted for IST800: Advanced Qualitative Methods (Instructor – Dr. J. Stromer-Galley), the focus group sessions produced large amounts of data. The objective was to examine, categorize, and combine the data based on the study goal of identifying attributes deemed as the most important contributors to project manager efficacy (Yin, 2014). As purpose drives analysis (Krueger & Casey, 2009), the analysis strategy was to identify patterns and themes supported by participant experiences. I used a combination of my focus group notes, the observer's notes, photos of the whiteboard notes, and transcripts to identify patterns within and across the two stakeholder groups (i.e. Senior IT Leaders and Certified Project Management Professionals).

Manual Coding

As "coding is not a precise science; it is primarily an interpretive act" (Saldana, 2013, p.4), I used manual coding to allow coupling of themes and patterns in the data to observations related to interactions within the focus groups. For example, facial and body gestures such as smiling and nodding in agreement or disagreement were noted during discussion. This

information was also used to guide the discussion and ask for clarification related to relationships between words used to describe attributes or traits and deepen the descriptions related to the participants' experience. Another impetus for manual coding was my unfamiliarity with Computer Assisted/Aided Qualitative Data Analysis Software (CAQDAS) and the potential to lead to quantitative analysis of qualitative data (Welsh, 2002). My goal with this research was to produce more than a list with frequency counts to imply relative importance. The intent was to leverage the participants' lived experiences and rich descriptions of attributes that influence project manager efficacy, identify similarities and differences related to how those attributes were described, and identify themes through a cyclical review of the data (Tracy, 2013).

Manual Coding Process

It is important to note that while consecutive steps are outlined below, the overall data analysis process followed an iterative approach, and each data set went through the steps several times as new codes, categories and themes were identified.

Step 1: Record the data collected from the pre-survey, post-survey and demographic survey. Differences between the pre-survey and post-survey were highlighted to document how the peer group discussions influenced individual participant perceptions. This included data related to both skill category prioritization and the top three prioritized skills in each category.

Step 2: Record the notes from the whiteboard and observer. The whiteboard notes, captured through photographs, consisted of lists of keywords provided in response to each focus group question. The observer notes supplemented the whiteboard photos to provide a check for consistency and identify missing data.

Note: Data from Step 1 and Step 2 were used to develop the initial codes, categories, and subcategories. Table 3.6 represents the final codebook. I revisited the codebook after each iteration to identify emerging codes, categories, and themes. Table 3.7 lists a summary of noteworthy codebook changes.

Step 3: Review the focus group audio tape to capture data not documented in the photos or observer notes, listen for verbal cues that emphasized agreement or disagreement, and compare notes and observations to recordings.

Note: This process was used to both update the codebook and the data sheets for each focus group.

Step 4: Transcripts were printed and manually coded. Color codes were assigned to Skill Categories to allow me to visualize both frequency and quantity of content related to each category. I interpreted meaning of the participants' comments and subsequent explanations and descriptions of their lived experiences.

Note: This process was used to both update the codebook and the data sheets for each focus group.

Table 3.6: Codebook

Skill Category (IT, PM, Soft Skill - SS)	Code Category (if applicable)	Code	Descriptor	Definition / Examples / Synonyms
IT	Dev Meth	Agile	Agile methodologies	Development methodology where requirements and solutions evolve through collaboration between the project team and user groups (e.g. SCRUM, Feature Driven Development, and Extreme Programming).
IT	Dev Meth	SDLC	Software Development Life Cycle	Generic references to understanding a software development lifecycle without specifying waterfall, agile, or other methodology.

Skill Category (IT, PM, Soft Skill - SS)	Code Category (if applicable)	Code	Descriptor	Definition / Examples / Synonyms
IT	Dev Meth	WF	Waterfall methodology	Sequential applications engineering process from initiation and requirements elicitation through design, build, test, and delivery.
IT		IT	Information Technology	Generic term used to reference systems, software, computing resources, and information systems.
IT		IT - E	IT Expert	Expertise in an aspect of IT. The ability to identify IT solutions through experience and knowledge.
IT		IT - G	IT Generalist	Knowledge of, not expertise in, IT. The ability to identify and leading the experts. Stakeholders often referred to a "basic" understanding of IT, terminology, and infrastructure.
PM	Expertise	Cert	Certification	PMP, or equivalent, certification.
PM	Expertise	Exp	Project management experience	Experience in managing complex projects.
PM	Expertise	M & C	Monitor and controlling work	Monitoring progress, follow-through, remaining engaged, regular contact with stakeholders, making sure team members are progressing.
PM	Expertise	Prag	Pragmatic project management	Pragmatic application of project management concepts.
PM	Expertise	T&T	Tools & techniques	Understanding and use of the project management tool set, terminology, and methodology.
PM	Management	$ Mgmt	Budget management	Planning, estimating, budgeting, managing, and controlling project related costs.
PM	Management	Comm Mgmt	Communications Management	Processes used to plan communications, collect data, and distribute information and reporting.
PM	Management	PS - Mgmt	Problem-solving - Management	Approach to solving complex issues through a consistent, orderly manner.
PM	Management	Quality Mgmt	Quality Management	Processes used to ensure the project meets the quality standards prescribed during planning processes.
PM	Management	Res Mgmt	Resource management	Capacity management, processes to ensure efficient and effective allocation of organizational resources. Ensuring the right resources are available at the right time and with the right skill sets.
PM	Management	Risk Mgmt	Risk management	Identification, assessment, prioritization, and management of uncertainty that can impact the project.

Skill Category (IT, PM, Soft Skill - SS)	Code Category (if applicable)	Code	Descriptor	Definition / Examples / Synonyms
PM	Management	Scope Mgmt	Scope management	Processes required to ensure project includes all the work required and only the work required.
PM	Management	Sked Mgmt	Schedule management	Managing the project schedule and timelines, analogous to time management.
PM	Management	Stake Mgmt	Stakeholder Management	Understanding the processes, procedures, tools and techniques to identify, understand, and engage stakeholders.
PM	Management	Team Mgmt	Team management	Processes used to administer and coordinate effort on a project.
PM	Management	Vendor Mgmt	Vendor management	Processes required to identify and procure vendors and manage the related contract agreements.
PM	Strategic	Bus Value	Business Value	Understanding the business case, and management of the value the product, service or result is planned to provide to the organization.
PM	Strategic	G & O	Goals and objectives	Clear understanding of the purpose for the project and how the business need is satisfied.
PM	Strategic	Strategic	Strategy Focus	Strategic thinker, understands contributions to strategic goals, focused on end-state (or the purpose for the product or service).
PM		APM	Agile Project Management	Specific references to agile project management. This is distinctly different from agile applications engineering and focused on the iterative planning processes.
PM		Org	Organized	Completes work and manages documentation in an arranged, systematic way. Attention to detail.
PM		Plan	Planning	The processes to establish project scope and objectives and define the course of action required to meet those objectives.
PM		PMIS	Project management information system	The systems used to collect, store and disseminate project related data, information, and reporting.
PM		Pri	Prioritization	Prioritizing tasks and effort.
PM		Proc Map	Process Mapping	Mapping processes and process flow.
SS – Inter: Soft Skills – Interpersonal SS – Pers: Soft Skills – Individual Traits				
SS - Inter	Communication	C - Clarity	Communication - Clear & Concise	The ability to be both clear and concise in your communication, regardless of medium.

Skill Category (IT, PM, Soft Skill - SS)	Code Category (if applicable)	Code	Descriptor	Definition / Examples / Synonyms
SS - Inter	Communication	C - Document	Communication - Documentation	Project artifacts are clear and concise and effectively represent appropriate stakeholder expectations and requirements.
SS - Inter	Communication	C - Listen	Communication - Listening	Actively listening to stakeholders with the purpose of understanding their meaning.
SS - Inter	Communication	C - Timing	Communication - Frequency & Timing	Understanding when to communicate and how frequently to communicate.
SS - Inter	Communication	C - Verbal	Communication - Verbal	This code references verbal communication, such as face-to-face, presentations, conference calls, meetings, and web-ex meetings.
SS - Inter	Communication	C - Written	Communication - Written	This code references written communication, such as email, agendas, minutes, and status reports.
SS - Inter	Communication	Comm	Communication	Generic term used to reference any form of communication skill.
SS - Inter	Facilitation	Conflict Mgmt	Conflict management	Leading a team in the reduction or elimination of conflict.
SS - Inter	Facilitation	Fac	Facilitation	Facilitating meetings, workshops, planning sessions, etc.
SS - Inter	Facilitation	Neg	Negotiation	Facilitating the discussion between two or more groups to reach an understanding, agreement, or consensus.
SS - Inter	Leadership	Change Mgmt	Change management	Approach to transitioning individuals, teams, or an organization from current state to a future state.
SS - Inter	Leadership	Ldr	Leadership	Generic term referring to the ability to get things done through others, influencing others, and focusing effort on a common goal.
SS - Inter	Leadership	PS - Team	Problem-solving - Team Based	Facilitating problem solving within a team.
SS - Inter	Leadership	Sponsor Mgmt	Sponsor management	Gaining executive support and ensuring effective sponsorship.

Skill Category (IT, PM, Soft Skill - SS)	Code Category (if applicable)	Code	Descriptor	Definition / Examples / Synonyms
SS - Inter	Leadership	Stake Ldr	Stakeholder Leadership	This code focuses on the project manager's approach used to manage stakeholder expectations and engagement (including customers), elicit ideas and alternatives, develop, and maintain the appropriate relationships. Gaining buy-in, agreement, on the project, decisions, change, etc.
SS - Inter	Leadership	Team Bldg	Team building	Helping a group of individuals work with each other.
SS - Inter		People Skills	People Skills	Generic term used to reference any form of skill related to working with other people.
SS – Pers		Attitude	Positive Attitude	A positive way of thinking, reflecting positive state, projecting positivity.
SS - Pers		Conf	Self- Confidence	Belief in your own ability, skills, and experience.
SS - Pers		CT	Critical Thinking	The ability to define a problem, elicit alternatives, and choose the best solution based on influencing factors.
SS - Pers		EI	Emotional intelligence	The ability to monitor self and others' emotions and use this information to inform thinking and behavior.
SS - Pers		Flex	Flexibility	The receptiveness to change and alternative ideas or solutions.
SS - Pers		Learner	Learner	The ability, coupled with the desire, to gain new knowledge or skills.
SS - Pers		Patience	Patience	Tolerant, perseverance, capacity for remaining calm.
SS - Pers		Trust	Trustworthy	Trustworthiness, transparency, provides complete and accurate information, respected for being up-front in dealings with stakeholders.
SS - Pers		Unbiased	Unbiased	Neutral, mediator, no pre-determined solutions.

The three skill categories were 1) IT knowledge and skills, 2) Interpersonal skills, and 3) Project management methodology knowledge and application. The IT category was important for informing the research question specific to IT-centric project environments. The interpersonal skills and project management knowledge and application categories were derived from the knowledge, skills, and abilities identified during the literature review.

During the focus group discussions, it became apparent that the interpersonal skills term was too limiting and two different themes related to soft skills emerged. The first soft skill theme was interpersonal skills, or people skills, a project manager uses to interact with various stakeholder groups. The second soft skill theme was the individual traits that influence the project manager's actions, attitudes, and behaviors. Interestingly, asking for a list of interpersonal skills generated responses that fit into the individual traits category and vice versa. In short, the participants could easily define and describe the difference; however, did not differentiate between the categories when discussing either. To inform the analysis, I coded the two categories as *SS – Inter* for soft skills in the interpersonal skill category and *SS – Pers* for soft skills in the individual traits category.

Code categories emerged both inductively and deductively. For example, the code "communication" was used in initial transcript reviews; however, it became quickly apparent that there were multiple different descriptions for this general skill category. As descriptions varied, I would note the variances to identify trends. I then grouped the various descriptions as I coded the data and developed the sub-categories through those observations. Then, I revisited previous coding to validate the trends and sub-categories. This iterative process resulted in the final communications sub-categories for this research. In contrast, the project management expertise code category emerged inductively. The participants provide descriptions and examples of how project managers applied their knowledge and skills. Initial codes were developed based on specific descriptions, such as certification (coded Cert) or their understanding and use of the project management tools and techniques (coded T&T). Through a mind map diagram, I noted the similarities between sets of individual codes, how the participants described their experiences and preferences, and developed the *expertise* parent code as a grouping.

Table 3.7: Summary of Code Book Changes

Code Book Changes	Justification or Explanation
Initial version based on audio from the FS IT stakeholder group.	Set baseline for codes, focused on themes and identifying categories.
Added Skill Categories (IT, PM, SS)	Many of the terms were the same (e.g. Vendor Management); however, the descriptions focused on either the mechanics (PM knowledge) or soft skills related to managing different people, relationships, and perceptions. Including the skill categories provided a natural code grouping.
Identified codes that emerged as categories and added sub-categories based on how participants described the attributes, skills, and abilities.	For example, the code “communication” was used in initial transcript reviews; however, it became quickly apparent that there were multiple different descriptions for this general skill. As descriptions varied, I would note the variances to identify trends. I then grouped the various descriptions as I coded the data and developed the sub-categories through those observations. Then, I revisited previous coding to validate the trends and sub-categories. This iterative process resulted in the final communications sub-categories for this research.
Identified groupings of codes that were related and identified an appropriate category.	For example, the project management expertise code category emerged through iterative transcript coding and analysis. The participants provided descriptions and examples of how project managers applied their knowledge and skills. Initial codes were developed based on specific descriptions, such as certification (coded Cert) or their understanding and use of the project management tools and techniques (coded T&T). I noted the similarities between sets of individual codes, how the participants described their experiences and preferences, and developed the expertise parent code as a grouping.
Added another tier of soft skills that differentiates between individual traits & interpersonal, or people skills.	During categorization, two themes developed in the soft skill category, i.e. individual abilities/traits vs interpersonal/people skills.
Combined codes that, when coded differently during the iterative transcript review process, emerged as slight variances in descriptions of the same attribute or skill.	For example, using keywords identified when participants listed their top three skills in each category or keywords identified during focus group brainstorming, I captured honesty, trustworthiness, and complete and accurate reporting as separate codes. As participants described these traits, it became apparent they were referencing the same attribute.
Communication - Remove "Effective" as a qualifier for communication sub-categories.	When coding transcripts and reviewing audio tapes, I noticed the term "effective" was not a sub-category, but an adjective I used in the focus group discussions to elicit descriptions and examples related to "how" a project manager communicates to produce the desire results.
Added an SDLC sub-category for development methodologies (Dev Meth) and recoded previous transcripts.	During coding, there were several references to applications engineering approaches that did not clearly differentiate between waterfall and agile methods. Additionally, there were occasions where participants would say "agile", but define a waterfall methodology. The SDLC sub-category was added to capture references without clear differentiation.

Code Book Changes	Justification or Explanation
Differentiated between agile software development methods and agile project management methods.	Participants' descriptions and examples used when describing their experience with agile teams included two themes; 1) agile software development, and 2) agile project management. Agile software development referenced specific applications engineering methods such as SCRUM, Extreme Programming, and Feature Driven Development. Agile project management references addressed iterative planning processes and incremental stages of a project.

Although I coded solo, I did use a combination of member checking to validate summative explanations of attributes and skill sets and validating observations with the dedicated observer and recorder. I checked progress on a continual basis through a combination of follow-up discussions with participants, discussing observations and associated coding with the observer, and keeping a journal of the analysis process and related decisions, modifications, and justifications (Saldana, 2013; Tracy, 2013).

Coding Methods

The coding process was cyclical; I did not follow a clear first cycle coding of all focus group session data followed by a comprehensive second cycle coding. Instead, the coding process was iterative. For example, I used the initial focus group conducted with the Financial Services Senior IT Leaders to set a baseline for coding and data collection. Table 3.8 below provides a summary of coding methods used in this research (Saldana, 2013).

Table 3.8: Summary of Coding Methods

Method	Purpose	Application
Magnitude Coding	Include basic frequency information to supplement participants' explanations and perceptions of importance	Example: Count of how many times keywords were used as part of a description
Subcoding	Applying a second-order code after a primary code to detail the data	Example: The primary code "communication" was subcoded to capture participants' detailed descriptions, such as written communication and verbal communication
Descriptive Coding	Assigning basic labels to data	Used to identify initial topics and themes during first cycle coding
Holistic Coding	Identify basic themes or issues in the data	Used to compare within and across stakeholder groups.
Hypothesis Coding	Applying predetermined codes to data	Example: Skill categories for Information Technology, Project Management, and Interpersonal skill sets

After first cycle coding for each focus group, I would reflect on the data, coding and emerging themes and revisit each focus groups' data as a regular comparison across participant groups. My goal was to determine if similar patterns existed, or additional new patterns emerged, based on how I was informed through the iterative analysis process (Leedy & Ormrod, 2009; Saldana, 2013).

Data Analysis Phases

The data analysis consisted of several phases. First, each focus group's data was analyzed in the following order; however, it is important to note that this was an iterative process. Findings in a step often led to retracing the data analysis from previous steps.

1. Pre-Discussion data collection (See Appendix E): Pre-discussion skill category rankings were analyzed for trends within the group. Similarly, the top three skills for each category listed in order of perceived priority were analyzed for keywords, trends, and themes within the group. Key observations were documented and used to update the codebook.

2. Post-Discussion data collection (See Appendix F): Post discussion skill category rankings were analyzed for both trends and changes in perceptions about relative priority. The top three skills for each category listed in order of preference were analyzed for new keywords, new trends, new themes, and changes in perceptions based on the group discussion. Key observations were documented and used to update the codebook.
3. The whiteboard photographs, or the field notes taken during the focus groups, were analyzed for keywords, trends, and emerging themes, and then compared to the individual ranking exercises. Key observations were documented and used to update the codebook.
4. The audio tapes were reviewed to identify gaps in the field notes, capture detailed descriptions related to experiences and keywords, identify verbal emphasis placed on keywords or phrases, help avoid loss of meaning possible through transcription, and notice the subtle meanings shared when the participants interact (Rapley, 2008).
5. Transcripts were reviewed, analyzed, and coded to identify data not captured in the previous steps, to capture verbatim comments, and identify the rich descriptions of participants' lived experiences (Miles & Huberman, 1994).

Scope, Limitations, Reliability, Validity, and Trustworthiness

The study did not intend to address every factor that influences a certified practitioner's knowledge, skills, and abilities. In addition, the study did not address how effectively the certification process measures a professional's understanding of their body of knowledge.

Limitations of this study included an inability to generalize the findings across all project managers in an IT-centric environment due to the small number of participants that may not be

representative of the full population of Senior IT Leaders and Certified Project Management Professionals. However, including more than one sector not only contributes to capturing contextual issues, but also enhances the study's trustworthiness. This design increased the probability that the results will resonate with practitioners and Senior IT Leaders outside of these industries or sectors that are in similar IT-centric project environments and enhances the generalizability (Krueger & Casey, 2009).

Additional limitations to the research approach included the potential for groupthink and self-censoring. While the facilitator made every effort to elicit individual experiences and perceptions, it remained a possibility that candidates could feel pressured to agree with their peers. The participant selection criteria contributed to minimizing this risk because the participants were senior, experienced practitioners, which reduced the likelihood that a group could sway their opinions based on experience.

In a focus group study, one cannot overlook the potential for researcher bias. Qualitative methods are inherently subjective since the researcher is the data collection instrument and the observations and analysis are highly dependent upon the researcher's insight and interpretation (Debus, 1988). The initial questions were worded to minimize leading the participants and follow-up questions and interactions with the groups during the session was managed to avoid introducing researcher personal opinion (See Appendix D: Focus Group Discussion Guide). In addition to the approaches used to minimize potential limitations outlined above, the study used the following methods for verification to reduce susceptibility to bias. The two stakeholder groups by three sectors model allowed for an increased range of data collection and comparison of participant perceptions and descriptions. Qualitative focus group research does not require a highly structured questionnaire; however, Table 3.4 above provides evidence that question

development was purposeful and that a disciplined approach was used to develop the questions as evidenced by the rationale provided for each.

During the discussions, I was careful not to suggest words or terms when seeking clarification on factors contributing to project success or attributes that contribute to project manager efficacy. Suggesting specific terminology could have unintentionally led the participants. When seeking clarification, I would use open-ended, exploratory questions that elicited their personal descriptions, such as "Can you help me understand what you mean by this factor or skill?" To gain additional clarity, I would ask them to describe an experience related to a specific situation that demonstrated the factor or skill. This reduced the probability of inserting researcher bias into the discussions by allowing participants, individually or as a group, to provide the definitions, qualifiers, or synonyms to provide further explanation.

Capturing the discussion can be a challenge in focus group research (Krueger & Casey, 2009). There are tactics this research used to address this risk. Digital audio recording allowed for enhanced sound quality, and dedicated conference rooms designed for private group discussions minimized external noise. The digital recording format facilitated quick download of the recordings and allowed saving back-ups to reduce the risk of data loss. The audio recording also allowed unlimited discussion replays to ensure critical information was not missed during analysis. Since a whiteboard was used to capture key words and allow participants to reflect on their discussions, photographs were taken of the whiteboards to capture and save the content for utilization during analysis. Finally, a professional observer was used as follows:

1. Started the recording at the beginning of the session and stopped the recording at the conclusion of the session.
2. Observed and noted participant behavior, facial gestures, and body language.

3. Noted keywords and discussion results.

I leveraged an external observer with training in observing human behavior, who did not have the professional bias I have as the researcher. This allowed for comparison between our notes and discussion about the differences between the observer and the researcher's observations. This approach allowed for data verification and strengthened the findings (Krueger & Casey, 2009).

Challenges Encountered During Research

This research design and execution was not without challenge. While I am well networked within both stakeholder group communities, identifying participant organizations that would allow access to both their Senior IT Leaders and Certified Project Management Professionals, had a sufficient number of potential participants that met the candidate selection criterion, and could dedicate the time and support for the research was difficult. Fortunately, I developed a list of primary candidate organizations and a list of back-up candidate organizations that allowed me to respond when barriers prevented participation.

The first challenge was related to a potential participant organization. Although preliminary discussions with a healthcare organization senior leader indicated the willingness and capacity to participate in the research, the internal approval process and concerns related to unintentional access to information protected by the Health Insurance Portability and Accountability Act of 1996 (HIPPA) prevented participants from participating as representatives of their organizations. Additional review and waivers could have addressed these concerns and permitted participation from this group; however, the amount of time required to submit, process, and approve the necessary documentation was not aligned with the research timeline.

The second challenge was related to scheduling the focus groups with the senior-level participants. To minimize impact and increase the likelihood that candidates would agree to participate, the focus groups were conducted during normal business hours. This led to the potential for schedule conflicts and related difficulties associated with coordinating schedules for multiple participants in each focus group session. This challenged was compounded by the fact that I was working with a third party representative in each organization that would need to coordinate internally and then contact me for final scheduling. Once focus groups were scheduled, five of six sessions had to be rescheduled at least once due to competing priorities, with one group of Senior IT Leaders needing to reschedule four times. This delayed the data collection, which also affected my desired research timeline.

Although I received letters of cooperation from three different organizations as part of the Institutional Review Board process that confirmed access to private conference rooms, the exact locations were not pre-determined. Two (2) of the three (3) participant organizations included candidates that are geographically dispersed. It was a poor assumption on my part that all of the participants were familiar with the conference room locations and had access to the conference rooms. This oversight resulted in three participants being omitted from participation. Two (2) candidates did not participate due to a misunderstanding about location, and one (1) candidate could not participate because they did not have access to a secured location, and I did not arrange for an escort.

The conference rooms, while enclosed, where not all conducive to a private group discussion. Two (2) of the three (3) conference rooms had glass walls that allowed observers to not only see the participants, but also see the whiteboards that were part of the data collection process. This was an easy barrier to overcome with moving whiteboards and using easels;

however, the open nature of the space was a potential distraction. I asked each stakeholder group if the location was acceptable for the discussion, and each group confirmed these conference spaces were the norm in their environment and often used for private or sensitive discussions. I reiterated the volunteer nature of participation, and all participants selected to sign the consent forms and continue with their participation.

Audio quality was also an issue with two of the locations. While the rooms were private and external noise was not a barrier, the size of the conference table was an issue with one location, and the room set-up was a potential barrier to recording in another. Again, these barriers were easy enough to overcome with a little space management; however, better planning could have mitigated potential impacts. Table 3.11 presents a summary of challenges encountered during the research and recommendations for future studies.

Table 3.9: Summary of Research Challenges

Challenge	Impact	Recommendations
Identifying participating organizations	Delay in research timeline as alternative organizations are identified	1. Identify alternative organizations in advance. 2. Determine organizational review process in advance of preparing research timeline and plan accordingly.
Coordinating schedules for multiple participants	Delay in research timeline and potential to omit candidates due to competing priorities and availability	1. Plan as far in advance as possible. 2. When working with internal contacts, ensure you provide multiple options for your availability and block those dates and times on your calendar. It is much easier to release scheduled time than to coordinate new dates and times. 3. Remain in constant communication with your internal points of contact. Do not assume they are proactively communicating to you.
Focus group locations	Candidates do not participate due to location directions	1. Identify the conference room locations as soon as possible. 2. Work with the internal points of contact to ensure all participants have directions and access to parking.
Conference room access	Many organizations have access control, and being an employee of a participating organization does not always ensure access to all buildings or conference rooms	1. Identify the conference room access requirements as soon as possible. 2. Work with the internal points of contact to secure access for all participants. 3. If necessary, arrange for an escort to the conference room.
Conference room environment	Facility arrangement or environment that is not conducive to collaborative discussion, especially if expecting to address sensitive content	1. Visit the conference rooms prior to conducting the focus groups. 2. If possible, rearrange rooms and resources to facilitate private group discussion.
Audio recording	Weak audio due to room set-up or size	1. Position chairs in close proximity to the recorder. 2. Rearrange room to ensure participants are too spread out. 3. Use multiple microphones

Summary of Appendices for Research Design Details

Various instruments were developed to support the focus group design. In addition to the comparison of methods, the recruiting script, consent form, focus group discussion guide and pre-and post-discussion forms are included as appendices. See Table 3.12 for a list of appendices related to research design with descriptions.

Table 3.10: Summary of Appendices for Research Design

Appendix A: Methods Comparison Table	Description of the benefits and limitations of potential research designs that could inform the research topic with conclusions in relation to this study.
Appendix B: Focus Group Recruiting Script	Describes the researcher's background, outlines the participant selection criteria, explains when and where the focus groups will be conducted, and requests participants to confirm their interest in participating in the study.
Appendix C: Focus Group Consent Form	Describes the research, highlights that participation is voluntary, identifies participation risks and benefits, addresses privacy, documents consent.
Appendix D: Focus Group Discussion Guide to Manage Process	Documents the narrative to open the focus group, introduces participants to the focus group process, outlines the recording and voice verification process, includes the questions used to elicit input and guide the discussions, and provides the narrative used to close the focus group.
Appendix E (Pre-Discussion): Focus Group Hand-out - Skill Category Ranking	Handout provided to participants at the beginning of the focus group asking them to rank the three skill categories and initiate discussion around preferences and differences of opinion.
Appendix F (Post-Discussion): Focus Group Hand-out – Skill Category Ranking	Handout provided to participants at the end of the focus group asking them if their skill category rankings have changed to identify how the focus group discussion may have influenced perceptions.
Appendix G: Demographic Survey	Survey to collect basic demographic information for participants, including details about participant selection criteria.

Chapter 4. Findings, Analysis and Interpretations

Individual focus group data analysis was required prior to analyzing the data in entirety as presented in Chapter 4. Appendices H – M provide a combination of the raw data and the individual analysis from each focus group session presented as follows:

1. Participant demographics
2. Pre-discussion skill ranking results
3. Focus group observations and analysis
4. Post-discussion skill ranking results

Table 4.1 lists the individual focus groups by appendix.

Table 4.1: Summary of Individual Focus Group Appendices

Appendix H	Financial Services Senior IT Leaders
Appendix I	Financial Services Certified Project Management Professionals
Appendix J	Academia Senior IT Leaders
Appendix K	Academia Certified Project Management Professionals
Appendix L	Government Senior IT Leaders
Appendix M	Government Certified Project Management Professionals

After summary level data and interpretations are presented for both the Pre-Discussion Skill Ranking and Post-Discussion Skill Ranking, I provide a comparison within the Senior IT Leader Stakeholder group, a comparison within the Certified PMP® Stakeholder group, a comparison across stakeholder groups, and a global analysis that considers all of the data in whole. Throughout the data collection, analysis, and interpretation process, I maintained focus on the research purpose as defined through the primary research question and three sub-questions.

Research Question: What do Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as the most important attributes for *project manager efficacy* as it relates to *project success*?

Sub-Question 1: Are there variances between these two stakeholder groups' expectations and the related attributes most important for project manager efficacy?

Sub-Question 2: Do contextual factors, such as organizational or industry culture, influence how stakeholders rank skills in order of priority?

Sub-Question 3: How do agile project management approaches create different demands on project managers, resulting in stakeholders perceiving differences in required skills sets for project manager efficacy?

Pre-Discussion Skill Ranking Data and Interpretations

Each focus group started with an individual activity. Each participant was asked how they would rank the following skill categories in order of importance for *project manager efficacy*: Interpersonal skills, project management methodology knowledge and application, and information technology knowledge and skill. As presented in Chapter 3 (see Table 3.5), the objective was to begin in broad categories to understand participants' perceptions about skill sets with the intent to elaborate within the categories during the group discussion. Participants were also asked to identify up to three skills in each category in order of importance for both identifying perceptions prior to the discussions and to begin the brainstorming process.

Pre-Discussion Senior IT Leaders Skill Rankings

Table 4.2 provides a comparison of skill set rankings across the three Senior IT Leader Stakeholder Groups (see Tables H.2, J.2, and K.2).

Table 4.2: Senior IT Leaders – Pre-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS IT 1	3	1	2
FS IT 2	3	1	2
FS IT 3	3	1	2
FS IT 4	3	1	2
FS IT 5	2	1	1
FS IT 6	4	2	1
FS IT 7	3	1	2
Average	3.00	1.14	1.71
A IT 1	1	2	2
A IT 2	3	2	1
A IT 3	3	1	2
A IT 4	2	1	1
A IT 5	3	1	1
A IT 6	3	1	1
A IT 7	2	2	1
A IT 8	4	1	3
A IT 9	3	1	2
Average	2.67	1.33	1.56
G IT 1	3	1	2
G IT 2	3	1	2
G IT 3	3	1	2
G IT 4	3	1	2
G IT 5	3	2	1
G IT 6	3	1	2
G IT 7	3	1	2
G IT 8	3	1	2
G IT 9	3	2	1
Average	3.00	1.22	1.78
IT Stakeholder Group Average	**2.89**	**1.23**	**1.68**

Skill Category Rankings

The Financial Services Senior IT Leaders pre-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Six (6) of seven (7) participants ranked interpersonal skills as absolutely critical, and one (1) of seven (7) ranked interpersonal skills as very important.

Collectively, the group ranked project management knowledge and application as very important, and IT knowledge and skills as moderately important.

The Academia Senior IT Leaders pre-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Interpersonal skills and project management knowledge and application were ranked closely by this stakeholder group during the pre-discussion exercise, with three (3) of nine (9) participants ranking both skill sets as absolutely critical.

The Government Senior IT Leaders pre-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Seven (7) of nine (9) participants ranked interpersonal skills as absolutely critical, and two (2) of nine (9) participants ranked interpersonal skills as very important.

Collectively, the Senior IT Leaders pre-discussion skill category ranking in order of perceived importance was: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Nineteen (19) of the twenty-five (25) Senior IT Leader participants ranked interpersonal skills as absolutely critical, and six (6) of twenty-five (25) participants ranked interpersonal skills as very important. Table 4.3 provides a checksheet table of rankings for the Senior IT Leaders stakeholder group to provide a visual representation. Each "X" represents a participant ranking. Trends indicate these participants, in their context, perceive interpersonal skills as critical to *project manager efficacy*. Project management skills and knowledge, while perceived as very important, is a lesser contributor to *project manager efficacy* according to Senior IT Leaders. IT skills and knowledge, while varying in degrees of

importance amongst this stakeholder group, is clearly perceived as the least important of the three skill categories.

Table 4.3: Senior IT Leaders – Summary of Pre-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXX	X			
Academia	XXXXXX	XXX			
Government	XXXXXXX	XX			
Project Management Knowledge and Application					
Financial Services	XX	XXXXX			
Academia	XXXXX	XXX	X		
Government	XX	XXXXXXX			
IT Skills and Knowledge					
Financial Services		X	XXXXX	X	
Academia	X	XX	XXXXX	X	
Government			XXXXXXXXX		

Top Three Skills in each Category

Although the pre-discussion exercise to identify what the participants thought were the top three skills in each category was designed to begin the brainstorming process, there are emerging patterns within the Senior IT Leader stakeholder group worth highlighting. Individual Senior IT Leader focus group data is provided in Appendix H (Financials Service), Appendix J (Academia), and Appendix L (Government).

Four (4) of seven (7) participants in the Financials Services Senior IT Leader group included a basic understanding of software development methodologies, including agile methodologies, in the top three for the IT skills and knowledge category. Four (4) of seven (7) participants also included basic IT knowledge in the top three skills in the IT knowledge and skills category. There was higher agreement in the interpersonal skills category. Communication was included in the top three interpersonal skills by six (6) of seven (7) participants. Facilitation skills were identified in the top three by four (4) of the (7) participants, increasing to five (5) of

the seven (7) participants when including facilitation listed in other skill categories. Comparatively, there was less agreement in the project management knowledge and application skill set as no single attribute was listed by more than two participants.

Nine (9) of nine (9) participants in the Academia Senior IT Leader group included a basic understanding of IT, or industry, knowledge in the top three skills in the IT knowledge and skills category. Communication was included in the top three interpersonal skills by eight (8) of nine (9) participants. Comparatively, there was less agreement in the project management knowledge and application skill, with the project manager's depth of experience demonstrated through certification and exposure to practical application in an IT environment emerging as theme.

The Government Senior IT Leader group unanimously included a basic knowledge of, not expertise in, IT terminology and processes in their top three skills in the IT knowledge and skills category. Seven (7) of nine (9) participants included communication in the list of top three interpersonal skills. While no one skill dominated the project management knowledge and application skill set, it is noteworthy that five (5) of nine (9) participants in the Government Senior IT Leaders group identified project management expertise as an important contributor to *project manager efficacy*. They further described expertise as a combination of certification, experience with a variety of project types, and the ability to adapt their project management approach to the organization's culture.

Table 4.4 provides a summary of the skills within each category that were listed most frequently (see Tables H.3, K.3, and L.3). Not only did this data provide a catalyst for the collaborative discussions, but also informed the data coding when analyzing audio recordings and transcripts.

Table 4.4: Senior IT Leaders – Summary of Pre-Discussion Top Skills by Category

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
Financial Services	Basic IT knowledge	Communication	Scope management
Academia	Basic IT knowledge	Communication	Project management tools & techniques
Government	Basic IT knowledge	Communication	Scope management

Pre-Discussion Certified Project Management Professionals Skill Rankings

Table 4.5 provides a comparison of skill set rankings across the three Certified Project Management Professional Stakeholder Groups (see Tables I.2, K.2, and M.2).

Table 4.5: Project Managers – Pre-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS PM 1	2	1	3
FS PM 2	3	1	2
FS PM 3	2	1	3
FS PM 4	4	1	2
FS PM 5	2	1	3
FS PM 6	5	1	2
Average	3.00	1.00	2.50
A PM 1	4	1	3
A PM 2	2	2	3
A PM 3	3	1	2
A PM 4	3	1	2
A PM 5	4	1	2
Average	3.20	1.20	2.40
G PM 1	1	3	2
G PM 2	2	1	3
G PM 3	4	2	1
G PM 4	2	3	1
G PM 5	3	1	2
G PM 6	3	1	2
G PM 7	3	1	2
G PM 8	3	2	1
G PM 9	1	3	2
Average	2.44	1.89	1.78
Certified Project Manager Group Average	**2.88**	**1.36**	**2.23**

Skill Category Rankings

The Financial Services Project Managers pre-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. The group unanimously identified interpersonal skills as the most important skill category, ranking this skill set as absolutely critical.

The Academia Project Managers pre-discussion skill category ranking in order of perceived importance is also: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Four (4) of the five (5) participants identified interpersonal skills as absolutely critical, with one (1) participant ranking interpersonal skills as very important. It worth nothing that although one (1) participant in the Academia group ranked interpersonal skills as very important, that they did not rank another skill set higher. This participant perceived both interpersonal skills and IT knowledge and skills as very important.

The Government Project Managers pre-discussion skill category ranking in order of perceived importance is: 1. Project management knowledge and application, 2. Interpersonal skills, and 3. IT knowledge and skills. Of the six focus groups, this is the only group that ranked any skill set, on average, higher than interpersonal skills.

Collectively, the Certified Project Managers pre-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Fourteen (14) of the twenty (20) Certified Project Management Professional participants ranked interpersonal skills as absolutely critical, three (3) of twenty (20) participants ranked interpersonal skills as very important, and three (3) of twenty (20) participants ranked interpersonal skills as moderately important. Table 4.6 provides a checksheet table of rankings for the Certified Project Management Professionals stakeholder

group to provide a visual representation. Each "X" represents a participant ranking. Trends indicate these participants, in their context, perceive interpersonal skills as critical to *project manager efficacy*. Project management skills and knowledge, while perceived as very important, is a lesser contributor to *project manager efficacy* according to the Certified Project Management Professionals. IT skills and knowledge, while varying in degrees of importance amongst this stakeholder groups, is clearly perceived as the least important of the three skill categories.

Table 4.6: Project Managers – Summary of Pre-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXX				
Academia	XXXX	X			
Government	XXXX	XX	XXX		
Project Management Knowledge and Application					
Financial Services		XXX	XXX		
Academia		XXX	XX		
Government	XXX	XXXXX	X		
IT Skills and Knowledge					
Financial Services		XXX	X	X	X
Academia		X	XX	XX	
Government	XX	XX	XXXX	X	

In the pre-discussion rankings, there was no clear agreement between the relative priority between project management knowledge and application and IT knowledge and skills within each stakeholder group; however, when considered in whole, there is evidence that this stakeholder group perceives project management knowledge and application as comparatively more important for *project manager efficacy* than IT knowledge and skills.

Top Three Skills in each Category

Although the pre-discussion exercise to identify what the participants thought were the top three skills in each category was designed to begin the brainstorming process, there are emerging patterns within the Certified Project Management Professional stakeholder group

worth highlighting. Individual Certified Project Management Professional focus group data is provided in Appendix I (Financials Service), Appendix K (Academia), and Appendix M (Government).

Five (5) of six (6) participants in the Financial Services Project Manager group identified basic IT, or IT industry, knowledge amongst the top three skills in the IT knowledge and skills category. In the interpersonal skills category, communication skills were included in the top three interpersonal skills by all six (6) participants. There was less agreement in the project management knowledge and application skill set; however, scope management, highlighted by specific references to scope management, scope definition, and work breakdown structure (WBS) development, was listed in the top three skills by three (3) of the six (6) participants.

Four (4) of five (5) project managers representing academia also listed basic IT, or IT industry, knowledge in the top three skills for the IT knowledge and skills category. In the interpersonal skills category, communication skills were included in the top three by all five (5) participants. Project management expertise was included in the top three project management knowledge and application skills by all five (5) participants. Specific references to project management expertise included not only an understanding of the project management tool set, but also an understanding of which tools to use in different situations based on the complexity of the project and amount of rigor necessary for monitoring and controlling.

Although there is no evidence of agreement within the Government Project Manager stakeholder group in either skills or priorities before the discussions, there are several trends identified. In complete alignment with the information this group had recently completed a project management training program and earning the PMP® certification was part of their professional development plans, nine (9) of nine (9) participants used specific project

management terms and related theory to identify their top three skills in the project management knowledge and application category. A basic understanding of IT systems, terminology, and infrastructure was identified as important by eight (8) of nine (9) participants. Communication skills were included in the top three interpersonal skills by eight (8) of nine (9) participants.

Table 4.7 provides a summary of the skills within each category that were listed most frequently (see Tables I.3, K.3, and M.3). Not only did this data provide a catalyst for the collaborative discussions, but also informed both the data coding when analyzing audio recordings and transcripts.

Table 4.7: Project Managers – Summary of Pre-Discussion Top Skills by Category

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
Financial Services	Basic IT knowledge	Communication	Scope management
Academia	Basic IT knowledge	Communication	Project management pragmatic application
Government	Basic IT knowledge	Communication	Project management theory

Pre-Discussion Skill Rankings Combined Analysis

The data in Table 4.8 demonstrates that, on average, the 45 participants ranked interpersonal skills as the most important contributor to *project manager efficacy*, with both stakeholder groups ranking interpersonal skills as absolutely critical. While there was more variance between the stakeholder groups' ranking for project management knowledge and application, both groups still ranked this skill set as the second in order of importance with an average ranking of very important. Both groups rank IT knowledge and skills as the third in order of importance for *project manager efficacy* in an IT-centric project environment, with an average ranking of moderately important. Table 4.9 provides a visual representation of these trends in a combined checksheet.

Table 4.8: Combined Pre-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
Senior IT Leader Stakeholder Group Average	2.89	1.23	1.68
Certified Project Manager Group Average	2.88	1.36	2.23
Combined Averages	2.89	1.30	1.95

Table 4.9: Combined Summary of Pre-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXXXXXXX	X			
Academia	XXXXXXXXX	XXXX			
Government	XXXXXXXXXX	XXXX	XXX		
Project Management Knowledge and Application					
Financial Services	XX	XXXXXXXX	XXX		
Academia	XXXXX	XXXXXX	XXX		
Government	XXXXX	XXXXXXXXXXX	X		
IT Skills and Knowledge					
Financial Services		X XXX	XXXXXX	XX	X
Academia	X	XXX	XXXXXXX	XXX	
Government	XX	XX	XXXXXXXXXXX	X	

Post-Discussion Skill Ranking Data and Interpretations

Each focus group ended with a follow-up individual ranking activity. Participants were asked if, based on the discussions, they would make any changes to how they ranked the skill categories in order of importance for *project manager efficacy*: Interpersonal skills, project management methodology knowledge and application, and information technology knowledge. Additionally, participants were asked if they would make any changes to their lists or relative ranking for the top skills in each category. As presented in Chapter 3 (see Table 3.5), the objective was to allow participants to modify their ranking based on the discussion.

Post-Discussion Senior IT Leaders Skill Rankings

Table 4.10 provides a comparison of skill set rankings across the three Senior IT Leader stakeholder groups (see Tables H.5, K.5, and L.5).

Table 4.10: Senior IT Leaders – Post-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS IT 1	3	1	2
FS IT 2	3	1	4
FS IT 3	3	1	2
FS IT 4	3	1	4
FS IT 5	3	1	2
FS IT 6	3	1	2
FS IT 7	3	1	2
Average	3.00	1.00	2.57
A IT 1	2	1	3
A IT 2	2	1	3
A IT 3	3	1	2
A IT 4	2	1	1
A IT 5	3	1	2
A IT 6	3	1	2
A IT 7	3	1	2
A IT 8	4	1	3
A IT 9	3	1	2
Average	2.78	1.00	2.22
G IT 1	3	1	2
G IT 2	3	1	2
G IT 3	3	1	2
G IT 4	3	1	2
G IT 5	3	1	2
G IT 6	3	1	2
G IT 7	3	1	2
G IT 8	3	1	2
G IT 9	3	1	2
Average	3.00	1.00	2.00
IT Stakeholder Group Average	**2.93**	**1.00**	**2.26**

Based on averages, the Financial Services Senior IT Leader group skill category rankings did not change; however, the level of agreement increased. Financial Services Senior IT Leader

group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance decreased as more emphasis was placed on interpersonal skills. The IT knowledge and skills category remained consistent with a ranking of moderately important.

Following the same pattern, the Academia Senior IT Leader group skill category rankings did not change overall, but the level of agreement increased. The group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance decreased when compared to interpersonal skills. The IT knowledge and skills category ranking changed slightly; however, the group still ranked the skill set as moderately important and the least important of the three skill sets.

Similar to the first two Senior IT Leader groups, the Government Senior IT Leader group skill category rankings did not change; however, the level of agreement increased to unanimity for all three skill categories. The group ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*, project management knowledge and application as very important, and IT knowledge and skills as moderately important.

The data clearly demonstrates a skill set preference based on experience with the Senior IT Leader stakeholder groups after the collaborative discussions. Collectively, the Senior IT Leaders post-discussion skill category ranking in order of perceived importance is: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Twenty-five (25) of the twenty-five (25) Senior IT Leaders ranked interpersonal skills as

absolutely critical. Nineteen (19) of twenty-five (25) Senior IT Leaders ranked project management knowledge and application as very important. Twenty-one (21) of twenty-five (25) Senior IT Leaders ranked IT knowledge and skills as moderately important. Table 4.11 provides a powerful visual representation. Each "X" represents a participant ranking.

Table 4.11: Senior IT Leaders – Summary of Post-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXXX				
Academia	XXXXXXXXX				
Government	XXXXXXXXX				
Project Management Knowledge and Application					
Financial Services		XXXXX		XX	
Academia	X	XXXXX	XXX		
Government		XXXXXXXXX			
IT Skills and Knowledge					
Financial Services			XXXXXXX		
Academia		XXX	XXXXX	X	
Government			XXXXXXXXX		

Post-Discussion Certified Project Management Professionals Skill Rankings

Table 4.12 provides a comparison of skill set rankings across the three Certified Project Management Professional stakeholder groups (see Tables I.5, K.5, and M.5).

Table 4.12: Project Managers – Post-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS PM 1	3	1	2
FS PM 2	3	1	2
FS PM 3	3	1	2
FS PM 4	3	1	2
FS PM 5	2	1	3
FS PM 6	5	1	2
Average	3.17	1.00	2.17
A PM 1	4	1	3
A PM 2	3	1	2
A PM 3	3	1	2
A PM 4	3	1	2
A PM 5	4	1	2
Average	3.40	1.00	2.20
G PM 1	3	1	2
G PM 2	3	1	2
G PM 3	4	1	3
G PM 4	2	1	3
G PM 5	3	1	2
G PM 6	3	1	2
G PM 7	3	1	2
G PM 8	3	1	2
G PM 9	2	3	1
Average	2.89	1.22	2.11
Certified Project Manager Group Average	**3.15**	**1.07**	**2.16**

Based on averages, the Financial Services Project Manager group skill category rankings did not change; however, the level of agreement increased. The group still unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance increased slightly as the relative importance of IT knowledge and skills decreased.

The Academia Project Manager group skill category rankings did not change; however, their level of agreement also increased. The group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance increased slightly as the relative importance of IT knowledge and skills decreased.

The Government Project Manager group skill category rankings did change. Based on averages, interpersonal skills changed from an average of very important to agreement between eight (8) of nine (9) participants that interpersonal skills are absolutely critical. One participant still considered project management knowledge and application as absolutely critical and interpersonal skills as moderately important. Based on averages, the group ranked project management knowledge and application as very important and IT knowledge and skills as moderately important.

The data clearly demonstrates a skill set preference based on experience with the Certified Project Management Professional stakeholder groups after the collaborative discussions. Collectively, the Certified Project Management Professionals post-discussion skill category ranking in order of perceived importance was: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Nineteen (19) of twenty (20) Project Managers ranked interpersonal skills as absolutely critical. Fifteen (15) of twenty (20) Project Managers ranked project management knowledge and application as very important. Thirteen (13) of twenty (20) Project Managers ranked IT knowledge and skills as moderately important. Table 4.13 provides a visual representation of the skill category rankings. Each "X" represents a participant ranking.

Table 4.13: Project Managers – Summary of Post-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXX				
Academia	XXXXX				
Government	XXXXXXXX		X		
Project Management Knowledge and Application					
Financial Services		XXXXX	X		
Academia		XXXX	X		
Government	X	XXXXXX	XX		
IT Skills and Knowledge					
Financial Services		X	XXXX		X
Academia			XXX	XX	
Government		XX	XXXXXX	X	

Post-Discussion Skill Rankings Combined Analysis

The data in table 4.14 demonstrates that, on average, the forty-five (45) participants ranked interpersonal skills as the most important contributor to *project manager efficacy*, with both stakeholder groups and forty-four (44) of forty-five (45) participants ranking interpersonal skills as absolutely critical. Collectively, the project management knowledge and application skill category is ranked second in order of perceived importance and decreased in relative importance due to the shifting focus on interpersonal skills. The IT knowledge and skills category remained third in order of perceived importance, also decreasing slightly in relative importance as compared to the other two skill categories. Table 4.15 provides a visual representation of these trends in a combined checksheet. This graphic also demonstrates the high level of agreement between all participants associated with the criticality of interpersonal skills for *project manager efficacy*. While the participants ranked project management knowledge and application and IT skills and knowledge second and third in order of importance, respectively, Table 4.15 does demonstrate the degree of perceived importance for these two skill sets are more dispersed than the results for interpersonal skills.

Table 4.14: Combined Post-Discussion Skill Category Ranking

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
Senior IT Leader Stakeholder Group Average	2.93	1.00	2.26
Certified Project Manager Group Average	3.15	1.07	2.16
Combined Averages	3.04	1.04	2.21

Table 4.15: Combined Summary of Post-Discussion Skill Category Rankings

Each "X" represents a participant ranking					
Interpersonal Skills					
	Absolutely Critical	Very Important	Moderately Important	Somewhat Important	Not Important
Financial Services	XXXXXXXXXXXXX				
Academia	XXXXXXXXXXXXXX				
Government	XXXXXXXXXXXXXXXXX		X		
Project Management Knowledge and Application					
Financial Services		XXXXXXXXXX	X	XX	
Academia		XXXXXXXXX	XXXX		
Government	X	XXXXXXXXXXXXXXX	XX		
IT Skills and Knowledge					
Financial Services		X	XXXXXXXXXXX		X
Academia		XXX	XXXXXXXX	XXX	
Government		XX	XXXXXXXXXXXXXXX	X	

Combined Pre-Discussion and Post-Discussion Skill Rankings Analysis

The average of change in the IT knowledge and skills category was 0.16, which suggests the participants consider this skill category less important after the collaborative discussions. The average change in the interpersonal skills category was -0.29, which suggests the participants consider this skill category more important after the collaborative discussions. The average change in project management methodology knowledge and application was 0.31, which suggests the participants consider this skill category less important after the collaborative discussions. Table 4.16 provides a summary of the average changes in skill category rankings.

Figures 4.1 and 4.2 present the Pre-Discussion and Post-Discussion combined skill set ranking distributions, respectively.

Table 4.16: Average Change in Skill Category Rankings

Average Change in IT Knowledge & Skills Category	Average Change in Interpersonal Skills Category	Average Change in PMM Knowledge & Skills Category
0.16	-0.29	0.31

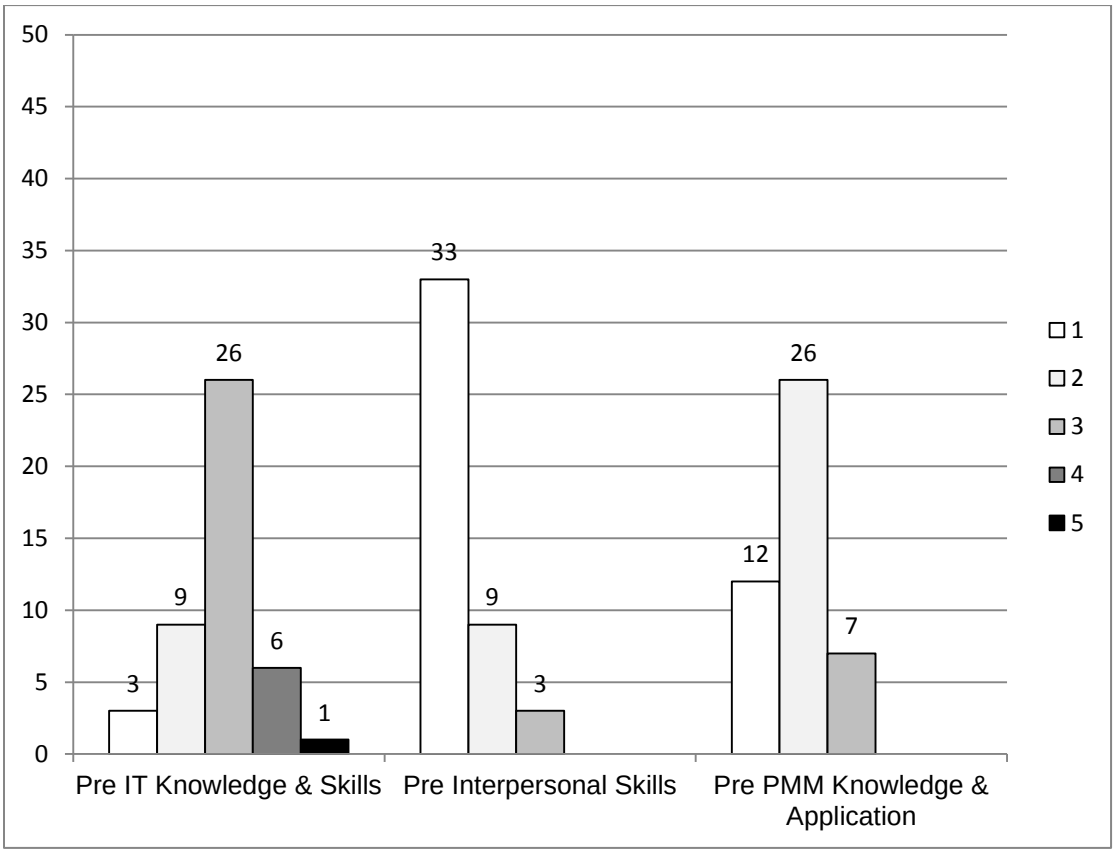

Figure 4.1: Pre-Discussion Skill Set Ranking Distribution

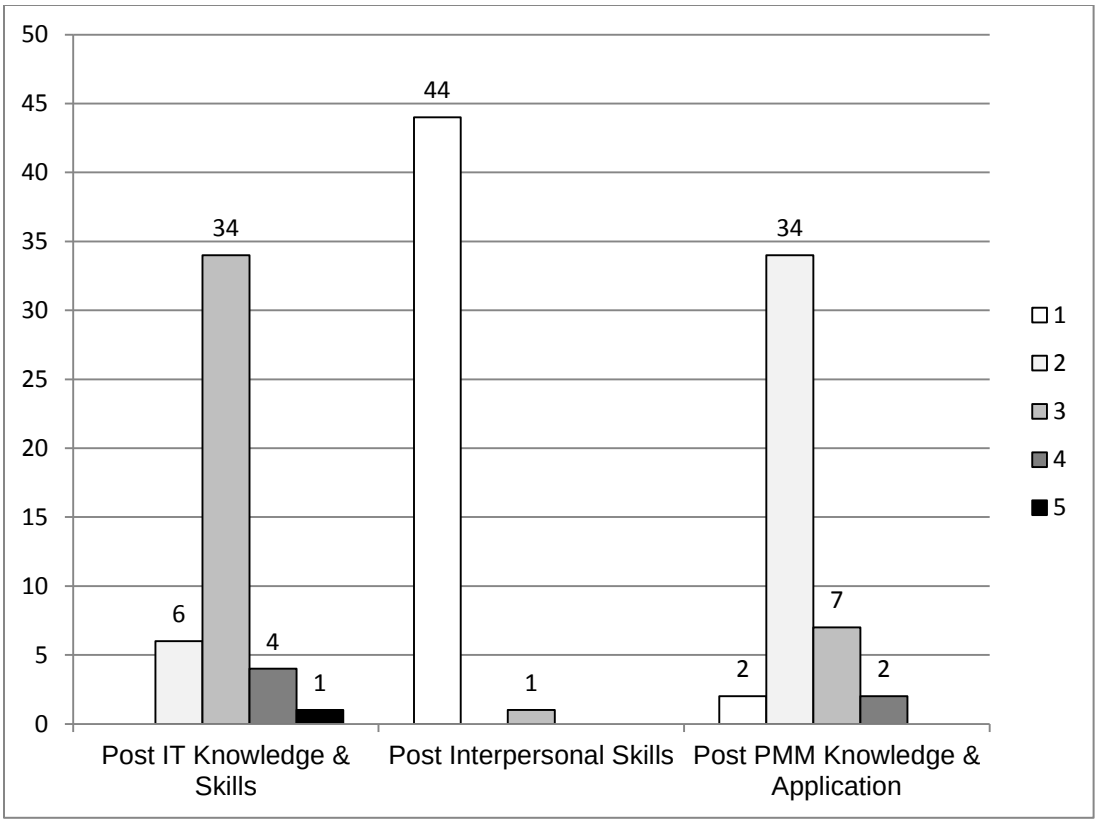

Figure 4.2: Post-Discussion Skill Set Ranking Distribution

In addition to analyzing the pre-discussion skill set rankings and post-discussion skill set rankings, there are themes that emerged within and across the two stakeholder groups that inform the research question and three sub-questions. The next section compares within the two stakeholder groups, across the two stakeholder groups, and considers the participants in sum.

Comparing within the stakeholder groups informs,

1. The primary research question as I gained a deeper understanding of the participants' perceptions about attributes that influence *project manager efficacy* as it relates to *project success* in an IT-centric project environment through their examples, descriptions, and discussion.

2. The sub-question related to how stakeholder rankings are impacted by contextual factors.
3. The sub-question about how agile project management approaches influence perceptions about the required skill sets for *project manager efficacy*.

Comparison across the two stakeholder groups informs the sub-question about variances between the two stakeholder groups' expectations and related attributes most important for *project manager efficacy*. The analysis is then considered in sum to form the overall findings and conclusions.

Comparison within the Senior IT Leader Stakeholder Groups

The analysis within the Senior IT Leader stakeholder groups started with evaluating the frequency with which specific factors were identified that contribute to *project success* to identify similarities, differences and patterns. These factors were then analyzed in relationship to the attributes Senior IT Leaders identified as the most important for *project manager efficacy* based on their experience. Finally, this analysis is used to identify how the research informed the primary research question and sub-questions.

Factors That Influence Project Success – Senior IT Leader Similarities

Several trends surfaced within the Senior IT Leader stakeholder group as they described the factors that contribute to *project success*. It is important to highlight these factors do not always directly inform the central research question targeting attributes most important for *project manager efficacy*; however, understanding this stakeholder groups' perceptions is central to influencing *project success* in an IT-centric project environment (Freeman, 1984; Freeman, Harrison, Wicks, Parmar, & DeColle, 2010). Although the factors are not always within the

project manager's control, the project manager could potentially influence those leaders or stakeholders that do have direct power over these contributors to *project success*.

The three different Senior IT Leader stakeholder groups used the exact same, or similar terms, for many of the factors listed during the initial brainstorming session (See Tables H.4, J.4, and L.4); however, coding based on how they described their experiences and defended the factors and attributes listed led to additional emergent parallels. Table 4.17 provides a summary of the similar factors that IT Senior Leaders identified as contributors to *project success* in order based on magnitude code (See Table 3.8 Summary of Coding Methods).

Table 4.17: Senior IT Leaders – Similarities in Factors that Contribute to Project Success

Project Success Factor	Sample Descriptive Quotes
Stakeholder Management	1. There are regular conflicts related to resources and timelines. The project manager must be able to work collaboratively to generate a solution that everyone can live. Then they have to synthesize the impacts and sell that solution. 2. Our lack of focus and the lack of a consistent shared understanding of the business problem and solution led to scope creep, constantly revisiting decisions that had already been made, and frustration from our leaders. That was simply a failure in project leadership. 3. A lack of stakeholder involvement is the biggest contributor to project issues. You can't throw a need over a wall and hope we guess what you want. We want to make users happy, but we can only do that if they want to stay engaged in the process. 4. It < project success > can be linked directly to the stakeholder engagement. Sometime you have strong executive support to initiate a project because they want something, but they need to stay true throughout the project.
Communication	1. They < project managers > have to seek to understand people and ensure that people understand them. They have to communicate honestly, but with tact. Be clear and avoid using confusing terms or being too wordy. 2. Clear communication and frequent communication are important. 3. They < the project manager > must understand the balancing act between communicating too much, not enough, and to the right audience with the right information. 4. I hear all the time that communication is key. If we all know that, why are we constantly challenged with communication? From my experience, if everyone knows the why, everyone knows the how, and everyone knows the when, then the project will be fine.
Clear Goals and Objectives	1. Our IT people know the technology, but they do not always know the why behind what we're doing. I want the project manager to make that connection for them. 2. The most successful projects I've been involved with are the ones where everyone understands the project goals and the business value. People like to know how their work contributes to our strategy. 3. Failure happens when there is a lack of quantifiable objectives. If the scope is subjective, how do you control something that is not defined? 4. I need to understand the project objectives, but my development team needs to understand the detailed requirements. I do not really need to know the details, but I do need to know the project manager knows the details and is ensuring the team's work satisfies the requirements.
Change Management	1. We gotta control change. Things often change without understanding the downstream impact. I do not mean we need a bureaucratic change request process, but a way to stop unnecessary change just because someone asks for something. 2. Part of change management is understanding who is impacted by change. The biggest challenges we run into is when someone we didn't think about puts up a roadblock or changes our direction.
Resource Availability and Management	1. You have to have the right resources at the right time. You just have to for success. 2. Even if you have the right project, if you have the wrong resources you are going to fail. My last project started with the right resources, and we lost them. From there on out, the project was doomed. It was almost and unrealistic expectation to complete the project on time.

Stakeholder Management. Factors related to stakeholder management were listed with the highest frequency with terms including stakeholder engagement and involvement, managing customer expectations, gaining stakeholder and team buy-in, clearly defined roles and responsibilities and ensuring related understanding, and earning and maintaining executive support were described during the discussions. Supporting the fact that stakeholder management was perceived as important for all three Senior IT Leader groups, there was also a common theme in the factors that contributed to experiences with project failures related to stakeholder management. One participant in the Academia group elaborated by sharing a recent experience where the project manager neglected to ensure that different stakeholder groups maintained focus on the original project goals and objectives.

> "Our lack of focus and the lack of a consistent shared understanding of the business problem and solution led to scope creep[14], constantly revisiting decisions that had already been made, and frustration from our leaders. That was simply a failure in project leadership."

In addition to keeping the project sponsorship and team focused on a common set of expectations, all three groups shared experiences that included examples of managing customers and end users' expectations. "Users have short memories. They remember exactly what they asked for, but they frequently forget the negotiated solution and what was actually agreed upon to be delivered." These observations imply that a project manager must focus not only on managing expectations around the agreed upon project scope, but there is also value in regularly

[14] The Project Management Institute defines scope creep as "the uncontrolled expansion of scope without adjustments to the project plan" (PMI, 2013a, p. 562). While scope management techniques can mitigate scope creep, the two terms are not synonymous.

revisiting prioritization decisions and reminding stakeholder groups about what will not be delivered. A Senior IT Leader in the Academia group offered the following analogy,

> "Without steering, a ship will drift off course. You can't wait until you've reached your destination to determine if you're in the right place. You need to constantly check and adjust by revisiting where you intend to go, including reminding yourself where you are not going."

Communication. The Senior IT Leader stakeholder groups also agreed that communication skills were amongst the most important factors contributing to *project success*. Qualifiers related to communication included active listening, training, documentation, and frequent communication. When asked how they would define effective communication, all three groups including listening skills as important. This similarity implies that project manager communications-related training and development must include more than learning objectives related to the communications planning and information distribution processes focusing primarily on when to communicate, what to communicate, how to communicate, and the appropriate media for sharing that content. All of which emphasize the sending processes in a typical communications model, where active listening is a receiving process.

The Senior IT Leaders also linked communication skills directly to the project manager's ability to manage stakeholder expectations. For example,

> "They < the project manager > must understand the balancing act between communicating too much, not enough, and to the right audience with the right information. For example, I receive weekly updates from < project manager's name >, and they trained me early to ignore their emails. There might be two lines of information I care about in every other update. < Project Manager's name >, on the other hand, is like

the E.F. Hutton [15]of project management. When they speak, I stop and listen because I know they're going to share something I want and need to know."

Clear Goals and Objectives. All three groups shared clearly stated project goals, objectives, and requirements as important contributors to *project success*. Discussion on this factor ranged from initial leadership vision, to clear and quantifiable goals and objectives, to clear and agreed upon requirements. While sharing their experiences, all three groups differentiated between a project's strategic objectives, or purpose, and clearly documented requirements. A Financial Services Senior IT Leader explained that,

> "I need to understand the project objectives, but my development team needs to understand the detailed requirements. I do not really need to know the details, but I do need to know the project manager knows the details and is ensuring the team's work satisfies the requirements. Users do not care about the project charter. They care about having their needs met. That impacts how they perceive my team, so that is why it is so important to me."

A lack of clearly documented and defined requirements was also a common theme in factors that contributed to project failure for the Senior IT Leaders.

Change Management. Consistent with the fact projects by definition introduce change into an environment (Gray & Larson, 2000; Knutson & Bitz, 1991; Lewis, 2002; PMI, 2013a, p. 553), each group identified change management as a factor that contributed to *project success* when handled well and a factor that contributed to project failure when not successfully managed. While discussing the broader category of change management, each Senior IT Leader group described their experiences differently. The Financial Services group highlighted the

[15] The E.F. Hutton reference is recalling a commercial series produced by the E.F. Hutton brokerage firm in the late 1970s that all ended with the tag line, "When E.F. Hutton talks, people listen." (Pergram, 2012)

importance of organizational change management that included communicating the driving factors behind the need for change, proactively identifying the impact of the change, and developing a comprehensive communication and training plan to both address concerns before product delivery and ensure resources were adequately trained when the product was delivered. The Academia group emphasized the importance of proactively identifying and managing change through a comprehensive impact analysis that included IT systems, support functions, and user groups. The Government group stressed the importance of identifying changes to business processes both specific to the project and the upstream and downstream impact to dependent business process. This difference in focus implies that change management, while important to all groups, is influenced by organizational context.

Resource Availability and Management. The Senior IT Leaders identified having the right resources with the right skill sets as a common contributing factor to *project success*. The Financial Services group highlighted that having the right skills available was only half the solution; that having the right resources is only effective when they are available at the right time, or when needed. This observation implies that the project manager's contribution to resource management is enhanced through proactive resource planning and scheduling. The Financial Services group also linked effective resource management to the project manager's ability to develop a rapport with resource managers.

> "I see resource planning, effective communication, and negotiating with leaders as complementary skills. The project manager has to know what resources are needed and when, and then present a supporting argument to their leaders to help ensure resources are available at the right time."

The Government Senior IT Leaders included identifying and mitigating issues related to over-committed resources as equally important for *project success*.

Factors that Influence Project Success – Context Specific

Comparing factors that contribute to *project success* across three different groups of Senior IT Leaders naturally led to factors that were context specific. Interestingly, the participants' descriptions of these factors often highlighted that specific influencing factors were more important in their current organization as compared to previous experiences. This supports the observation that organizational context influences factors that contribute to *project success* and, as highlighted in Table 2.5 (Summary of Key Paradoxes in Literature), factors that contribute to *project success* can differ between organizations, stakeholder groups, and project lifecycle phases. These differences between stakeholder groups and organizational contexts also highlight the importance of a project manager's ability to understand the relationships between the project and all legitimate stakeholders that can influence, or are impacted by, the project work or outcome (Freeman, 1984; Freeman, Harrison, Wicks, Parmar, & DeColle, 2010). It is important to note that the differences noted in this research do not imply the factors are not contributors to *project success* in the other environments. The observation is that one stakeholder group and not the others emphasized these factors during the discussions. Table 4.18 provides a summary of the context-specific factors that IT Senior Leaders identified as contributors to *project success*.

Table 4.18: Senior IT Leaders – Context-Specific Factors that Contribute to Project Success

Stakeholder Group	Project Success Factor	Sample Descriptive Quotes
Financial Services	Project and Resource Prioritization	1. There was no clear priority between projects competing for the same development resources. IT can't be expected to dictate business priorities. I need the project manager to work with the business owners to set relative priority and manage those conflicts before it gets to my team. If I am left to choose, it becomes IT's fault that work is not completed when expected. I only have so much capacity, and everything can't be a priority.
Academia	Accountability	1. Saying something needs to be done, regardless of who says it, is not enough. What you measure gets managed. Follow-up and holding people accountable are what keeps projects moving forward. 2. The most successful project teams are when the team members hold each other accountable for their work.
Government	Realistic Constraints	1. How can you commit to a timeline and budget when you do not even know what users want and the amount of work necessary to deliver? 2. What we typically end up doing is getting as much done as we can with the amount of money or time we're given. Then they blame us for not doing everything they wanted.

Project and Resource Prioritization. With the Financial Services Senior IT Leaders, project and resource prioritization was identified as a critical factor contributing to *project success*. The group described organization specific experiences that, due to a lack of dedicated prioritization, led to recurring resource conflicts and slipping deadlines. A participant shared a recent experience where they had to decide which business partner to "keep happy".

> "There was no clear priority between projects competing for the same development resources. IT can't be expected to dictate business priorities. I need the project manager to work with the business owners to set relative priority and manage those conflicts before it gets to my team. If I am left to choose, it becomes IT's fault that work is not

completed when expected. I only have so much capacity, and everything can't be a priority."

Accountability. The Academia Senior IT Leaders shared experiences with difficulties specific to holding people accountable across functional boundaries as a contributing factor to project failure. Functional silos with competing priorities led to resource starvation for projects. Departments frequently had no incentive to contribute resources to projects without shared priorities or benefits. Additionally, departmental politics presented barriers to project implementation when leaders did not have aligned goals and there was not a sense of reciprocity in resource allocation or perceived benefit related to the project. These factors imply a project manager in this organizational context must develop relationships with the senior stakeholders with decision authority, develop a sense of shared goals and objectives, and be able to facilitate conflict resolution across functional boundaries.

Realistic Constraints. The Government Senior IT Leaders emphasized that having a realistic timeline and budget was a factor contributing to *project success*. "Deadlines are almost always set before IT has an understanding of the effort required to meet the project needs." During the group discussion, it emerged that budget constraints were typically related to operational budget in the form of resource, or salary, expense. The lack of sufficient resources to meet project related demand compounded the difficulty in meeting imposed deadlines. These factors lead to the conclusion that a project manager in this environment must be able to successfully lead task effort estimating and resource requirement planning. Project managers also need to leverage that information to facilitate prioritization discussions with senior leadership and negotiate for appropriate deadlines based on resource availability and capacity.

These observations imply that factors that influence *project success* are often situationally dependent, and a project manager must have an understanding of the factors that influence *project success* within their organizational context.

Attributes Most Important for Project Manager Efficacy – Similarities

There were several trends identified within the Senior IT Leaders as they described the attributes most important for *project manager efficacy*. Similar to the analysis for the factors contributing to *project success*, the Senior IT Leader stakeholder groups used the exact same, or similar, terms for many of the attributes listed during the initial brainstorming session (See Tables H.4, J.4, and L.4); however, coding based on how they described and defended their perceptions led to additional emergent parallels or skill categories. *It is interesting that both the Academia and Financial Services Senior IT Leader stakeholder groups identified they were either hiring project managers or promoting current resources into project management roles based on perceptions about skill sets that do not necessarily contribute to their ability to effectively lead projects and project teams.* Three of the salient comments are included here.

> Academia Senior IT Leader: "Wow, I have never had a discussion with my peers about what contributes to *project success*. I just assumed we all knew, and now I know that my perceptions were incomplete at best. Using this list to identify the appropriate skill sets would have led to different hiring decisions."
>
> Academia Senior IT Leader: "I can sit here and thoughtfully list things that lead to *project success* and the skills that a project manager should have. Funny, but I've never used that information to inform my decision making."
>
> Financial Services IT Leader: "I have struggled with assigning IT experts to project leadership positions. In retrospect, they had a depth of knowledge in the technology, but

they did not have the facilitation skills or listening skills needed for the role. There was a natural tendency for them to direct the team to their way of thinking."

Table 4.19 provides a summary of the similar attributes that IT Senior Leaders identified as most important for *project manager efficacy* in order based on magnitude coding (See Table 3.8 Summary of Coding Methods).

Table 4.19: Senior IT Leaders – Similarities in Attributes Most Important for Project Manager Efficacy

Project Manager Attribute	Sample Descriptive Quotes
Facilitation Skills	1. What makes them good is like having the agenda ready, being prepared ahead of time, making sure the right people are in the room, that the room is set up before people get in there, being able to capture decision that are made, ensure appropriate documentation, and having meeting minutes sent out on a timely basis, and that kind of stuff. 2. I think it < facilitation > is the ability to understand that you might have a conflicting need for resources or a timeline issue and then working that through with stakeholders and being able to come up with a solution that everyone could live with. You know, negotiating an agreement. When facilitating the discussion, you got to be able to get the real issue out on the table so the solution addresses the problem. It is not about a win-win compromise, it is about leading them to the right solution.
Individual Personality Traits (Attitude, Trustworthiness, Unbiased)	1. Give me a negative-minded project manager, and I'll show you a failed project before it starts. The project manager needs to be a cheerleader for both the project goals and the team. 2. A project manager has to be trustworthy and respected. They do not have direct control of the people, so their power comes through what the team members think of them. 3. A positive person makes everyone else positive, even with things are hard. Project work can be hard. Who wants a negative, mean, or disrespectful person in a leader role.

Project Manager Attribute	Sample Descriptive Quotes
Communication Skills	1. She < project manager> takes the time to know the team members and talks on their level. I do not mean she talks down to them, but uses terms and examples they are familiar with to ensure they understand. 2. She chooses the tool < medium > best suited for the message. In other words, she is not stuck in email or conference calls. 3. < Project manager name > always listens before she talks. She asks more questions than anything else. You just know she is actually listening and wants to hear you. 4. They have to know more than just how to draft a communications plan. I had a project manager that drafted and plan and sent it to everyone via email. They couldn't figure out why no one read the plan. 5. There are a lot of different ways you can communicate a message and you have to be very careful, especially in email that you don't come across poorly. I have seen many examples of people getting upset for really not reason just because it was a poor choice of words.
Leadership Skills	1. I think that a project manager's team building skills need to be stronger than what I expect from my IT managers. Their < project manager's > teams are constantly changing and the team members often come from different departments and do not work together on a regular basis. Naturally, this would lead to the potential for greater conflict within the team. 2. Part of leadership is the approach you use to lead up the chain too. How do you keep the decision makers engaged? A project manager needs to know how to lead their sponsors. I think building a relationship with them is the best approach.
Basic IT Knowledge	1. I need the project manager to lead the solution design, not dictate the solution. 2. I think it < project challenges > emphases the need for the IT background and experience. Again not on an expert level, but understanding dependencies. There tend to be more dependencies I think in a development project. 3. To be effective, they need to have an understanding of the software development life cycle or basic infrastructure terminology or requirements and that kind of stuff.

Facilitation Skills. Attributes related to facilitation skills were listed with the highest frequency amongst the Senior IT Leader stakeholder group. This group led to the initial observation that references to negotiation skills in the project management context were often more related to facilitating a discussion between two independent parties, or a group, to reach an agreement than negotiating for a predetermined, desired outcome. While the denotative use of negotiation was referenced during the discussions, such as securing needed resources and setting realistic deadlines, the typical use focused on mediation-type skills demonstrated by working to

reduce the conflict between two parties and facilitating the discussion to reach an agreement or solution.

Additional descriptions highlighting facilitation skills included the ability to elicit alternative ideas in a setting with dominate personalities with strong opinions by asking the right questions and using diplomacy to encourage debate and discussion. Identifying conflict and leading teams through disagreements was another important facilitation skill described by the Senior IT Leaders. Each of the three groups also described the necessity for an effective project manager to be unbiased on their approach to conflict resolution. This implies that the Senior IT Leaders perceive the ability to separate personal opinion or perceptions from team facilitation as a complementary skill.

Individual Personality Traits. While initially coded as discrete attributes, there were specific individual patterns of behavior not directly related to interpersonal skills that emerged as a set of personal traits that the Senior IT Leaders identified as important contributors to *project manager efficacy*. The discussions highlighted three specific traits all three groups considered critical. First, a project manager must have a positive attitude and be a champion for the project. An Academia Senior IT Leader stated, "Give me a negative-minded project manager, and I'll show you a failed project before it starts. The project manager needs to be a cheerleader for both the project goals and the team." Trustworthiness, and developing trust, was identified as an important enabling factor for all interactions with the project team and stakeholders. The third personal trait that surfaced across the Senior IT Leader stakeholder groups was the ability to remain unbiased.

Communication Skills. Reflecting on the factors Senior IT Leaders identified as important contributors to *project success*, it is logical that this stakeholder group would identify

communication skills as an important attribute for *project manager efficacy*. Three trends related to communications skills emerged as participants described their expectations and experiences. The first was the project manager's ability to identify their audience's information needs and communications preferences and adapt their style accordingly. The second was the project manager's listening skills. The following dialogue between two Government Senior IT Leaders addresses the importance of both audience analysis and active listening.

> "She < project manager> takes the time to know the team members and talks on their level. I do not mean she talks down to them, but uses terms and examples they are familiar with to ensure they understand."
>
> "She chooses the tool < medium > best suited for the message. In other words, she is not stuck in email or conference calls."
>
> "< Project manager name > always listens before she talks. She asks more questions than anything else. You just know she is actually listening and wants to hear you."

The third trend related to communication skills was the ability to balance between being precise and concise in messaging, which can be diametrically opposing requirements. Being precise in communication is related to being exact, or definitive, which can lead to lengthy, detailed content. Being concise is more related to sharing meaning in a few words, or brevity. Both are excellent qualities in effective communication; however, a project manager must understand which messages require being precise, and which messages require being concise, based on the target audience and their communication goals.

Leadership Skills. While leadership skills can be a broad category and often a generic term, there are specific attributes that Senior IT Leaders considered most important for *project manager efficacy*. The three leadership skills that emerged most frequently in the discussions

were related to team building, change management, and problem solving. A Financial Services Senior IT Leader stated,

> "I think that a project manager's team building skills need to be stronger than what I expect from my IT managers. Their < project manager's > teams are constantly changing and the team members often come from different departments and do not work together on a regular basis. Naturally, this would lead to the potential for greater conflict within the team."

The second two, change management and problem-solving, are aligned with the observations that projects introduce change in an environment, which creates risks and issues that must be identified and resolved throughout the project.

Basic IT Knowledge. The Senior IT Leader stakeholder group was consistent in their expectations that a project manager in an IT-centric project environment needed only a basic understanding of IT-related terminology, development methodologies, and infrastructure. In contrast, the Academia and Government Senior IT Leaders noted that a majority of their project managers were sourced from the IT department or hired due to their IT experience, and both stakeholder groups contributed project challenges to a skill mismatch based on their discussions with their peers during this research. Having in-depth IT experience was actually seen as a potential risk by some participants. As stated by a Government Senior IT Leader, "I need the project manager to lead the solution design, not dictate the solution."

Attributes Most Important for Project Manager Efficacy – Context Specific

Comparing attributes important for *project manager efficacy* across three different groups of Senior IT Leaders naturally led to factors that were context specific. It is important to note that the differences noted in this section do not imply the attributes are not contributors to *project*

manager efficacy in the other environments. The observation is that one stakeholder group, and not the others, emphasized these attributes during the discussions. Table 4.12 provides a summary of the context-specific attributes that IT Senior Leaders identified most important for *project manager efficacy*.

Table 4.20: Senior IT Leaders – Context-Specific Attributes Most Important for Project Manager Efficacy

Stakeholder Group	Project Manager Attribute	Sample Descriptive Quotes
Financial Services	Pragmatic Experience	1. The most effective project leaders understand, at least at a high level, the organization's operations, how the organization is broken down, and how things work here. Those who have had more real-world experience, do a better job.
Academia	Holding Team Members Accountable	1. Project managers have to hold themselves accountable. They don't just hold other accountable, they hold themselves accountable. They are fair, but they are firm. 2. You have to be truthful and provide accurate information in order to hold yourself and others accountable, so I think those are joined.
Government	Certification	1. Certification is pretty important if you are really going to run a project. People expect you to be the professional, and certification shows me they know what you're doing.

Interestingly, these were all within the project management knowledge and application skill set. The Financial Services Senior IT Leaders emphasized the importance of experience with a variety of different projects, stating that this created a depth of experience necessary to be pragmatic in their application of the project management tools and processes. The Academia Senior IT Leaders, consistent with their discussion related to factors contributing to *project success*, highlighted the importance of holding team members accountable for completing assigned tasks by monitoring progress and controlling that rate of progress through appropriate escalation. The Government Senior IT Leaders, also consistent with their decision to invest in

project management certification training for project managers, identified the effort required to earn the PMP® credential as an important contributor to *project manager efficacy*.

Comparison within the Project Management Professional Stakeholder Groups

The analysis within the Certified Project Management Professional stakeholder groups started with evaluating the frequency with which specific factors were identified that contribute to *project success* to identify similarities, differences and patterns. These factors were then analyzed in relationship to the skills Certified Project Management Professionals identified as the most important for *project manager efficacy* based on their experience. Finally, this analysis is used to identify how the research informed the primary research question and sub-questions.

Factors That Influence Project Success – Similarities

Several trends surfaced within the Certified Project Management Professional stakeholder groups as they described the factors that contribute to *project success*. It is important to highlight these factors do not always directly inform the central research question. These factors are not always within the project manager's control; however, understanding these factors is the foundation for applying their knowledge and skills to influence those leaders or stakeholders that do have direct power over these contributors to *project success*.

You will note that the three different Certified Project Management Professional stakeholder groups used the exact same, or similar, terms for many of the factors listed during the initial brainstorming session (See Tables I.4, K.4, and M.4); however, coding based on how they described their experiences and defended the factors and attributes listed led to additional emergent parallels. Table 4.21 provides a summary of the similar factors that Certified Project Management Professionals identified as contributors *project success* in order based on magnitude coding (See Table 3.8 Summary of Coding Methods).

Table 4.21: Project managers – Similarities in Factors that Contribute to Project Success

Project Success Factor	Sample Descriptive Quotes
Stakeholder Management	1. I have been on what I would call a sponsor-less project. Collectively, leadership thought the project was a good idea; however, no one leader would accept the responsibility for being the project champion. It was like everyone wanted the result, but no one wanted to contribute to the effort required to get that result. The project eventually starved to death due to a lack of resources. I had no one to escalate issues to, and no one to back me up when another leader demanded resources from the project. 2. When there's a change in leadership after an election cycle, we expect certain projects to be cancelled. Sponsorship leaves office and key resources are reassigned to new priorities. 3. If senior management does not support both the project and the project management processes, the project manager's ability to influence stakeholders is limited. One sleeping giant can crush the project.
Planning	1. I have experienced more throw-away work in software development from jumping into coding before stepping back and thinking about what you are doing and why than from actual defects. You have to spend time understanding requirements first. 2. A lack of planning, at any level of detail, is one of the biggest contributors to project failure. We have to slow down long enough to know what we're doing before we start doing it. You've heard the old axiom, "If you don't have time to do it right the first time, how are you going to find time to do it the second time?"
Resource Availability and Management	1. I'm trying to think of the right way to articulate this, but not having the appropriate resources is a risk. Is that risk management? We always begin optimistic, but when it comes time to get the people to do the work, they always have something else to do. 2. When you lose a key resource with access to subject matter expertise, it can kill a project or at least negatively impact it.
Communication	1. Well, specifically, effective communication means identifying the approach and tool best suited for the situation. In my project, we had stakeholders so far away that to communicate to via the phone would cost almost a dollar a minute. We also found verbal communication was less effective anyway because of the language barrier. We found that writing and emailing was the best way, and the clearest way, to communicate. There were occasions when I heard 'yeah, yeah' on the phone and assumed they agreed, but I would find out later they just meant they understood what I was saying. When we asked for agreement via the written word, would receive a clear yes or no. So that is what I mean by finding a way to effectively communicate. 2. We learned when studying for the PMP® exam that most of our time is spent communicating. That wasn't just in theory. The best project managers get out from behind their desks and computers and spend time talking to people.

Project Success Factor	Sample Descriptive Quotes
Clear Goals and Objectives	1. Clear goals are documented in the project charter using S.M.A.R.T. objectives. 2. I have seen projects fail because the sponsor or project manager could not hold the line and keep everyone focused on the original objectives. You can be everything to everyone. Sometimes you have to say no, and clearly documented objectives gives you the ability to say what is, and is not, included in the project.

Stakeholder Management. Similar to the Senior IT Leaders, factors related to stakeholder management were listed with the highest frequency within the project manager stakeholder group. This indicates skills related to leading stakeholders, such as the project manager's approach to engaging various stakeholder groups and developing the appropriate relationships, coupled with an understanding of the processes, procedures, and techniques for stakeholder management, are among the most important skills contributing to *project manager efficacy*. Terms used, and subsequently described, by the project manager stakeholder group included executive support, sponsor support, team buy-in, and user involvement.

When describing their experiences related to *project success*, all three groups agreed that sponsor support, also referenced as senior leadership and executive support, is necessary; however, they put much more emphasis on how a lack of sponsor support is a primary contributor to project failure. Of few of the specific comments are included below.

> Financial Services Project Manager: "I have been on what I would call a sponsor-less project. Collectively, leadership thought the project was a good idea; however, no one leader would accept the responsibility for being the project champion. It was like everyone wanted the result, but no one wanted to contribute to the effort required to get that result. The project eventually starved to death due to a lack of resources. I had no one to escalate issues to, and no one to back me up when another leader demanded resources from the project."

Government Project Manager: "When there's a change in leadership after an election cycle, we expect certain projects to be cancelled. Sponsorship leaves office and key resources are reassigned to new priorities."

Academia Project Manager: "If senior management does not support both the project and the project management processes, the project manager's ability to influence stakeholders is limited. One sleeping giant [16]can crush the project."

Planning. Planning, more specifically the time necessary to plan, was identified as an important contributing factor to *project success* by all three project manager stakeholder groups. When explaining what sufficient time to plan meant, participants universally agreed that this statement did not imply that planning should be complete before work began. Instead, that a respect for the planning processes and sufficient time to plan to a level of detail necessary to begin the right work was important. A Financial Services Project Manager explained, "I have experienced more throw-away work in software development from jumping into coding before stepping back and thinking about what you are doing and why than from actual defects. You have to spend time understanding requirements first." It is important to note that the Financial Services Project Managers were in an agile software development environment. Subsequent discussion highlighted that planning did not mean having a complete set of business and technical requirements before any work could be done, but that the importance of planning simply cannot be overlooked.

Resource Availability and Management. Having access to the resources that were adequately skilled to do the work was also a common them with the project managers. The project managers linked access to the right resources to sponsor support and negotiating skills.

[16] A sleeping giant is a term commonly used in stakeholder classification to reference a powerful stakeholder that is not directly involved in the project leadership; however, has the potential to be negatively impacted and has the power to influence project outcomes, resource assignments, or other stakeholder groups' perceptions.

As stated by an Academia Project Manager, "A strong, visible, respected sponsor makes negotiating for the right resources much easier." This implies that a lack of sponsor support reduces the project manager's ability to secure the best resources.

Communication. The Project Manager stakeholder groups agreed that effective communication was an important contributor to *project success*. When asked how they would define effective communication, a Government Project Manager shared a specific experience related to an international project that crossed geographic boundaries between < their city in the United States > to a city in Africa.

> "Well, specifically, effective communication means identifying the approach and tool best suited for the situation. In my project, we had stakeholders so far away that to communicate to via the phone would cost almost a dollar a minute. We also found verbal communication was less effective anyway because of the language barrier. We found that writing and emailing was the best way, and the clearest way, to communicate. There were occasions when I heard 'yeah, yeah' on the phone and assumed they agreed, but I would find out later they just meant they understood what I was saying. When we asked for agreement via the written word, would receive a clear yes or no. So that is what I mean by finding a way to effectively communicate."

Based on their descriptions and examples, effective communication in the project manager stakeholder group was focused primarily on ensuring adequate information distribution and creating a shared understanding.

Clear Goals and Objectives. Documented and agreed upon end-state goals and business objectives were shared as important contributors to *project success* by all three project manager groups. Similar to the Senior IT Leaders, a lack of clear goals and objectives were also a

common theme in factors that contributed to project failure. Understandably, these stakeholder groups used project management specific terms when describing how clear goals and objectives contributed to *project success*. For example, a Financial Services Project Manager stated, "Clear goals are documented in the project charter using S.M.A.R.T. [17]objectives." A signed, or agreed upon, project charter is typically the milestone that indicates a project's objectives are documented and there is a shared understanding between the sponsor and the project manager about how *project success* will be measured.

Factors that Influence Project Success – Context Specific

Comparing factors that contribute to *project success* across three different groups of project managers with diverse backgrounds and experiences naturally led to factors that were context specific. It is important to note that the differences noted in this research do not imply the factors are not contributors to *project success* in the other environments. The observation is that one stakeholder group, and not the others, emphasized these factors during the discussions. Table 4.22 provides a summary of the context-specific factors that Certified Project Management Professionals identified as contributors *project success*.

[17] S.M.A.R.T. is an acronym commonly used in goal writing to help ensure an objective is specific, measurable, attainable, realistic and timely (Kerzner, 2009, p. 296).

Table 4.22: Project Managers – Context-Specific Factors that Contribute to Project Success

Stakeholder Group	Project Success Factor	Sample Descriptive Quotes
Academia	Organizational Knowledge	1. We are a bureaucratic organization. Each department runs like they are a business of their own, and there's no sense of urgency about anything that is not your department's priority. I realize that is a failure in leadership, but a project manager has to understand that environment because it is their reality. 2. The decision makers are not always the most senior people. It takes time and experience to know who the real decision makers and influences are.
Government	Organizational Knowledge	1. The project manager needs time to develop internal consulting skills. This means they have to understand our culture. They have to understand not only the business processes, but also who they may impact downstream, who they may offend, who may resist the change, if the change has been tried before and didn't' work, etcetera.
Financial Services	Realistic Constraints	1. Promised delivery dates are not real until there's a feasible plan and scheduling. Everything can't be a priority either. What is realistic if you only have one thing to focus on is not realistic when you have ten things to focus on. You have to balance the whole workload.

Organizational Knowledge. Academia and Government project managers both emphasized that having organizational knowledge, in the form of understanding business processes, business cycles, organizational culture, and resource capabilities, was an important contributor to *project success* in their environments. Both groups also stated their organizations tend to be laden with bureaucracy, and that it took months of experience to understand how to "make things happen". A Government Project Manager elaborated with the following statement, "The project manager needs time to develop internal consulting skills. They have to understand not only the business processes, but also who they may impact downstream, who they may offend, who may resist the change, if the change has been tried before and didn't' work, etcetera."

Realistic Constraints. The Financial Services Certified Project Management Professionals identified that setting realistic project constraints was a significant contributor to *project success* in their organizational context. Specifically, they identified having sufficient time and resources to meet stakeholder expectations related to delivery dates. This is consistent with the fact that their Senior IT Leader counterparts in the same organization noted projects were challenged due to a lack of dedicated prioritization. Setting deadlines in a vacuum based solely on a single project's effort estimates, without considering resource availability and capacity, can lead to unrealistic expectations related to delivery.

Attributes Most Important for Project Manager Efficacy – Similarities

There were several trends identified within the Certified Project Management Professional stakeholder groups as they described the attributes most important for *project manager efficacy*. Similar to the analysis for the factors contributing to *project success*, the Certified Project Management Professional stakeholder groups used the exact same, or similar terms, for many of the attributes listed during the initial brainstorming session (See Tables I.4, K.4, and M.4). However, coding based on how they described and defended their perceptions led to additional emergent parallels or skill categories. Table 4.23 provides a summary of the similar attributes that the project managers identified as most important for *project manager efficacy* in an IT-centric project environment in order based on magnitude coding (See Table 3.8 Summary of Coding Methods).

Table 4.23: Project Managers – Similarities in Attributes Most Important for Project Manager Efficacy

Project Manager Attribute	Sample Descriptive Quotes
Communication Skills	1. You have to understand that different teams have different communication styles that work for them. Some people do rely on emails, and other people need a face-to-face where you go actually talk to them about the details. 2. < A project manager > must be engaged in the conversation and taking the time to understand what someone is saying instead of trying to figure out what they plan to say next. 3. One of the things I have observed with poor communication is when one party fails to stop and listen. They have it in their minds what they want to hear or say next, or focus on what is impacting them, or the goals they want to achieve and they are not listening for new information or different ideas.
Facilitation Skills	1. Facilitation is about guiding people to a common understanding. I mean, when there's conflict, the project manager has to understand the situation, get the right folks together, and lead the discussion to resolve the issue. This takes facilitation skills. 2. I know communication is important, but that takes place most of the time in meetings. Project managers have to understand the best practices for meeting management. Things like sending out an agenda in advance so they can prepare, starting on time, keeping people focused and on track, and making sure important decisions are written down and shared with everyone.
Leadership Skills	1. The best project managers can modify their leadership style based on the situation and need. For example, you lead a senior sponsor that you need support from differently than a developer that has multiple competing priorities and is not sure what to work on first. 2. The biggest part of leadership is leading up the chain of command. In my experience, the team members all want to do a good job, but they need the time. The project manager has to remove barriers, and often those barriers are leaders that are not committed.
Individual Personality Traits (Emotional Intelligence, Attitude, Trustworthiness)	1. There are times when emotions, such as anger or frustration, would lead me to defuse the situation by taking a break or changing the topic. There are also times when a positive emotion, such as excitement about the project, would lead me to enter into a public discussion to hopefully share or spread the emotion. 2. It is hard enough to get the right people on the bus. You don't want a project manager that will throw you under it. If team members can't trust me, I would expect them to be constantly watching out for themselves. If they know I'm watching out for them and have their back; they'll have mine too. 3. Optimism is more than just being positive. It is a can do attitude at all times. They < project manager > have to convince the team they can solve any problem. 4. Being honest, being consistently honest builds trust. How can you be a trusted advisor if you're not trustworthy? No one really starts a new relationship with others thinking they're 100% trustworthy. That is earned over time. After you get to know a person's honesty through their actions, you can learn to count on them to be an advisor.

Communication Skills. Factors related to communication skills were listed with the highest frequency with terms and phrases including effective communication, active listening, understanding your audience, and diplomatic communication. When expounding on the meaning behind effective communications, a Financial Services Project Manager explains, "Effective communication has taken place when my audience and I have a shared understanding of the information presented". Responding to a peer's question about how they know that has happened, she responded,

> "Well, it depends. If I'm with them, I can read their body language, facial expressions, head nods, and stuff like that. But I like to ask questions too. You know, to check for understanding. If I'm using WebEx < webinar >, I like to turn over the presenter role and ask them to highlight key points in a document. If we communicate mostly through email, I will pick up the phone. Email doesn't provide a very helpful feedback loop."

A Government Project Manager described effective communication as adapting to meet the audience's preferences; "You have to understand that different teams have different communication styles that work for them. Some people do rely on emails, and other people need a face-to-face where you go actually talk to them about the details."

Active listening was described as being "engaged in the conversation and taking the time to understand what someone is saying instead of trying to figure out what you plan to say next". As explained by a Government Project Manager,

> "One of the things I have observed with poor communication is when one party fails to stop and listen. They have it in their minds what they want to hear or say next, or focus

on what is impacting them, or the goals they want to achieve and they are not listening for new information or different ideas."

Diplomatic communication was described as using tact in your approach to communicating through an awareness of others' opinions, emotions, and beliefs. Since people are unique, treating everyone the same can be counterproductive. If the project manager takes the time to modify their communications approach based on their audience, context, and current situation, they can improve their relationships with stakeholders. This, in turn, can enhance communication as stakeholders begin to respect and trust the project manager.

The qualifiers and descriptions offered by the project managers suggest that there is an understanding that communicating effectively in a project environment involves much more that technical communications planning and information distribution.

Facilitation Skills. All three Certified Project Management Professional stakeholder groups highlighted that project managers by design accomplish their goals through collaborating with others and coordinating activities across multiple resources. Accordingly, the project managers unanimously identified facilitation skills as one of the most important contributors to *project manager efficacy*. An interesting observation was that this group also included negotiating skills as a descriptor for effective facilitation and differentiated between negotiating for a desired outcome and facilitating a discussion between two groups to reach a negotiated agreement. The project manager stakeholder group also stressed the importance of the project manager's role in facilitation to remain focused on meeting the project goals and objectives, not to satisfy a specific stakeholder group or to reach a compromise.

All three project manager groups also identified leveraging facilitation skills to resolve conflict as important. It is noteworthy that the groups identified unresolved conflict between stakeholders, team members, and sponsors as barriers to *project success*.

Leadership Skills. Similar to the approach used with the Senior IT Leaders, I sought to elicit qualifiers and specifics about what the Certified Project Management Professionals meant by strong leadership. The project manager group used qualifiers such as team building, team development, team-based problem solving, and influencing others to describe strong, or effective, leadership in a project environment. A Government Project Manager emphasized the importance of not only understanding your leadership style, but also being able to modify your approach to leading based on the situation. "For example, you lead a senior sponsor that you need support from differently than a developer that has multiple competing priorities and is not sure what to work on first."

The Project Managers' descriptions suggest that although leadership is a broad grouping of skills necessary to provide guidance and direction to a group of people, that there are certain leadership traits more important for project managers. Specifically, traits related to building teams, influencing team behaviors and performance, and problems solving emerge as leadership traits critical for *project manager efficacy*.

Individual Personality Traits. The Certified Project Management Professionals stakeholder groups identified several personality traits they considered important; however, three specific traits were included in the discussion and descriptions by all three groups. The first was emotional intelligence. The project managers described emotional intelligence as self-awareness and control, coupled with awareness of others' emotional state and modifying your behavior to

minimize the impact of negative influences and maximize the impact of positive influences. As described by a Financial Services Project Manager,

> "There are times when emotions, such as anger or frustration, would lead me to defuse the situation by taking a break or changing the topic. There are also times when a positive emotion, such as excitement about the project, would lead me to enter into a public discussion to hopefully share or spread the emotion."

The second personality trait was the project manager's general attitude. Similar to the Senior IT Leaders, the project manager stakeholder group expected the project manager to be a cheerleader for the project by highlighting the benefits and remaining optimistic and confident during the challenges that are certain to come. The third trait, also perceived as important by the Senior IT Leaders, was trustworthiness. A participant in the Government Project Manager group shared in jest,

> "It is hard enough to get the right people on the bus. You don't want a project manager that will throw you under it. If team members can't trust me, I would expect them to be constantly watching out for themselves. If they know I'm watching out for them and have their back; they'll have mine too."

Attributes Most Important for Project Manager Efficacy – Context Specific

Comparing attributes important for *project manager efficacy* across three different groups of Certified Project Management Professionals naturally led to attributes that were context specific. It is important to note that the differences noted in this section do not imply the attributes are not contributors to *project manager efficacy* in the other environments. The observation is that one stakeholder group, and not the others, emphasized these attributes during

the discussions. Table 4.24 provides a summary of the context-specific attributes that Certified Project Management Professionals identified most important for *project manager efficacy*.

Table 4.24: Project Managers – Context-Specific Attributes Most Important for Project Manager Efficacy

Stakeholder Group	Project Manager Attribute	Sample Descriptive Quotes
Financial Services	Focus on User Requirements	1. They < project managers > have to make sure user requirements are documented and clear. We do not have dedicated business analysts outside of our development teams, so the project manager needs to fill that role. Without requirements, how can you test and ensure expectations are met? 2. Requirements are what projects are about. You're delivering something, and that *is* the requirements. If the project manager loses focus on the users' needs at the expense of staying on track, they're focused on the wrong thing.
Academia	Maintain Strategic Alignment	1. Since we're so siloed, the project manager has to keep everyone focused on the end goal. We get so caught up in what our department is doing, that we can forget why we're doing it. I expect the project manager to know the why, and keep our effort focused on that, not the how.
Government	Internal Business Process Knowledge	1. We have to be consultants. We need to know the business processes, where the opportunities are, and who the influencers are. That takes time and experience here. The < government name > has a lot of interconnected parts, and changes in one place can have a downstream impact on hundreds of people. The project manager has to know how things work and are connected, and be prepared to guide the team in the right direction for the project instead of the right direction for their department.

The Financial Services Project Managers identified the need for the project manager to be a champion for the users' needs in their organizational context. As constraints shorten timelines and influence project scope in the form of removing features or not satisfying certain requirements, the project manager must remain focused on the requirements that are most

important for meeting the intended business need. It is important to note that this organization did not have dedicated business analysts or product owners, so the project manager served in that capacity during a project. The Academia Project Managers included the ability to maintain strategic alignment as an important attribute for *project manager efficacy*. This is aligned with the Senior IT Leaders' perceptions that functional silos and lack of shared understanding of the business problem and need contributed to project failure. The Government Project Managers listed internal consulting skills as an important attribute for *project manager efficacy* in their organizational context. This is in alignment with their observation that the organizational environment is complex and bureaucratic, which requires an understanding of, and desire to improve, business processes.

Comparison across Stakeholder Groups

To support the strength of these findings, it is important to revisit the level of experience represented by the forty-five (45) participants in this study; twenty-five (25) Senior IT Leaders, and twenty (20) Certified Project Management Professionals representing three different industries. Figure 4.3 presents a summary of the following figures from Chapter 3:

1. Figure 3.5 showing years of IT experience for Senior IT Leaders
2. Figure 3.6 showing years of project team member experience for Senior IT Leaders
3. Figure 3.7 showing years of project leadership experience for Senior IT leaders
4. Figure 3.8 showing years of IT project management experience for the Certified Project Management Professionals.

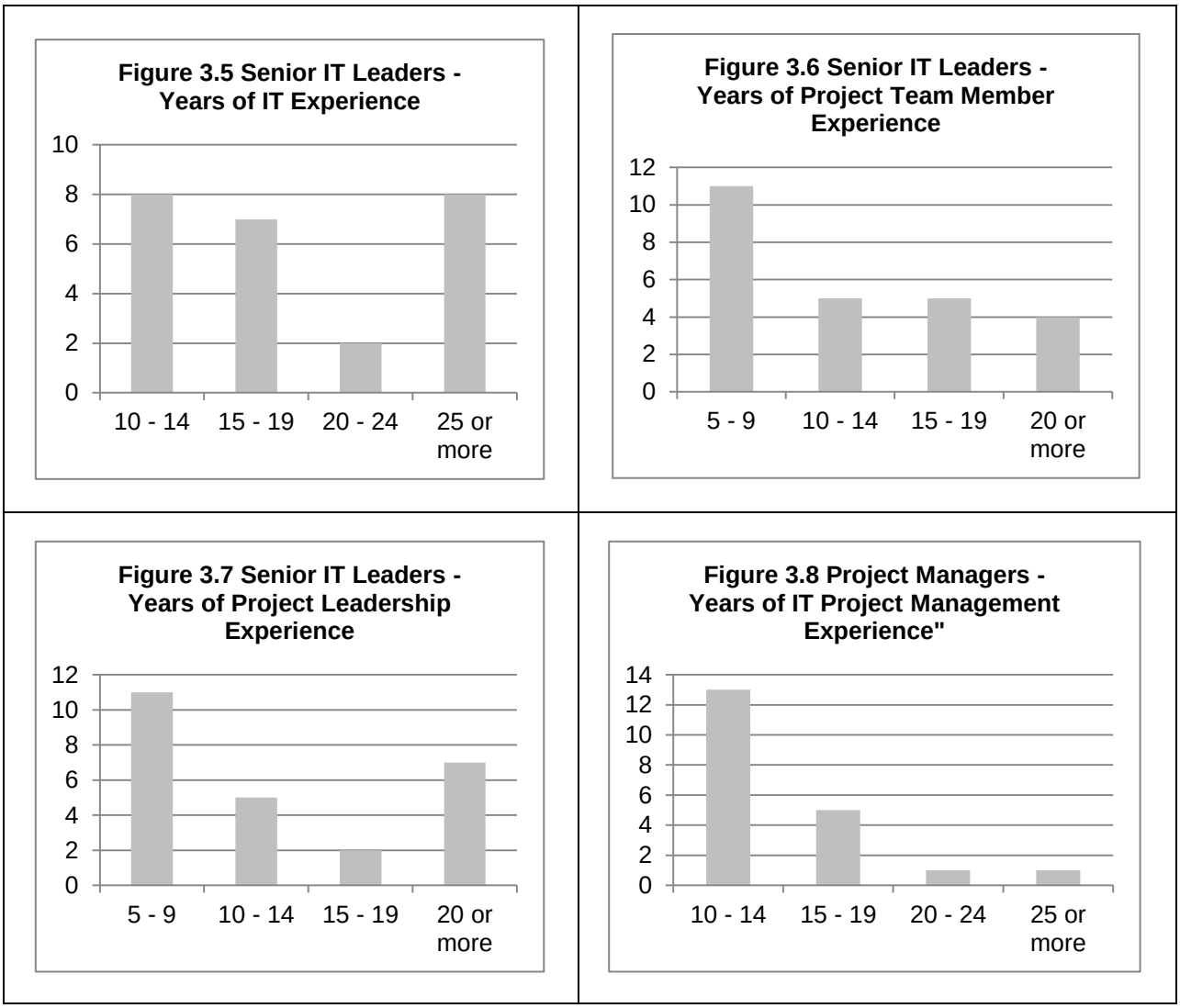

Figure 4.3: Summary of Participant Experience - Figures from Chapter 3

Combined Factors that Contribute to Project Success

Table 4.25 provides a summary of the factors both the Senior IT Leader and Certified Project Management Professional stakeholder groups identified as the most important contributors to *project success* based on their experience.

Table 4.25: Combined Factors that Contribute to Project Success

Senior IT Leaders Only	Shared Between Both Stakeholder Groups	Certified Project Management Professionals Only
Change Management	Stakeholder Management	Planning
	Communication	
	Clear Goals and Objectives	
	Resource Availability and Management	

Stakeholder Management. Both stakeholder groups identified stakeholder management as the most significant contributor to *project success*. It is important to highlight that the participants described experiences and examples included more than stakeholder management planning as outlined in the PMBOK (PMI, 2013a) chapter 13. While the Guide to the Project Management Body of Knowledge does state that stakeholder management encompasses understanding needs and expectations, managing conflict, development appropriate relationships and more, there is no practical guidance on how to develop those skills. This suggests there is an assumption that project managers either have those skills, or have the wherewithal to mature those skills, external to an understanding of the project management processes, tools, and techniques.

Communication. Both stakeholder groups identified communication as an important factor for *project success*, with Senior IT Leaders ranking communication the second most important factor and Certified Project Management Professionals ranking communication the fourth most important factor for *project success* based on magnitude coding. While descriptions related to effective communication were similar, there was one notable difference between the two stakeholder groups. The Senior IT Leaders described listening skills more frequently and placed more emphasis on listening than their Certified Project Management Professional counterparts. This fits well with the observation that they also preferred project managers that were unbiased and sought to elicit alternatives and ideas from their subject matter experts. The

project managers placed more emphasis on effectively sharing information and creating a common understanding amongst stakeholders.

Clear Goals and Objectives. Both stakeholder groups identified clear goals and objectives as an important factor for *project success*, with Senior IT Leaders ranking this factor the third most important factor and Certified Project Management Professionals ranking this factor the fifth most important factor for *project success* based on magnitude coding. The two participant groups similarly described the benefit of quantifiable objectives and clear requirements; relative ranking was the only notable difference.

Resource Availability and Management. Both stakeholder groups identified resource availability and management as an important factor for *project success*, with Senior IT Leaders ranking this factor the fifth most important factor and Certified Project Management Professionals ranking this factor the third most important factor for *project success* based on magnitude coding. The participants' descriptions suggest a natural variation in the emphasis related to resource management for the two stakeholder groups. For example, the Senior IT Leaders placed higher importance on resource scheduling and understanding what skills were needed and when, and the Project Managers placed higher importance on access to the right resources with the right skills at the right time. These are complementary resource management concepts, since the Project Manager's effort with resource planning and scheduling could address the Senior IT Leaders' needs and subsequently enhance their access to resources.

Planning. The Certified Project Management Professionals included planning as one of the most important contributors to *project success*. Based on the participants' descriptions and examples, planning is complementary to the clear goals and objectives and resource availability and management factors. Planning processes include eliciting quantifiable business objectives

and user requirements, which enables a project manager to decompose the work into manageable work packages that facilitates resource identification and scheduling.

Change Management. The Senior IT Leaders included change management as one of the most important contributors to *project success*. An argument can be made that three of the shared factors identified in this research contribute to effective change management; stakeholder management, communication and clear goals and objectives. Stakeholder management includes activities related to managing stakeholder expectations, eliciting ideas and alternatives, gaining buy-in to the project objective and project work, and developing the appropriate relationships with people impacted by the project. Communication includes active listening and ensuring messaging is clear, timed appropriately, and designed to meeting the target audiences' needs. Clear goals and objectives include having an understanding of the purpose for the project and an understanding of how the business need is satisfied. All of which are important components of change management.

The previous sections on planning and change management supports the observation that differences noted in this research, such as factors omitted from a stakeholder's list, does not imply they are not important contributors to *project success*. The observation is that one stakeholder group and not the other emphasized the factors during the discussions. Although the factors in isolation do not ensure *project success*, the data does suggest which factors are the most important contributors to *project success* based on the participants' combined experiences and related descriptions.

Combined Attributes Most Important for Project Manager Efficacy

Table 4.26 provides a summary of the attributes both the Senior IT Leader and Certified Project Management Professional stakeholder groups identified as most important for *project manager efficacy* based on their experience.

Table 4.26: Combined Attributes Most Important for Project Manager Efficacy

Senior IT Leaders Only	Shared Between Both Stakeholder Groups	Certified Project Management Professionals Only
Basic IT Knowledge	Facilitation Skills	
	Communication Skills	
	Leadership Skills	
	Individual Personality Traits	

Facilitation Skills. Facilitation skills were identified as one of the most important attributes for *project manager efficacy* by both stakeholder groups, with Senior IT Leaders ranking this attribute as the most important and Certified Project Management Professionals ranking this attribute as the second most important, based on magnitude coding. Based on the participants' descriptions, facilitation includes more than the common description of leading through sharing control of a discussion and sustaining a collaborative, supporting environment. Both stakeholder groups included negotiating skills as a descriptor for effective facilitation and differentiated between negotiating for a desired outcome and facilitating a discussion between two groups to reach a negotiated agreement. The project manager's ability to facilitate conflict resolution between various project stakeholders was also identified as a critical facilitation skill by each of the participant groups.

Communication Skills. Communication skills were identified as one of the most important attributes for *project manager efficacy* by both stakeholder groups, with Senior IT Leaders ranking this attribute as the third most important and Certified Project Management Professionals ranking this attribute as the most important, based on magnitude coding. This is not

surprising, as the Guide to the Project Management Body of Knowledge (PMI, 2013a) highlights that "projects manages spend most of their time communicating with either team members or project stakeholders" (p. 287). Similar to other skills and abilities, the PMBOK outlines processes, tools and techniques for communication; however, there is an assumption that a project manager has developed interpersonal skills.

Audience analysis and listening skills were lauded as critical communication skills contributing to *project manager efficacy*. Participants described audience analysis as the ability to identify a target audience, understand their information needs, assess their communication preferences such as medium and style, and then plan how to communicate with that group based on that knowledge. Listening skills, specifically active listening, was described as listening with the intent to understand the senders' intended meaning. The ability to ensure messaging was both clear and concise and created a shared understanding rounded off the participants' descriptors related to effective communication.

Leadership Skills. Both stakeholder groups based on magnitude coding identified leadership skills as the third most important attribute for *project manager efficacy*. Although leadership skills can be a broad category of skills, or skill set, there were specific leadership traits identified by the participants as important attributes for *project manager efficacy*. The three leadership capabilities identified by Senior IT Leaders were related to team building, change management, and problem solving. The Certified Project Management Professionals identified the same capabilities and added the ability to influence others and guide a group to a common goal.

Individual Personality Traits. Specific project manager personality traits were identified amongst the most important attributes for *project manager efficacy* by both

stakeholder groups, with Senior IT Leaders ranking their listed traits as the second most important and Certified Project Management Professionals ranking their listed traits as the fourth most important, based on magnitude coding. Table 4.27 provides additional details related to the specific individual personality traits that both the Senior IT Leader and Certified Project Management Professional stakeholder groups identified as most important for *project manager efficacy*.

Table 4.27: Individual Personality Traits

Senior IT Leaders Only	Shared Between Both Stakeholder Groups	Certified Project Management Professionals Only
Unbiased	Attitude	Emotional Intelligence
	Trustworthiness	

Displaying and maintaining a positive attitude was a recurring theme reiterated by all six groups. Terms such as positive minded, optimistic, enthusiastic support, cheerleader for the project and team, and upbeat when interacting with stakeholders were used to describe the participants' experiences and attributes important for *project manager efficacy*. They expected the project manager to be a visible advocate for the project and keep the stakeholders focused on the benefits. Part of exhibiting a positive attitude was also remaining optimistic and confident when presented with challenges related to conflict, risks, and changes.

Both stakeholder groups also discussed the importance related to a project manager's trustworthiness. Participants described their expectations by using words and phrases such as transparent in their intentions, good intentioned, honest, accountable, they have a high say-do ration, and worthy of respect. The following conversation from the Government Project Manager Group emphasizes the value placed on trustworthiness.

"Well I am trying to synthesize; are we talking about being trustworthy or being a trusted advisor or reputable?"

"Both. Yeah, being honest, being consistently honest builds trust. How can you be a trusted advisor if you're not trustworthy? No one really starts a new relationship with others thinking they're 100% trustworthy. That is earned over time. After you get to know a person's honesty through their actions, you can learn to count on them to be an advisor."

"It works the other way too. I think an honest status report is important. The ones < projects > I have been a part of that have failed had project managers that said everything was OK when it was not. I would rather someone just tell me when it < a project > is starting to fail so that we can address the situation before it is too late. The reality is that I cannot trust those project managers."

The Senior IT Leaders included being unbiased and open-minded as part of the individual personality traits they considered important for project managers. Their descriptions and examples centered on ensuring the project manager did not unduly influence the project team when resolving conflict or making decisions. The Certified Project Management Professionals included emotional intelligence in their list of individual personality traits important for *project manager efficacy*, offering descriptions of emotional intelligence as self-awareness and control, coupled with awareness of others' emotional state and modifying your behavior to minimize the impact of negative influences and maximize the impact of positive influences.

Basic IT Knowledge. The Senior IT Leaders included Basic IT Knowledge as one of the attributes most important for *project manager efficacy* in an IT-centric project environment. Only three (3) of twenty-five (25) Senior IT Leaders initially believed that IT expertise was important for *project manager efficacy* during the pre-discussion surveys. Only one (1) of twenty-five (25) still listed IT expertise as important for *project manager efficacy* in the post-

discussion survey. *Given these rankings, it is interesting that they acknowledged focusing interview questions, hiring decisions, and internal promotion decisions on IT knowledge and skills*. This suggests this research can inform project manager hiring and placement decisions. Here are a few of the salient descriptions provided by participants in each of the three Senior IT Leader groups.

> Government IT: "I need a project manager to understand basic IT terminology, understand the IT roles, and really know how important it is for us to have engaged user groups and clear requirements. I do not want a project manager that is an IT expert, or worse, a project manager that thinks they are an IT expert. They should rely on their team to be the experts and focus on their project management role. Their < project manager > IT knowledge, real or not, can get in their way."
>
> Financial Services IT Leader: "I have struggled with assigning IT experts to project leadership positions. In retrospect, they had a depth of knowledge in the technology, but they did not have the facilitation skills or listening skills needed for the role. There was a natural tendency for them to direct the team to their way of thinking."
>
> Academia Senior IT Leader: "Wow, I have never had a discussion with my peers about what contributes to *project success*. I just assumed we all knew, and now I know that my perceptions were incomplete at best. Using this list to identify the appropriate skill sets would have led to different hiring decisions."

Summary

This chapter focused on the analysis and interpretation of the data collected during the six focus group sessions. My major objective was to identify what Senior IT Leaders and Certified Project Management Professionals identify as the most important attributes for *project manager*

efficacy. The research design supported this objective through the elicitation and collaborative discussion related to lived experiences from senior representatives from each stakeholder group. Thick descriptions based on practical examples and experiences were used to extend beyond generating a list of attributes important for *project manager efficacy* or prioritizing existing data to provide a ranking.

This study combined the benefit of group brainstorming with presenting, describing and defending opinions related to the attributes most important for project manage efficacy in three different organizational contexts. These combined benefits contribute to a better understanding the language related to *project success* and *project manager efficacy*. In addition to providing access to more participants, a benefit of recruiting in different industries was that the study identified experiential differences in different organizational contexts and increases generalizability beyond a single sector.

Additional objectives of this study were to,

1. Describe variances between these two stakeholder groups' expectations and the related attributes most important for *project manager efficacy,*
2. Determine if contextual factors impact how stakeholders rank skills in order of priority, and
3. Determine if the stakeholder perceptions about the required skills for *project manager efficacy* change when applying agile project management approaches.

Key findings are presented by revisiting how the data answers the primary research question and three sub-questions.

Research Question: Attributes Most Important for Project Manager Efficacy

The primary research question was what do Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as the most important attributes for *project manager efficacy* as it relates to *project success*?

Key Finding 1: There is a clear skill category preference for project managers in an IT-centric project environment for both stakeholder groups, adding to our understanding of the potential conflicts and agreements between hiring project managers, assigning resources to project management roles, and developing project managers. Interpersonal skills are perceived as most important, and absolutely critical, for *project manager efficacy* in an IT-centric project environment. Project management knowledge and application is the second most important skill set, and perceived as very important for *project manager efficacy* in an IT-centric project environment. IT knowledge and skills were ranked third in order of importance, and perceived as moderately important for *project manager efficacy* in an IT-centric project environment.

Key Finding 2: The skill category priorities related to factors that contribute to *project success* and attributes that contribute to *project manager efficacy* strengthened through collaborative discussion with peers, suggesting that research methods need to engage participants.

Key Finding 3: Four attributes categories emerged as most important for *project manager efficacy*. They are, in relative order of perceived importance, facilitation skills, communication skills, leadership skills, and individual personality traits including a positive attitude and trustworthiness.

Sub-Question 1: Variances between Stakeholder Groups' Expectations

The first sub-question was, are there variances between these two stakeholder groups' expectations and the related attributes most important for *project manager efficacy*?

Key Finding 4: While Senior IT Leaders considered IT knowledge and skills as "moderately important" contributors to *project success*, descriptions suggested a preference for general, or basic, IT knowledge rather than a specialized area of IT expertise. Basic IT knowledge consisted of familiarity with IT terminology, familiarity with IT infrastructure, and familiarity with software development methodologies. This finding may influence practitioners' decisions on resource allocation for project manager development.

Sub-Question 2: Contextual Factors Influence on Skill Ranking

The second sub-question was, do contextual factors, such as organizational or industry culture, influence how stakeholders rank skills in order of priority?

Key Finding 5: There were suggestions of industry influences on attributes influencing *project manager efficacy* during the initial group brainstorming. However, stakeholders did not include those attributes that varied between industries when ranking attributes in order of perceived importance, adding support for a group of key attributes that are expected of project managers for them to be effective across industries.

Key Finding 6: Similarly, while the participants' suggest *project manager efficacy* is situational; this did not influence their skill category rankings or attributes most important for *project manager efficacy*. This reinforces support for key attributes of effective project managers.

Sub-Question 3: Agile Project Management Influence on Required Skills

The third sub-question was, how do agile project management approaches create different demands on project managers, resulting in stakeholders perceiving differences in required skills sets for *project manager efficacy*?

Key Finding 7: Agile project management approaches do create a different demand on project managers; however, participants were unanimous in their assertion that the attributes most important for *project manager efficacy* do not change in an agile project management environment. There is agreement in the project management and software development communities, as evidenced by agile certifications such as Scrum Master and PMI – Agile Certified Practitioner, that there are different skills and abilities required to lead projects in agile environments; however, these differences were defined by the participants as primarily methodological. This is consistent with the findings that all four attribute categories identified as most important for project management efficacy were soft skills, or a combination of interpersonal skills and individual personality traits that participants defined as necessary in any project environment.

Chapter 5. Discussion and Implications

Previous chapters addressed the motivation for the study, what we know from the literature, methods used to develop and analyze data, and the findings from this study. My final chapter will close with a discussion of contributions to research, implications for specific stakeholder groups in practice, as well as directions for future research.

Several trends motivated the need for this research. As discussed in chapter one, there are trends in both the public and private sectors influencing professional development decisions among both organizational leadership and IT professionals seeking to improve their skills and knowledge. The first trend is the downturn in the economy. The combination of the difficulty in quantifying investments in professional development (Gale & Brown, 2003; Guskey, 2003; Hordle, 2002) and the shrinking global economy has put downward pressure on professional development budgets (Anderson 2009; Foster; 2009; Newgass, 2010). Simultaneously, the second trend is an increase in demand for practitioners with advanced certifications that demonstrate proficiency within a certain body of knowledge (Daniels, 2011; Gabberty, 2013). This growing demand for certified professionals has led to a reciprocal demand for certification preparation programs in higher education (Alam, Gale, Brown, & Khan, 2010; Daniels, 2011; Gale & Brown, 2003). This is further supported by the Project Management Institute's launch of their Project Management Curriculum and Resources designed to help university faculty members create project management courses. Their website, www.PMITeach.org, provides educators with guidelines for preparing their own project management curricula (PMI, February 2015).

Educators are seeking to develop project management skills through education and training programs, project management professional organizations are seeking to support the profession by providing standards and resources for professional development, and organizations

are seeking hire, or promote, candidates into project management positions to leverage their skills. Given these facts, are we developing the right set of capabilities, focusing on enhancing the skills most likely to improve performance, and employing project managers based on the right set of capabilities and skills?

Contributions to Research

As addressed in the benefits and limitations sections of the Methods Comparison Table (see Appendix A), the focus group approach used in this study contributes value through interactive group discussions that allow us to gain a deeper understanding of the attributes that contribute to *project manager efficacy* in IT-centric project environments. The focus group discussions explored the lived experiences of senior practitioners, providing richer, situated knowledge about the interdependencies between different types of project manager skills and knowledge, and why these skills were perceived to matter to project success. By using a comparative set of focus groups of Senior IT Leaders and Certified Project Management Professionals, the study provides insights to differences in stakeholder views, as all had first-hand knowledge of IT projects. This study was not intended to address every factor that influences the value placed on a project manager's knowledge, skills, and abilities. Nor does the study reported here explore specific knowledge and skills evidenced through a certification process. Instead, this study sought specifically to elicit and describe attributes that the two stakeholder groups perceive to contribute to a *project manager's efficacy* in contributing to project success in an IT-centric project environment. The contributions of the seven specific findings related to the research questions and sub-questions are addressed below.

Contribution of Key Finding 1: Skill Category Preference

In evaluating the three skill categories of "Project Management", "IT", or "Interpersonal Skills", stakeholder groups demonstrated clear preferences, regardless of their diverse cumulative experiences or gender. This finding is based on analysis of the Pre-Discussion Skill Category Ranking (see Appendix E), the participants' descriptions and examples supporting their perceptions about factors influencing *project success* and attributes most important for *project manager efficacy*, in comparison to the Post-Discussion Skill Category Ranking (see Appendix F). Both stakeholder groups held clear skill category preferences for project managers in IT-centric project environments. *Interpersonal skills* are perceived as most important – "absolutely critical" – for *project manager efficacy* in an IT-centric project environment. *Project management knowledge and applic*ation is the second most important skill set, and perceived as "very important" for *project manager efficacy* in an IT-centric project environment. Despite the focus on *IT-centric* project environments, *IT knowledge and skills* were ranked third or "moderately important" as a skills set category for *project manager efficacy*. My first key finding extends our understanding of the earliest seminal work dedicated to *project success* that identified the necessity of focusing on more than schedule, budget, and technical performance measures (Baker et al., 1988; DeWit, 1988; Pinto & Slevin, 1988a).

This first important finding also contributes to the body of research that provides lists of project manager competencies by suggesting relative priorities as perceived by the two participant stakeholder groups. For example, Gale and Brown (2003) provided a list of various skill categories that should be included in a project manager's repertoire; however, their study neither attempted to identify specific interpersonal skills, nor attempted to prioritize the skill categories.

The first key finding also contributes to our understanding of gaps identified in previous research related to project manager skill categories and the need for future study on relative importance of various skill categories. Napier, Kei, and Tan's (2009) study used semi-structured interviews with nineteen (19) IT project managers with the objective of finding skill requirements for IT project managers. Their research focused on what IT project managers identify as skills necessary for successful project management and sought to group these skills to identify archetypes of effective project managers (Napier, Kei, and Tan, 2009). The limitations related to their study were the convenience sample of IT project managers (limited to the authors' industry and professional network), the findings based on single stakeholder group's perceptions, and the omission of any stakeholder outside the project management profession to use as a basis of comparison.

My first key finding contradicts Munns & Bjeirmi (1996) list of project management success factors that focus primarily on the methodology and managing project constraints, such as schedule and task planning, budget, and quality requirements. My finding fills a gap by highlighting the importance of project manager attributes necessary to facilitate applying the project management methodology and leveraging project management tools and techniques to meet stakeholder expectations.

Finally, this finding adds to the body of research on meeting project-related stakeholder expectations and further contributes by extending Lally's (2004) root cause analysis of IT project failure. Specifically, my study provides insight into increasing the probability of IT *project success* by identifying *specific skill categories in order of perceived importance* that influence a project manager's ability to contribute to *project success*.

Contribution of Key Finding 2: Peer Discussions Strengthen Skill Category Preferences

The Post-Discussion Skill Category Raking (see Appendix F) was included in the research to determine if the explanations provided by participants during the focus group discussion influenced reflection on attributes or relative importance. This individual (unshared) ranking activity not only allowed participants to anonymously modify their rankings based on the discussion, but also provided an opportunity to crosscheck both the skill set rankings and the most important skills in each category with the discussion transcripts (see Tables H.5, I.5, J.5, K.5, L.5, and M.5. The finding was that the skill category preference related to interpersonal skills was strengthened, or drew closer to unanimity, through collaborative discussion with peers sharing experiences related to factors that contribute to *project success* and attributes that contribute to *project manager efficacy*. Specifically, there was more agreement that the interpersonal skill category was absolutely critical to *project success*. Consequently, there were slight changes in rankings related to relative priority of the remaining two skill categories; project management methodology knowledge and application and the IT knowledge and skills. This finding provides insights into methodological challenges in addressing success related issues in project management studies, highlighting the need for collaborative methodologies (such as focus groups and Delphi studies) in order to better understand the interrelationships between skill sets and other project manager attributes.

A clear contribution of this finding is in demonstrating that collaborating with peers would improve results in defining job descriptions, identifying criteria for hiring decisions, and determining the set of skills necessary to move into a project management position in an IT-centric project environment. This is not insignificant as many of the study participants noted that

involvement in the focus group discussions led to questioning previous decisions related to hiring and project management role assignments.

Contribution of Key Finding 3: Four Attribute Categories Most Important for Project Manager Efficacy

Four attribute categories emerged as most important for *project manager efficacy*. They are, in relative order of perceived importance, facilitation skills, communication skills, leadership skills, and individual personality traits including a positive attitude and trustworthiness. This was supported throughout all stages of the data collection (pre-discussion ranking, discussion, and post-discussion ranking) (see Appendices H, I, J, K, L and M).

Previous research also provides evidence that project management techniques contribute to *project success*; however, effective project management cannot prevent project failure (de Wit, 1988). This begs the questions, why and what is missing? This study contributes to our understanding of this phenomenon and finds that one of the missing factors between project management and *project success* hinges on the project manager's soft skills, or a combination of specific interpersonal skills and personality traits presented in Chapter 4.

There is agreement in the literature that project manager competencies are an essential ingredient for *project success*, and a project's success or failure is *influenced by* who manages that project (Patanakul, 2011). Patanakul's (2011) findings suggest a match between the project manager and the project technology, project manager availability in the form of time commitment and capacity, a professional's career goals, and a familiarity with similar projects are key factors for project manager assignments that influence *project success*. My findings support that these factors overlook the importance of the project manager's interpersonal skills as contributors to their ability to apply their understanding of the technology and familiarity with similar projects. Pinto and Slevin (1988a) more specifically state that a project's success or

failure is dependent upon who is selected to manage the project. While stakeholder management is not explicitly mentioned, their findings imply the importance of aligning and managing stakeholder perceptions related to the mission, relative importance, and a sense of urgency related to satisfying project schedules. My study contributes to this line of research through the identification of four specific, prioritized attribute categories that enable project managers to lead, influence, and manage their stakeholders.

At least one previous study has tried to link the dominance of certain Myers-Brigs personality types with suitability for project manager roles (Cohen, Ornoy & Keren, 2013). While these broad categories are informative, my study contributes by identifying specific personality traits perceived as more important for *project manager efficacy*. Both stakeholder groups specifically identified having a positive attitude and trustworthiness as important; two attributes that would not normally be tapped by traditional self-reported personality inventories. Further examples of other attributes not captured by standard personality inventories come from the Senior IT Leader groups that highlighted "being unbiased" as an important personality trait, and Certified Project Management Professionals who included "emotional intelligence" as an important personality trait (see Table 4.27).

Contribution of Key Finding 4: Stakeholder Groups Place Moderate Importance on Basic IT Skills

Given that the context of the study was IT-centric projects, it is informative that the "IT skills category" was viewed as only *moderately important* by both stakeholder groups. This was supported in both the Pre-Discussion Ranking (see Appendix E), the participants' descriptions and examples supporting their perceptions about factors influencing *project success* and attributes most important for *project manager efficacy*, and the Post-Discussion Skill Category Ranking (see Appendix F). This finding indicates a preference for project managers to possess

only basic IT knowledge. While IT knowledge and skills are considered moderately important contributors to *project success* for the Senior IT Leaders, rankings also suggested a preference for more general, or basic, IT knowledge consisting of familiarity with IT terminology, familiarity with IT infrastructure, and familiarity with software development methodologies.

This finding contradicts hiring and project manager assignment decisions highlighted by study participants from both the Senior IT Leader and the Certified Project Management Professional stakeholder groups. This suggests an opportunity to enhance the processes related to recruiting and hiring project managers, and the processes related to identifying and assigning internal resources to project management roles.

Contribution of Key Finding 5: Industry Influences Do Not Change Stakeholder Preferences

There were hints of industry influences on attributes influencing *project manager efficacy* during the initial group brainstorming. For example, one industry clearly placed more value on project management certification than the other two. However, stakeholders did not include those attributes that varied between industries when ranking attributes *in order of perceived importance*, adding support for a group of *key attributes* that are expected of project managers for them to be effective *across industries*. This finding potentially contradicts prior research arguing for context or industry specific PM skills. An important contribution from this finding is an opportunity to place emphasis on a key set of attributes most important for *project manager efficacy* that are common across industries and in many cases across situational influences.

Contribution of Key Finding 6: Efficacy, While Situational, Does Not Influence Stakeholder Preferences

Experience, supported by scholarly research, indicates that perceptions about project-related success are a moving target and a complicating factor related to success is that different

stakeholder groups define success differently for the same projects (Baker et al., 1988; Baccarini, 1999; DeWit, 1988; Judgev & Muller, 2005; Lipovetsky, Tishler, Dvir & Shenhar, 2002; Muller & Turner, 2007; Shenhar, Dvir, Levy & Maltz, 2001; Wateridge, 1995). Although stakeholder perceptions vary from project to project, my study suggests the factors that contribute to *project success* and attributes viewed as most important for *project manager efficacy* remain consistent from project to project. While the participants' descriptions and examples identified that factors influencing *project success* and attributes important for *project manager efficacy* are situational (rather than industry specific), this observation did not influence their skill category rankings of attributes most important for *project manager efficacy*. This finding has significant implications for hiring practices, professional development, and curriculum development as addressed later in this chapter. Another key contribution is the evidence of *consistent attributes* of effective project managers across diverse projects in diverse industries.

Contribution of Key Finding 7: Agile Project Management Approaches Do Not Change Stakeholder Preferences

Agile project management approaches do create a different demand on project managers; however, both stakeholder groups agreed that the difference is limited to understanding the methodology. Participants were unanimous in their assertion that the attributes most important for *project manager efficacy* do not change in an agile project management environment. This is consistent with the findings that all four attribute categories identified as most important for *project manager efficacy* were soft skills, or a combination of interpersonal skills and individual personality traits. Understanding of, and ability to apply, the methodology was deemed as very important; however, secondary to the most important interpersonal skill category and the four attribute categories identified as most important for *project manager efficacy*.

This aligns with the assertion in Chapter 1 that project management certification is about demonstrating mastery of the hard skills related to a specific methodology. Certifications focus on standards related to a body of knowledge and methodology and can provide evidence of baseline knowledge; however, holding the certification does not necessarily mean that the project management practitioner is more efficient. The agile environment may require some new methods, but does not change what is perceived to be critical for *project success* or *project manager efficacy*. This is an important finding as it contradicts early anecdotal evidence.

Each of these finding contributes to the body of research on project manager success, project success and project management success, as well as providing insights for practice and new thoughts for future research.

Implications for Practice

As highlighted in Chapter 1, one of the most sought after IT certifications in 2013 was the Project Management Institute's (PMI) Project Management Professional or PMP®, indicating that senior leadership realizes the value in having experienced, certified project managers leading IT projects (The top five in-demand IT Certifications, 2012; Muller, 2013). The scholarly research is clear that having project management skills, or demonstrated knowledge of the project management body of knowledge and associated tools and techniques, alone *does not guarantee project success*. This thesis research identified perceptions about attributes most important for *project manager efficacy* in IT-centric project environments based on two key stakeholder groups'; Senior IT Leaders and Certified Project Management Professionals. My key findings have implications for each of the following stakeholder groups.

1. Senior IT Leaders / IT Executives
2. Hiring managers & resource managers

3. Certified Project Management Professionals (PMPs) & practitioners
4. Academia (project management curriculum)

Implications for Senior IT Leaders

Senior IT leaders are often members of the project leadership stakeholder group as either the executive sponsor or IT sponsor. In this capacity, Senior IT Leaders can have fiduciary responsibility for project resources and accountably for project outcomes. Accordingly, it is important for Senior IT Leaders to understand the dynamics and factors influencing *project success* and the attributes most important for *project manager efficacy*. Understanding the skill category preferences for project managers in an IT-centric project environment informs decision making related to hiring and project manager assignments.

My study findings allow us to build a baseline profile for Senior IT Leaders to consider when seeking project managers in an IT-centric project environment.

1. Interpersonal Skills: Candidates will have demonstrated facilitation skills that include creating and sustaining a collaborative environment, leading groups through negotiation processes, and facilitating conflict resolution. Candidates will have communication skills that include the ability to analyze an audience and adapt their style based on the audience's needs and the message, the desire to actively listen with the intent to understand their audience, and the ability to ensure messaging is clear, concise, and creates a shared understanding of the intended message. Candidates will have demonstrated leadership abilities that include team building, change management, and collaborative problem solving. Finally, candidates will have two specific individual personality traits that include (1) displaying and maintaining a positive attitude and (2) the ability to build and maintain trust with stakeholders.

2. Project Management Methodology Knowledge and Application: Candidates will also have knowledge of the project management standards, processes, and tools and techniques. This knowledge may be demonstrated through certification; however, evidence of pragmatic experience is suggested to be more important than certification.
3. IT Knowledge and Skills: A viable candidate will have a basic understanding of the IT terminology, development methodologies, and infrastructure specific to the organization. The specific IT knowledge will be unique based on the organizational context; however, this study informs the level of familiarity necessary for project managers to lead projects in that environment.

This research provides evidence that, given a candidate has demonstrated proficiency in project management and a basic understanding of the IT environment, the primary factor influencing hiring or assignment is the candidate's interpersonal skills. Specifically, the most important interpersonal skills include facilitation skills, communication skills, leadership skills, and a demonstrated positive attitude and ability to build trust.

An additional recommendation is that Senior IT Leaders *collaborate* when identifying the skill sets and attributes they believe most important for *project manager efficacy* within their organizational context. While this research indicates the skill category ranking and four attribute categories most important for *project manager efficacy* are consistent, the collaborative discussion can inform contextual factors that may influence decision-making and help teams reach consensus on a more granular level of requisite skills or prior experiences. The risks of divergent opinions on these skills are highlighted in prior research (see literature review). In particular, the earlier findings on variances in perceptions about *project success*, the lack of a

clear definition of *project success*, and the different factors that influence project efforts. The research approach used in this thesis study is consistent with practice based collaboration methods and can contribute to Senior IT Leaders influence on project-related outcomes through:

1. Articulating their project related expectations to help reduce differing opinions about what constitutes success.
2. Require quantifiable project objectives to facilitate a clear definition of success for each individual project.
3. Understand their executive role in project sponsorship to include ensuring the project manager has the necessary skills to lead projects within the specific organizational context.
4. Foster an environment of stakeholder engagement throughout a project to address evolving expectations and perceptions related to *project success*.

Implications for Hiring & Resource Managers

This study has additional implications specific to those involved in hiring and resource allocations. The first is related to professional development investment decisions. This thesis research was partially motivated by the question of whether continued investment in a capability that a project manager has already demonstrated advanced knowledge of through certification or application is the best allocation of training dollars. Training in the project management body of knowledge primarily contributes to developing skills related to success in applying project management methods, with a potential collateral benefit of developing skills associated with identifying factors that contribute to *project success*. While the project management body of knowledge emphasizes the importance of developing skills outside of technical project management, there is little guidance on how to develop those skills that the literature and this

thesis research show are viewed as critical for *project manager efficacy*. Based on the findings of the research presented in this thesis document, resource managers should focus professional development investments on skills that will contribute most to *project manager efficacy*. My findings further contribute by providing insights to specific skill categories and attributes that may require development, including seeking development opportunities outside of traditional project management skill-based training.

I offer the same recommendation given to Senior IT Leaders to the practitioner group of hiring managers and resource managers – that is, to collaborate when identifying the skill sets and attributes most important for *project manager efficacy* within their organizational context. While this research indicates the skill category ranking and four attribute categories most important for *project manager efficacy* are consistent, the collaborative discussion can inform contextual factors that may influence decision-making and help teams reach consensus on the requisite skills.

The research presented here also raises new questions for hiring and resource managers. If we accept that certifications, or a demonstrated depth of knowledge in project management tools and techniques, do not ensure a project manager's efficacy, how then does a hiring manager ensure candidates are properly skilled for their organization? The findings presented here suggest that a first step is developing clear role descriptions tailored to the organization's project environment and seeking project managers that fit the organization and potential project team members. This requires a focus on understanding the candidate's personality and interpersonal skills. This study provides a list of prioritized attributes that hiring managers can use to identify the best candidates and that resource managers can use for decisions related to assigning internal resources to project management roles. Hiring managers and resource managers have principle

responsibility for preparing job descriptions and identifying the skills and abilities necessary for their project managers. While specific IT knowledge is influenced by the organization and type of projects, this finding informs the level of IT knowledge preferred for project management roles based on the participants' experience. As stated above, focusing on hiring a project manager with a depth of experience in IT, or assigning an internal resource to a project management role based on their detailed understanding of the project's technical requirements, can have suboptimal results. Job descriptions, hiring decisions, and project manager assignments should be based on the attributes that most influence *project manager efficacy*. Basing decisions on industry specific experience may not produce the intended results.

Implications for Certified Project Management Professionals (PMP®) & Practitioners

Scholarly research provides clear evidence that there is much more to project manager success than mastering the project management body of knowledge and continued study in that same body of knowledge. While there are demonstrated benefits related to earning a project management certification (Muller, 2013), my empirical research supports other evidence that the structured approach to learning the project management body of knowledge is only the foundation for a project manager's professional journey. The key implication for project management practitioners is new clarity on which skills will contribute most to their overall efficacy. This study proposes practitioners may benefit from seeking to develop interpersonal skills and personality traits more so than seeking to enhance their project management acumen.

It is important for certified project managers to note that although project management methodology knowledge and application was perceived as very important for *project manager efficacy* in an IT-centric project environment, both stakeholder groups perceived a project manager's interpersonal skills as more important. Continued investment in professional

development related to the project management body of knowledge will not affect the most important skill category. My recommendation to Certified Project Management Professionals, based on the findings here, is to identify professional development opportunities outside of the traditional body of knowledge and focus on developing skill gaps in the other two skill categories, with priority on interpersonal skills.

As a fellow practitioner, I submit the following question to my colleagues seeking to invest in their professional development: What are your investment goals? I purposefully avoided asking about learning goals, because I believe the question needs to be addressed from a career planning level first. If your investment goal is to increase your marketability in the project management profession, there is clear evidence in the literature that earning your project management certification can contribute to that goal. If your investment goal is to enhance your ability to lead projects and produce the desired outcome through collaboration with a diverse project team, this study informs the types of skills you should seek to acquire and demonstrate.

Implications for Academic and PM Curriculum

First addressed in Chapter 1 in the section on Skill Sets and Skill Acquisition, earning the PMP® certification may provide evidence of baseline knowledge; however, holding the certification does not necessarily mean that the project management practitioner is more efficient. Surprisingly, even the certified practitioner stakeholder group did not consistently identify certification as a most important contributor to *project manager efficacy*.

Earning the PMP® certification only demonstrates mastery of the hard skills, or technical competencies related to project management, specifically those skills and knowledge outlined in *The Guide to the Project Management Body of Knowledge* (2013) and that can be measured through testing. Reviewing Asplund's (2006) adaptation of six levels of learning from Bloom's

Taxonomy of the Cognitive Domain (see Table 1.2), the first three levels are knowledge, comprehension, and application. These levels are aligned with the project management hard skills demonstrated through certification. The next three levels are analysis, synthesis, and evaluation. In context, these require mastery in pragmatic application of the project management body of knowledge and require that project managers possess interpersonal skills, or soft skills, as well. There appears to be disconnect between trends in demands for certified practitioners (The top five in-demand IT Certifications, 2012; Muller, 2013) and the factors and attributes participants identified in this study. This creates a tension for those responsible for training and development, both in the academic and practitioner spaces on how to address this gap.

The findings here suggest that learning should be designed to address the skill category priorities and attributes most important for *project manager efficacy.*

Acceptance of the evidence provided in this thesis study (and consistent with other trends in research), leads to the conclusion that project management development and training is missing focus on the set of skills that contribute the most to *project manager efficacy*. Project management curriculum typically includes courses on project finance, risk management, cost estimating and management, schedule management, and project execution and control, blended with other management, leadership, and organizational theory courses. My recommendation is that project management training and education programs include emphasize on developing the skill category most important for *project manager efficacy*.

Curriculum that develops the skills necessary for students to apply project management tools and techniques in practice must also include approaches for developing interpersonal skills. These interpersonal skills should include consideration for managing a diverse set of stakeholders, managing conflict, and leading an organization through change. The dilemma is

how you integrate learning related to the interpersonal skills identified as most important for *project manager efficacy* with the technical project management methodology skills. A suggested approach is to incorporate experiential learning that allows students to learn through doing, reflect on the outcomes, and immediately integrate and apply that learning to the next experience. This could include learning in a team-based environment to supplement to direct instruction (Beard, 2010). This team-based approach to hands-on learning, or learning groups that would simulate a collaborative project team setting, would also create an environment where team members could transfer their tacit knowledge within the group. An added benefit to the team-based learning approach is creating a setting were learners are applying the interpersonal skills necessary to interact with a project team. As noted in the findings, even experienced IT Leaders and PMP's found it valuable to reflect on their own and others' successes in a collaborative environment to help more clearly define what skills and attributes were evidenced in relation to project successes.

Directions for Future Research

This study and associated key findings have demonstrated a clear skill category preference between two key stakeholder groups in three industries representing a public, for-profit organization, academia, and a government agency. The findings have contributed to what we know about *project manager efficacy* in the context of IT-centric project environments and increased our understanding of attributes most important for *project manager efficacy* common to these stakeholder groups and organizations. Replication of this study with a different sample population from different stakeholder groups, e.g. project team members and product or service consumers, can further increase our understanding of the attributes most important for *project manager efficacy*.

Other than through the shared experiences and thick descriptions provided by the participants, this study did not specifically seek to link the identified skill categories and attributes most important for *project manager efficacy* to *project success* indicators. I recommend continued research on how the findings from this study correlate to *project success* as defined by various stakeholder groups. Additionally, this study did not intend to measure the relationships and interdependencies between the three skill categories. The findings of this thesis research supports value in ongoing research that explores the relationships between interpersonal skills, project management methodology knowledge and application, and IT knowledge and skills to further our understanding of *project success* and *project manager efficacy* in IT-centric project environments.

Opportunities also exist to leverage and further validate the findings presented here related to both the skill category prioritization and the four attribute categories most important for *project manager efficacy* through a survey that would allow access to a large population from both stakeholder groups. This would permit large participant groups, and allow for random sampling that would enable great finding generalization (Babbie, 1990; Creswell; 2008). A caution that builds on my findings, however, is that future survey research should include open-ended questions that gather richer data to help clarify responses and contextualize the data collected.

Case study research that directly observes how practitioners apply the skill categories and associated impact on project outcomes could also extend this study's contributions to our understanding of the attributes most important for *project manager efficacy*. While a case study was not suited to this study seeking a deeper understanding of multiple stakeholder groups across several industries, a case study would allow for a detailed analysis of attributes that contribute to

a small sample of project managers' efficacy. A case study could add value by allowing direct observation of the project managers in their daily interactions with team members. The observation, coupled with interviewing project stakeholders to gain near real-time insight into their experiences and perceptions, would provide additional insight into factors that influence project managers' efficacy in their particular organizational setting.

Concluding Remarks

One source of confusion around the attributes that contribute to *project manager efficacy* already identified in the literature is the lack of clear agreement on definitions of success as viewed by different stakeholders in the context of *project success*, *project management success*, and *project manager success*. These are not subtle differences when making decisions related to hiring, professional development efforts and curriculum development. This research shows that they are indeed distinct and yet inter-related areas highly influenced by *project manager efficacy*. The purpose of this research was to identify what Senior IT Leaders and Certified Project Management Professionals (PMPs) identify as *the most important attributes* for *project manager efficacy* as it relates to *project success*.

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Appendix A. Methods Comparison Table

Method	Benefits	Limitations	Conclusion in Relation to Study	References
Case Study	-Allow detailed observation & analysis of attributes that contribute to specific PM's efficacy by identifying case study project, interviewing project stakeholders, & observing PM during their daily interactions throughout project -Would be conducted in participants' real-world context (e.g. through studying specific PM with defined stakeholder group) -Could be applied to specific PM's or to particular organizational setting	-Challenges generalizing outside of specific context & case study environment -Would require immersion in project environment to observe PM's knowledge, skills, & behaviors & how each influences their efficacy -Objectivity and bias challenges; As full-time practitioner, case study would require project from my work environment since observation must take place in real-world context. It is important to note that PMs report directly to me, increasing potential for researcher bias -Time intensive	**-Not practical** for study designed to identify attributes most important for PM efficacy across multiple groups -While results might be interesting, findings would be specific to an individual or small group -Findings would be limited to specific case study participants & heavily influenced by specific stakeholder group associated with case study project	Yin, R. K. (2014). Case study research: Design & methods (Fifth ed.). Thousand Oaks, CA: Sage Publications. Creswell, J. W. (2008). Research design: Qualitative, quantitative, & mixed methods approaches (Third ed.). Los Angeles, CA: Sage Publications. Leedy, P. D., & Ormrod, J. E. (2013). Practical research: Planning & design (Tenth ed.). New York: Pearson Education, Inc.

Method	Benefits	Limitations	Conclusion in Relation to Study	References
Survey	-As member of PMI, I have access to large population of certified PMPs -Access to large population of Senior IT Leaders through Association of IT Professionals -Potentially large participant groups & random sample. Contact multiple participants simultaneously -Online survey tools (such as Qualtrics) relatively inexpensive, easy to use, & offer basic data analysis functions -Survey would demand less of respondents' time -Uniformity in collected data -Participant anonymity -Sophisticated Analytics -Statistical significance increases generalizability of results -Less bias due to researcher presence (acting practitioner)	-Potential delays due to bureaucracy of professional associations (PMI & AITP) can be large & bureaucratic -PMPs & Senior IT Leaders over sampled, resulting in survey fatigue; risk of low response rates -Costs high - Fees for each survey starting at approximately $500.00 per transmitted survey -Factors influencing PM efficacy must be well-understood to facilitate fair & unbiased ranking. E.G. responses can be biased by questions, & there are natural barriers to addressing complex, conceptual or subjective issues, words, etc. (e.g. soft skills) -May not reach correct person -Demographic qualifiers require honest responses but anonymous surveys do not allow me to validate respondents' qualifications -Contextual factors difficult to elicit	**-Not suitable or practical** to capture context; gaps require more than another list -Ranking attributes that contribute to PM efficacy through survey requires researcher to provide list -Participants may rank list provided even if they identify that a critical attribute is missing, or choose to skip question because they consider critical attribute more important that those listed -Ambiguous definitions around soft skills & interpersonal skills will make identifying & ranking these skills challenging -Variances in Likert scale interpretation & application can skew results. E.G., does an 8 on scale of 1 – 10 mean same thing to different respondents? -Contextual factors influence perceptions of success and are hard to develop through survey research design	Babbie, E. (1990). Survey research methods (Second ed.). Belmont, CA: Wadsworth Cengage Learning. Booth, W. C., Colomb, G. G., & Williams, J. M. (2009). Craft of research (Third ed.). Chicago, IL: University of Chicago Press. Creswell, J. W. (2008). Research design: Qualitative, quantitative, & mixed methods approaches (Third ed.). Los Angeles, CA: Sage Publications. Leedy, P. D., & Ormrod, J. E. (2013). Practical research: Planning & design (Tenth ed.). New York: Pearson Education, Inc.

Method	Benefits	Limitations	Conclusion in Relation to Study	References
Interviews	-Gain understanding of individual and aggregated perspectives of PMPs & Senior IT Leaders -Allows for in-depth discussions & direct observation of participant reactions to interview questions, leveraging non-verbal messaging -Allows for detailed descriptions of participant experiences with examples & analogy -Can ask follow-up questions to seek clarification, elaboration, or test understanding of participant's response -Two way dialogue; Conversational interview design overcomes limitations of surveys as participants can suggest, describe, & rank factors that contribute to project success and attributes most important for PM efficacy in real-time -Potential identification of new constructs/factors not identified in prior literature	-Sampling challenges: How many interviews with each of two stakeholders groups is sufficient to reach data saturation? -Time intensive at all stages: Multiple interviews will be time intensive to conduct & transcribe -Data can be limited by participants' ability to articulate their experiences. E.G. , single interviewee having difficultly putting their experiences & thoughts into words -Potential researcher bias: One-on-one interviews present more opportunities for researcher bias as discourse is guided, interpreted, & restated by researcher	**-Not practical** due to numbers of interviews required to ensure even modest generalizability - Interviews would inform my research question; however, number of interviews required to make results more significant & generalizable is time-prohibitive -Additionally, some of limitations presented by one-on-one qualitative interviews (e.g. time, bias of researcher presence) can be addressed through Focus Group research design	Kvale, S., & Brinkmann, S. (2009). Interviews: Learning craft of qualitative research interviewing (Second ed.). Thousand Oaks, CA: Sage Publications. Tracy, S. J. (2013). Qualitative research methods: Collecting evidence, crafting analysis, communicating impact. Malden, MA: Wiley. Creswell, J. W. (2008). Research design: Qualitative, quantitative, & mixed methods approaches (Third ed.). Los Angeles, CA: Sage Publications. Leedy, P. D., & Ormrod, J. E. (2013). Practical research: Planning & design (Tenth ed.). New York: Pearson Education, Inc. Baker, S.E. & Edwards, R. (2012). How many qualitative interviews is enough? Expert voices & early career reflections on sampling & cases in qualitative research. National Centre for Research Methods discussion paper http://eprints.ncrm.ac.uk/2273/.

Method	Benefits	Limitations	Conclusion in Relation to Study	References
Focus Groups	All benefits of qualitative interviews, plus: -Interactive discussion: group interaction allows participants to collaborate when addressing complex, or subjective, concepts such as soft skills that contribute to PM's efficacy -Consensus reaching: groups can discuss concepts, such as list of factors contributing to PM efficacy & reach consensus or general agreement -Dialogic interpretation: reactions, brainstorming, & dialogue will generate information -6 – 8 participants per group allow access to more participants in less time than individual interviews -Reduces researcher influence on questions & responses -Sampling across different industries allows some contextual comparison across sectors & stakeholders	-Relatively small sample size in comparison to survey design (however, benefits outweigh limitations of qualitative interview) -Non-representative sample (however, varying industry & organization size can enhance findings) -Focus groups can result in individual participants having opinions suppressed by more vocal participants -Discussions may take different direction with different groups -Focus groups can be inappropriate for some sensitive topics; (however, this is not a sensitive topic. Voluntary participation; senior people)	**Best design for question, gaps and existing literature.** -Leveraging Focus Group design allows me to realize benefits from qualitative interviews & overcome many of limitations related to one-on-one interviews, for example: 1) 6 – 8 focus group sessions with 6 – 8 participants provides access to up to 64 participants with fraction of time related to facilitating & transcribing discussions 2) groups can collaborate to help articulate difficult to describe attributes relating to PM efficacy (e.g. soft skills) 3) -Divergence in interpretations can be resolved or highlighted in real-time, face-to-face interactions -Focus Group will allow researcher to seek clarification when participants use subjective terms -Allow diverse groups to seek consensus on meaning -Multiple focus groups allow for contextual data	Krueger, R. A., & Casey, M. A. (2009). Focus groups: practical guide for applied research (Fourth ed.). Los Angeles, CA: Sage Publications. Starks, H. & Trinidad, S.B. (2007). Choose your method: comparison of phenomenology, discourse analysis & grounded theory. Qualitative Health Research. 17:10. pp. 1372 - 1380. Booth, W. C., Colomb, G. G., & Williams, J. M. (2009). Craft of research (Third ed.). Chicago, IL: University of Chicago Press. Tracy, S. J. (2013). Qualitative research methods: Collecting evidence, crafting analysis, communicating impact. Malden, MA: Wiley. Kvale, S., & Brinkmann, S. (2009). Interviews: Learning craft of qualitative research interviewing (Second ed.). Thousand Oaks, CA: Sage.

Appendix B. Focus Group Recruiting Script

Background

Hi, my name is Chuck Millhollan, and I am a doctoral student with Syracuse University studying attributes most important for project manager efficacy as it relates to project success. You have been identified as senior IT leader or certified Project Management Professional that meets the participant criteria. This solicitation is for research purposes, and you can help me gain valuable information for this study.

The purpose of this focus group study is to discover the attributes that IT leaders and certified project management practitioners perceive as the most important for project manager efficacy within IT-centric project environments.

To gather this information, I will schedule a focus group with small groups of people with similar backgrounds for about 60 minutes. Your insights and experiences will help fill gaps in our current understanding about skills and knowledge needed by project managers as they deal with different situations. Ultimately, this information will inform project managers, their managers, leaders in project environments, educators, and human resource professionals on topics such as investment in professional development, curriculum development, recruitment, and hiring practices.

Participants

I am recruiting people who meet either of the following two sets of criteria:

For IT leaders, I seek people who have the following:

1. Currently serving in an IT Leadership role with 5 or more direct reports.
2. Has a minimum of 10 years of IT experience.
3. Has a minimum of 5 years of experience as a project team member.
4. Has a minimum of 5 years of experience in a project leadership role (i.e. resource management, project sponsor, project manager) with accountability for project outcomes.

The project managers must meet the following criteria:

1. Hold the Project Management Professional (PMP®) certification, which indicates a minimum level of project management experience and demonstrated knowledge of project management theory, tools, and techniques.
2. Has a minimum of 10 years of experience in a project leadership role in an IT-centric project environment.

Procedure

The focus groups will be conducted on < date > at < location >. Upon arrival, please call my cell number (502.751.5751), and I will pick you up from the lobby and bring you to the conference room.

Session 1 – Senior IT Leaders: < time >
Session 2 – Certified Project Management Professionals: < time >

If you are available and interested in contributing to this study, please provide the following information via email to chuck.millhollan@gmail.com.

1. Preferred name (will not be disclosed outside of the focus group):
2. Confirmation of availability:
3. Preferred email address:
4. Preferred phone number:

Please respond by < date >. I will send you a confirmation email with an informed consent form. Please review the form in advance. We will discuss, sign and collect the forms at the beginning of the session. Additionally, I will call you with any last minute details and to answer any questions you might have, on < date >.

Please feel free to contact me via email or phone if you have any questions. Thank you for your interest, and I look forward to gaining your perspective.

Chuck Millhollan
Email: chuck.millhollan@gmail.com
Phone: 502.751.5751

Appendix C. Focus Group Consent Form

for Study Titled "A Phenomenological Study of Factors that Influence Project Manager Efficacy"

Note: Consent form submitted to the IRB on Syracuse Letterhead.

My name is Chuck Millhollan. I am conducting a study of factors that influence the efficacy of project managers under different circumstances and I would like you to share your thoughts and experiences on this topic. This research is conducted as part of my doctoral studies at the School of Information Studies, Syracuse University and is supervised by Dr. Michelle L. Kaarst-Brown.

Research Description

You have been identified as senior IT leader or certified Project Management Professional that meets the participant criteria. This study aims to understand the factors that IT leaders and certified project management practitioners perceive as the most important for project manager efficacy within IT-centric project environments.

Voluntary Participation

Your participation in this group discussion is voluntary. You do not have to participate in this focus group, and your consent to participate can be withdrawn at any time after the discussion begins. You may choose not to answer a focus group question for any reason.

Risks

The only minor risk associated with study participation concerns the privacy of information shared during the focus group. While unlikely, there is a chance that another member of the focus group could reveal something learned in the open discussion. The ideas and experiences we seek are likely things that you would talk about with your colleagues and other professionals in related fields. We remind you that in this setting you will be talking to individuals outside of your own organization. All focus group members are asked to respect the privacy of other group members. You may tell others that you were in a focus group and the general topic of the discussion, but actual names and contributions of other participants should not be repeated. We encourage you to refrain from sharing anything that would qualify as confidential to you or your organization.

Benefits

While you will not receive a direct benefit or compensation from participating in this research, I hope that this study will contribute to project manager professional development, and ultimately to project success through focusing on key factors influencing project manager efficacy. There are gaps in existing research that your insights will help address. The focus group will also provide you with an opportunity to reflect on your own experiences and thoughts about project manager efficacy and the necessary skills that your organization needs.

Privacy

I plan to publish the results of this study, but will not include any information that would identify you or your organizations by name; your privacy will be protected. Data will be aggregated and any specific quotes will be assigned a pseudonym. Your name will not be used in any report that is published. The discussion will be kept strictly confidential. All participants in the group are asked to keep what we talk about private, but this cannot be assured. Please keep this in mind during the discussions that we are not asking that you share anything you view as confidential to you or your organization.

A voice recorder will be used during the sessions only if all participants agree. I will be the only person with access to the recording and will only use the recording to assist with documenting the focus group discussions. A professional transcription service may be used to transcribe the recordings. If such a service is used, I will have a signed agreement with the service to protect confidentiality and privacy. Codes will be provided to the transcription service, but no names of actual participants will be shared. No electronic copies will be made of the voice recordings. After the discussion is documented, the recordings will be erased from the recorder. Transcripts of the discussion will be stored on a password protected computer, and no actual names will be indicated in the transcripts.

Consent

By signing this document, you are confirming that you are 18 (eighteen) years or order and agreeing to participate in the study. You will be given a copy of this document for your records and one copy will be kept with the study records. Be sure that questions you have about the study have been answered and that you understand what you are being asked to do. You may contact the researcher if you think of a question later. If you have any concerns about the conduct of the research, you may contact my doctoral advisor (Dr. Kaarst-Brown mlbrow03@syr.edu or 315-443-1892), or the Office of Integrity and Protections at Syracuse University (orip@syr.edu or 315-443-3013).

_____ I agree to be audio recorded.

_____ I do not agree to be audio recorded.

_____	_____
Participant Printed Name	Investigator Printed Name
_____	_____
Participant Signature / Date	Investigator Signature / Date

Researcher Information

Name: Chuck Millhollan, Email: chuck.millhollan@gmail.com, Phone: 502.751.5751

Appendix D. Focus Group Discussion Guide

(Note: Both groups will receive the same set of questions)

1. Opening

Appreciation: Thank you for agreeing to participate. I am interested to hear your valuable opinion on the attributes most important for project manager efficacy.

Confidentiality: The information you provide is completely confidential, and I will not associate anyone's name with anything said in the focus group but will use codes or pseudonyms. I also ask participants to respect each other's confidentiality and remind you not to share anything that you are not comfortable sharing with your peers. Your participation is voluntary and valued.

Recording: I would like to tape the focus group so that I can make sure to capture the thoughts, opinions, and ideas offered by the group. No names will be attached to comments and the recordings will be destroyed as soon as they are transcribed. The consent form asks that you indicate this in writing. If during our discussions anyone would like the recorder turned off, please let me know.

Voluntary: Please remember that your participation is voluntary, you may withdraw your consent to participate at any time during the focus group, and you may choose not to answer any question.

Questions & Consent: Are there any questions about the informed consent forms? Please sign and return your signed informed consent forms if you choose to participate in this research.

2. Introduction

I am excited that you have decided to participate in this focus group research. The purpose of this focus group project is to discover the knowledge or skills factors that IT leaders and certified project management practitioners perceive to be the most important for project manager efficacy within IT-centric project environments.

3. Focus Group Process

Before we begin, I would like to cover the focus group process, logistics, and our ground rules for participation.

Have any of you participated in focus groups before? (Probe if they facilitated, were a participant or a client observing behind the scenes. Acknowledge with a positive reinforcement such as "good", "excellent". If no prior experience in room, reassure that "This is okay. This is a conversation and we have all had those.")

> Background if asked: A focus group is a facilitated, group discussion designed to capture detailed information about your perceptions. In this case, I am interested in your thoughts specifically as related to attributes most important for project manager efficacy in this

research. One of the primary advantages of a focus group is that we can gain multiple perspectives on a particular issue, with ideas generated through the interactive, group process as you share your ideas, explain points of view, and hear how others share similar experiences.

It is important to note that our goal is not to reach a consensus. I am learning from your different experiences and thoughts and interested in why you have those opinions.

The session will last approximately one hour. Please feel free to move about the conference room and use the dry erase board if that would help with sharing your ideas.

As for ground rules, I would like to ensure that everyone has the opportunity to contribute to our discussions. Please be respectful of the other participants and their points of view. Stay engaged with the group discussion and avoid sidebar conversations. Potentially valuable contributions can be missed. Finally, remember to keep our discussions and the focus group participants confidential.

4. **Audio Start:** At this time (given everyone has consented), I have received consent to record our focus group and will turn on the voice recorder.

Any questions before we get started?

5. **Voice Verification:** I would like to begin with a quick ice breaker question that will allow us to introduce ourselves and help with voice recognition on the recorder. Your name and response to the icebreaker question will not be included in the transcripts. Please state your name, and respond to the following question: If time and money was not a barrier, how would you describe your ideal vacation?

6. **Discussion / Questions**: Moving from generic, open-ended questions to increased levels of specificity

   Individual activity: How would you rank the following skill categories in order of importance for project manager efficacy: Interpersonal skills, project management methodology knowledge and application, and information technology knowledge? Include what you consider your top three skills in each category in order of importance.

   Researcher note: Each participant will receive a handout listing the three categories (pre-discussion on the front, post-discussion on the back). I will ask them to rank the categories as individuals. As a group, we will discuss differences in the rankings to understand participant opinions and associated reasoning. The intent is to start by focusing their thinking on different project manager skills.

   Question 1: Think back to a recent project that you were involved in that is now complete. What factors or characteristics or ingredients contributed to the success?

   Researcher note: We will use a whiteboard to document the brainstorming and categorize the list as ideas are generated.

Question 2: What about projects that were less successful? What factors contributed to a lack of success?

Researcher note: We will use a whiteboard to document the brainstorming and categorize the list as ideas are generated.

Question 3: Let's expand on our list captured on the backboard. In your experience, what skills or knowledge are most important for project manager efficacy?

Researcher note: We will use a whiteboard to document the brainstorming and categorize the list as ideas are generated.

Question 4: There can be ambiguity in describing similar skills. What do we mean by each of these? What keywords would you use to define each skill we have identified?

Researcher note: This would help remove the ambiguity between similar skill descriptors and ensure the group shares a common understanding of each term/skill.

Question 5: How would you rank the generated skill lists in terms of most important?

Researcher note: Explain that the lists do not have to be prioritized by category. For example, the most important skill can be in the interpersonal skills category and the second most important skill can be in the project management methodology knowledge and application category.

Question 6: How does leading an agile team influence attributes contributing to project manager efficacy? Does this change anything?

Question 7: Based on our discussions, are there any changes you would make to your rankings or factors or traits you would add to any of the categories?

Individual closing activity: Based on our discussions, would you make any changes to how you ranked the skill categories or top three skills in each category?

Researcher note: Ask the participants to flip over their handouts used to rank the skill categories at the beginning of the discussions and ask them to rank the categories again. Observe participants to see if they check their initial rankings.

Demographic survey: Please respond to the demographic questions in your handout package. Do not include your name on this handout. The information is collected will not be identified with any single participant.

Conclusion

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions. If you have additional information that you did not get to share during the focus group, please feel free to contact me.

Appendix E. (Pre-Discussion): Focus Group Handout – Skill Category Ranking

1. Using a scale of 1 – 5, how would you rank the following skill categories in order of importance for project manager efficacy in an IT-centric project environment?

Scale for Ranking

1 = absolutely critical; most important for project manager efficacy
2 = very important
3 = moderately important
4 = somewhat important
5 = not important at all

_____ Information technology knowledge/skills

_____ Interpersonal skills

_____ Project management methodology knowledge and application

2. As a starting point for our discussions, please list the top 3 skills under each category.

Information Technology Knowledge/Skills	Interpersonal Skills	Project Management Methodology Knowledge & Application
1. 2. 3.	1. 2. 3.	1. 2. 3.

Appendix F. (Post-Discussion): Focus Group Handout – Skill Category Ranking

Using a scale of 1 – 5, how would you rank the following skill categories in order of importance for project manager efficacy in an IT-centric project environment?

Scale for Ranking

1 = absolutely critical; most important for project manager efficacy
2 = very important
3 = moderately important
4 = somewhat important
5 = not important at all

☐ None of my rankings have changed

My rankings have changed to the following:

_____ Information technology knowledge

_____ Interpersonal skills

_____ Project management methodology knowledge and application

2. As a closing point for our discussions, please list the top 3 skills under each category.

☐ None of my top 3 skills have changed

My top three skills have changed to the following:

Information Technology Knowledge/Skills	Interpersonal Skills	Project Management Methodology Knowledge & Application
1. 2. 3.	1. 2. 3.	1. 2. 3.

Appendix G. Demographic Survey

Please respond to the following demographic questions. Do not include your name on this handout. The information is collected will not be identified with any single participant.

1. What is your age (check the corresponding box)?

   - ☐ 25 – 34
   - ☐ 35 – 44
   - ☐ 45 – 54
   - ☐ 55 – 64
   - ☐ 65 or older

2. What is your gender?

   - ☐ Female
   - ☐ Male

3. What is your primary language?

   - ☐ Arabic
   - ☐ English
   - ☐ Spanish
   - ☐ Other: _____

4. What is the highest level of education you have completed?

   - ☐ High school or equivalent
   - ☐ Associate/technical degree (2 year)
   - ☐ Bachelor's degree

- ☐ Master's degree
- ☐ Doctoral degree

5. How would you classify yourself?
   - ☐ Arab
   - ☐ Asian/pacific islander
   - ☐ Black
   - ☐ Caucasian/white
   - ☐ Hispanic
   - ☐ Other: _____

6. Which industry do you currently work in?
   - ☐ Financial services
   - ☐ Government
   - ☐ Healthcare
   - ☐ Insurance
   - ☐ Manufacturing
   - ☐ Not-for-profit
   - ☐ Other: _____

7. How many years have you been in your current organization?
   - ☐ 4 or less
   - ☐ 5 – 9

- ☐ 10 – 14
- ☐ 15 – 19
- ☐ 20 or more

8. What other industries have you worked in (check all that apply)?

   - ☐ Financial services
   - ☐ Government
   - ☐ Healthcare
   - ☐ Insurance
   - ☐ Manufacturing
   - ☐ Not-for-profit
   - ☐ Other: _____
   - ☐ I have not worked in any other industry area than my present one

9. Which stakeholder group are you representing?

   - ☐ Senior IT Leader (go to question 10, stop at question 12)
   - ☐ Certified Project management Professional – PMP® (skip to question 13)

10. How many years of IT experience do you have?

    - ☐ 10 – 14
    - ☐ 15 – 19
    - ☐ 20 – 24
    - ☐ 25 or more

11. How many years of experience as a project team member do you have?

- ☐ 5 – 9
- ☐ 10 – 14
- ☐ 15 – 19
- ☐ 20 or more

12. How many years of experience in a project leadership role (i.e. resource management, project sponsor, project manager) do you have?

- ☐ 5 – 9
- ☐ 10 – 14
- ☐ 15 – 19
- ☐ 20 or more

13. How many years of experience do you have in a project leadership role in an IT-centric project environment?

- ☐ 10 – 14
- ☐ 15 – 19
- ☐ 20 – 24
- ☐ 25 or more

Appendix H. Focus Group 1 – Financial Services Senior IT Leaders

Participant Demographics

The participants in this focus group were Senior IT Leaders from a Financial Services organization. Table H.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table H.1: Financial Services Senior IT Leader Demographics (N = 7)

Age	25 – 34: 35 – 44: 45 – 54: 55 – 64: 65 or older:	1 3 2 1 0	14% 43% 29% 14% 0%
Gender	Female: Male:	1 6	14% 86%
Primary Language	English:	7	100%
Highest Level of Education	Bachelor's degree: Master's degree:	6 1	86% 14%
Ethnicity	Black: Caucasian/white:	1 6	14% 86%
Years in Current Organization	4 or less: 5 – 9: 10 – 14: 15 – 19: 20 or more:	3 2 0 1 1	43% 29% 0% 14% 14%
Years of IT Experience	10 – 14: 15 – 19: 20 – 24: 25 or more:	3 3 0 1	43% 43% 0% 14%
Years of Project Team Member Experience	5 – 9: 10 – 14: 15 – 19: 20 or more:	1 4 2 0	14% 57% 29% 0%
Years of Project Leadership Experience (i.e. Resource Mgmt, Project Sponsor, Project Manager)	5 – 9: 10 – 14: 15 – 19: 20 or more:	2 4 0 1	29% 57% 0% 14%

Figure H.1 shows the participants' age ranges. Six (6) of the participants were male, and one (1) of the participants were female. The primary language, 100% of the participants, was English. Figure H.2 provides a representation of the highest level of education for each participant, with all participants holding either a Bachelor's or Master's degree.

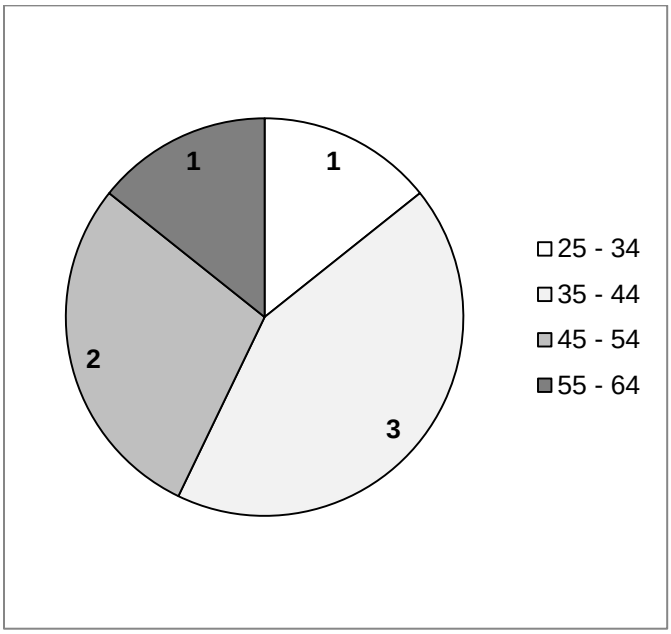

Figure H.1: Financial Services Senior IT Leaders - Participants by Age Range (N = 7)

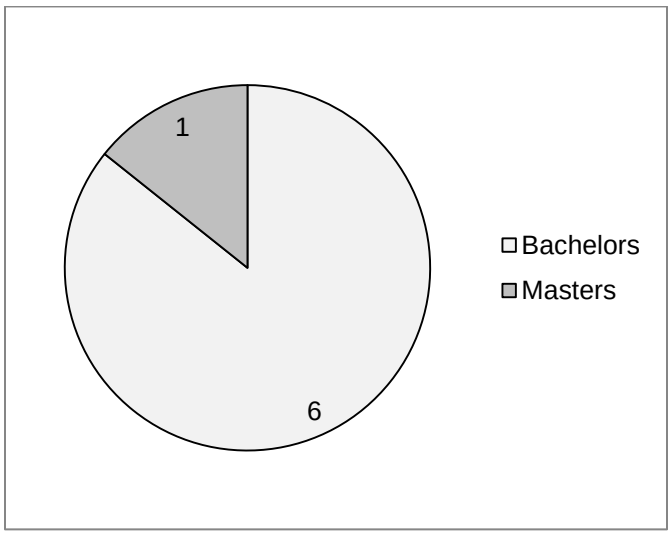

Figure H.2: Financial Services Senior IT Leaders - Highest Level of Education (N = 7)

Six (6) of seven (7) participants classified themselves as Caucasian, and one (1) of seven (7) participants classified themselves as Black. Figure H.3 represents the participants' tenure in their current organizations. Since experience is an important inclusion criteria for participants, their years of IT experience, project team member experience, and project leadership experience are provided. Figure H.4 represents the participants' years of IT experience. Figure H.5 represents the participants' years of project team member experience. Figure H.6 represents the participants' years of project leadership experience as a resource manager, project manager, or project sponsor.

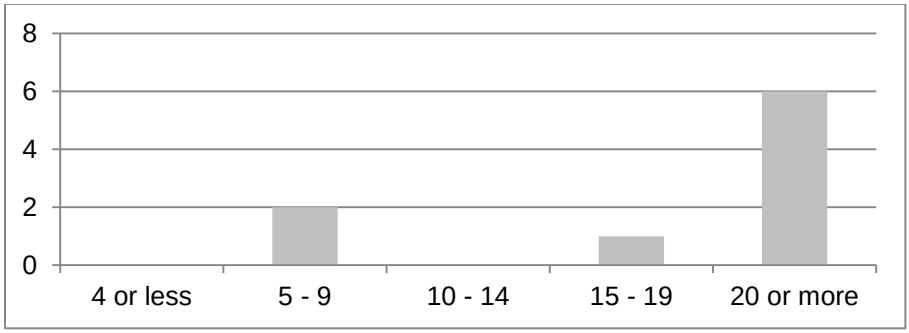

Figure H.3: Financial Services Senior IT Leaders - Years in Current Organization (N = 7)

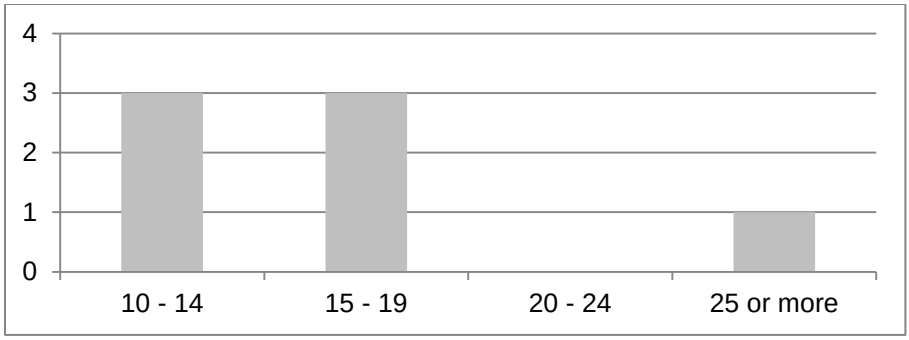

Figure H.4: Financial Services Senior IT Leaders - Years of IT Experience (N = 7)

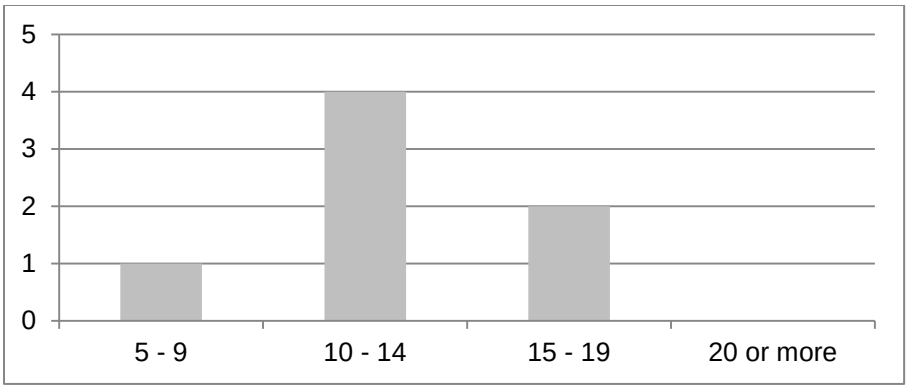

Figure H.5: Financial Services Senior IT Leaders - Years of Project Team Member Experience (N = 7)

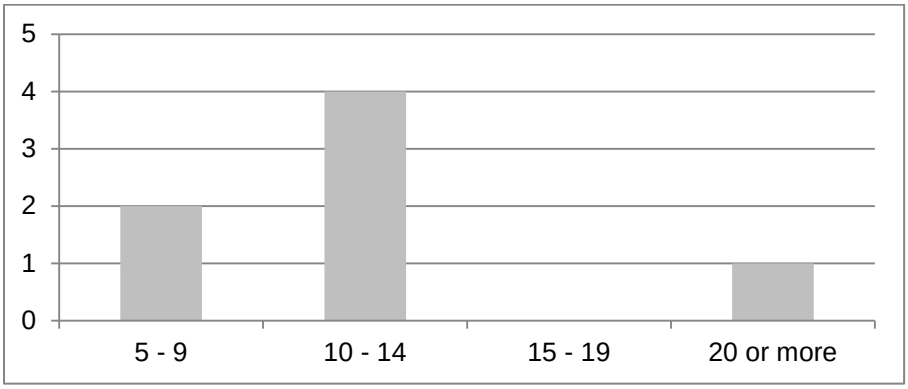

Figure H.6: Financial Services Senior IT Leaders - Years of Project Leadership Experience (N = 7)

Pre-Discussion Skill Ranking Results

The results from the Financial Services Senior IT Leaders pre-discussion skill category ranking (see Appendix E) are provided in Table H.2. Based on averages, the Financial Services Senior IT Leader group ranked the skill categories, in order of importance, as follows: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Interpersonal skills were ranked as absolutely critical, project management knowledge and application as very important, and IT knowledge and skills as moderately important. It was interesting that the Senior IT leader group unanimously ranked IT knowledge as the least

important skill category when compared to interpersonal skills and project management knowledge and application, with only one participant ranking project management knowledge and application higher than interpersonal skills. The data clearly demonstrates a skill set preference based on experience.

Table H.2: Financial Services Senior IT Leaders Pre-Discussion Skill Category Ranking (N = 7)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS IT 1	3	1	2
FS IT 2	3	1	2
FS IT 3	3	1	2
FS IT 4	3	1	2
FS IT 5	2	1	1
FS IT 6	4	2	1
FS IT 7	3	1	2
Averages	3	1.14	1.71

Table H.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. While there is no evidence of agreement in either skills or priorities before the discussions, there are several trends identified. In the IT knowledge and skills category, a basic understanding of software development methodologies, including agile methodologies, was identified as critical skills by four (4) of seven (7) participants. Basic IT, or industry, knowledge was identified as important by four (4) of seven (7) participants. There was higher agreement in the interpersonal skills category. Communication was included in the top three interpersonal skills by six (6) of seven (7) participants. Facilitation skills were identified in the top three by four (4) of the (7) participants, increasing to five (5) of the seven (7) participants when including facilitation listed in other skill categories. Comparatively, there was less agreement in the project management knowledge and application skill set as no single attribute was listed by more than two participants.

Table H.3: Financial Services Senior IT Leaders Pre-Discussion Top Three Skills by Category (N = 7)

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS IT 1	Agile methodologies	Facilitation	Managing expectations (scope)
	Basic IT knowledge	Communication	Resource management
	Critical thinking	Collaboration	Risk management
FS IT 2	Understanding dependencies	Facilitation	Stakeholder engagement
	Understanding change impact	Agreement gaining	Managing scope
	Agile process knowledge	Communication	Defining/measuring business value
FS IT 3	Certification	Teambuilding	Certification
	Hands-on experience	Conflict resolution	Experience
	Industry knowledge	Personal growth concepts	Industry knowledge
FS IT 4	Aptitude	Communication	Microsoft Project
	Detail	Listening	PM Process and Terminology
	Technology understanding	Empathy	Methodology diversity
FS IT 5	Software development methodology experience	Communication	Requirements management
	Applications experience	Team building	Leadership
	Flow charting	Facilitation	Flow charting
FS IT 6	Typical milestone knowledge	Listening	Certification
	Basic IT knowledge	Facilitation	Project management tools
	Vendor management	Communication	Facilitation
FS IT 7	Applications development	Negotiation	Prioritization
	Software development lifecycle	Communication	Scheduling
	Extract, transform and load (ETL)	Listening	Facilitation

Focus Group 1 Observations and Analysis

Table H.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. When sharing their experiences, factors that contribute to either *project success* or failure focused on a combination of soft skills and effective project

management. This supports research that provided evidence that technology accounts for less than 5% of root causes that projects fail (The Standish Group, 1994). While sharing their experiences, participants described interpersonal skills, or those skills that deal directly with interacting with project stakeholders, as necessary for ensuring the factors that contribute to *project success* were present and factors that contribute to project failure were avoided. For example, stakeholder involvement, clear goals and objectives, executive support and organizational change management are influenced by the project manager's approach to managing stakeholder expectations and engagement (including customers), eliciting ideas and alternatives, developing the appropriate relationships, and facilitating agreement on project-related decisions.

Table H.4: Financial Services Senior IT Leaders Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
Communication	Facilitation
Stakeholder involvement	Gaining agreement
Prioritization	Negotiation
Managing customer expectations	Strategic thinker
Facilitation	Unbiased, no predetermined solutions
Leadership	Clear communicator
Visionary leadership	Elicits alternative ideas
Managing scope	Confidence
Having the right resources	Expertise in project management
Vendor management	Gains leadership support
Clear goals and objectives	IT knowledge
Realistic timeline and budget	Understands Agile methodology
Team buy-in	Understands impact of change
Organizational change management	Manages dependencies
Executive support	Asks the right questions
Risk management	Capacity management
	Detailed documentation

As the discussion progressed from factors related to *project success* or failure to attributes most important for *project manager efficacy*, the focus shifted to skills that enable *project success* as defined by each participant. Only one participant expected the project manager

to be an expert in IT, and they immediately clarified their expectation by stating, "Somebody has to have a strong IT background, but it doesn't necessarily have to be the project manager". When asked to prioritize the skills listed for *project manager efficacy*, the group reached a quick consensus that a combination of facilitation and communication skills was the first and second most important, respectively. While not included in their brainstorming, there was a great deal of discussion related to project management methodology. The group demonstrated an appreciation for project management; however, concluded that the project manager must be more focused on meeting goals and objectives than adhering to a rigid process. One participant summarized the discussion by stating, "A project manager needs to understand not only when strict adherence to a methodology is needed, but also when it is not needed."

When asked to rank the attributes most important for *project manager efficacy* in order of importance, the discussion emphasized the earlier talking points related to skills associated with interacting with various project stakeholders. Facilitation was identified as the most important skill; however, the group linked facilitation skills to the project manager's ability to develop the appropriate relationships with different stakeholder groups, identify the factors most important to each stakeholder group, and balance that information and a thorough understanding of the project goals and objectives to lead discussions. This thick description blends facilitation, stakeholder leadership, and strategic thinking. Communication skills were identified as the second most important with an explanation including the project manager's ability to modify their approach based on the audience's needs and communication style. Negotiating skills were ranked third; however, this group differentiated facilitation from negotiation as an "approach" and a "purpose", respectively.

It is important to note that this IT stakeholder group was experienced in agile software development methodologies and their organization used SCRUM as their applications engineering methodology. When asked how leading an agile team influences attributes contributing to *project manager efficacy*, a participant responded with "I do not think the skills that most influence efficacy change with methodology." When defending their claim, they discussed how agile simply requires more team interaction and a lack of interpersonal skills is more apparent, not more important. The only change noted was specific to application of project management methodology. Specifically, their experience indicated that some project managers are challenged with a short-term planning cycle with rapidly changing priorities and are more comfortable with planning the whole project up-front.

Post-Discussion Skill Ranking Results

The results from the Financial Services Senior IT Leaders post-discussion skill category ranking (see Appendix F) are provided in Table H.5. Based on averages, the Financial Services Senior IT Leader group skill category rankings did not change; however, the level of agreement increased. The group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance decreased overall from 1.71 to 2.57 on a scale of 1 – 5, or between very and moderately important. The IT knowledge and skills category remained at an overall ranking of three (3) on a scale of 1 – 5, or moderately important. Still, the data clearly demonstrates a skill set preference based on experience in this stakeholder after the collaborative discussions defending the individuals' perceptions. The variances between the pre-discussion skill category rankings in Table H.2 are highlighted in the post-discussion skill category rankings in Table H.5.

Table H.5: Financial Services Senior IT Leaders Post-Discussion Skill Category Ranking (N = 7)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS IT 1	3	1	2
FS IT 2	3	1	4
FS IT 3	3	1	2
FS IT 4	3	1	4
FS IT 5	3	1	2
FS IT 6	3	1	2
FS IT 7	3	1	2
Averages	3	1	2.57

Table H.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. FS IT 1 changed their top three IT Knowledge & Skills ranking and included an interpersonal skill; critical thinking. During a follow-up discussion for member checking, the participant explained they were specifically referring to the project manager's ability to "leverage basic IT knowledge to identify and define problems, and lead a team of experts through a problem solving process". While there were variations in perceived priority related to specific skills in each category, there are no noteworthy trends associated with new skills or emerging trends in the top three skills by category. The variances between the pre-discussion skill category rankings in Table H.3 are highlighted in the post-discussion skill category rankings in Table H.6.

Table H.6: Financial Services Senior IT Leaders Post-Discussion Top Three Skills by Category (N = 7)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS IT 1	Agile methodologies	Communication	Resource management
	Critical thinking	Collaboration	Managing expectations
	Work management	People development	Risk management
FS IT 2	Understanding dependencies	Facilitation	Stakeholder engagement
	Understanding impact of change	Communication	Business value definition
	Agile process knowledge	Negotiation	Scope management
FS IT 3	Certification	Teambuilding	Certification

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
	Hands-on experience	Conflict resolution	Experience
	Industry knowledge	Personal growth concepts	Industry knowledge
FS IT 4	Aptitude	Communication	Methodology diversity
	Detail	Facilitation	Facilitation
	Technology understanding	Empathy	Toolset
FS IT 5	Apps Eng methodology experience	Facilitation	Requirements management
	Applications experience	Communication	Leadership
	Flow charting	Negotiation	Flow charting
FS IT 6	Typical milestone knowledge	Listening	Certification
	Basic IT knowledge	Facilitation	Project management tools
	Vendor management	Communication	Facilitation
FS IT 7	Software development lifecycle	Communication	Facilitation
	Extract, transform and load (ETL)	Facilitation	Prioritization
	Applications development	Negotiation	Visionary

Appendix I. Focus Group 2 – Financial Services Project Managers

Participant Demographics

The participants in this focus group were Certified Project Management Professionals (PMP®) from a Financial Services organization. Table I.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table I.1: Financial Services Project Manager Demographics (N = 6)

Age	25 – 34:	0	0%
	35 – 44:	1	17%
	45 – 54:	4	67%
	55 – 64:	1	17%
	65 or older:	0	0%
Gender	Female:	2	33%
	Male:	4	67%
Primary Language	Arabic:	1	17%
	English:	4	67%
	Spanish	1	17%
Highest Level of Education	Bachelor's degree:	2	33%
	Master's degree:	4	67%
Ethnicity	Arab:	1	17%
	Black:	1	17%
	Caucasian/white:	3	50%
	Hispanic:	1	17%
Years in Current Organization	4 or less:	1	17%
	5 – 9:	1	17%
	10 – 14:	2	33%
	15 – 19:	2	33%
	20 or more:	0	0%
Years of IT Project Leadership Experience	10 – 14:	3	50%
	15 – 19:	2	33%
	20 – 24:	1	17%
	25 or more:	0	0%

Figure I.1 shows the participants' age ranges. Four (4) of the participants were male, and two (2) of the participants were female. Four (4) participants reported English as their primary language, one (1) reported Arabic, and one (1) reported Spanish. Figure I.2 provides a

representation of the highest level of education for each participant, with all participants holding either a Bachelor's or Master's degree.

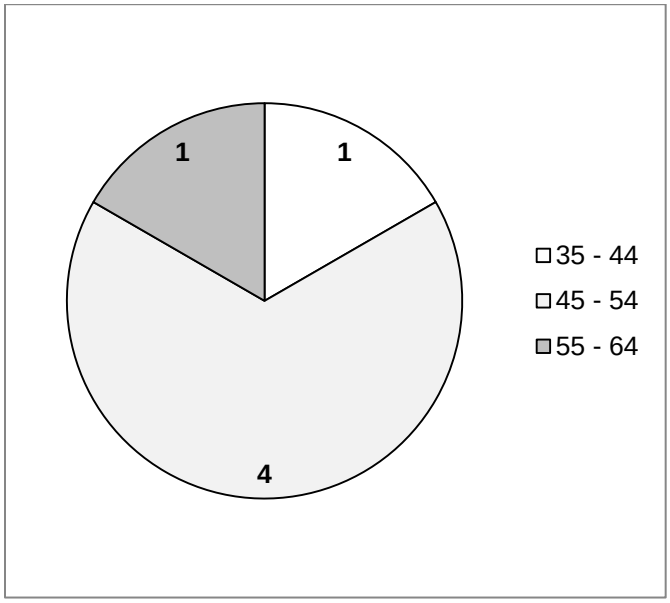

Figure I.1: Financial Services Project Managers - Participants by Age Range (N = 6)

Figure I.2: Financial Services Project Managers - Highest Level of Education (N = 6)

Of the six (6) participants, three (3) classified themselves as Caucasian, one (1) classified themselves as Black, one (1) classified themselves as Arab, and one (1) classified themselves as Hispanic. Figure I.3 represents the participants' tenure in their current organizations. Since experience is an important inclusion criterion for participants, their years of IT project management experience are presented in Figure I.4.

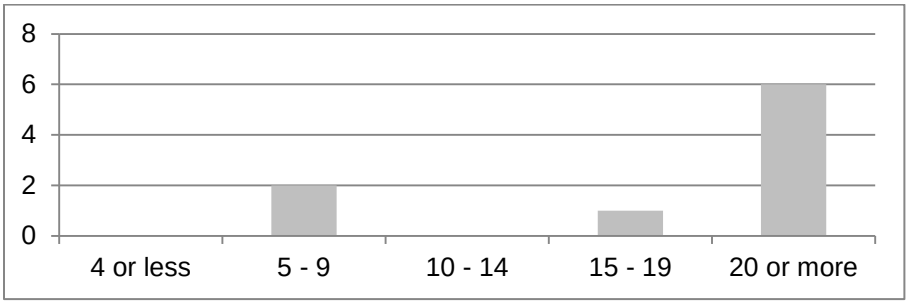

Figure I.3: Financial Services Project Managers - Years in Current Organization (N = 6)

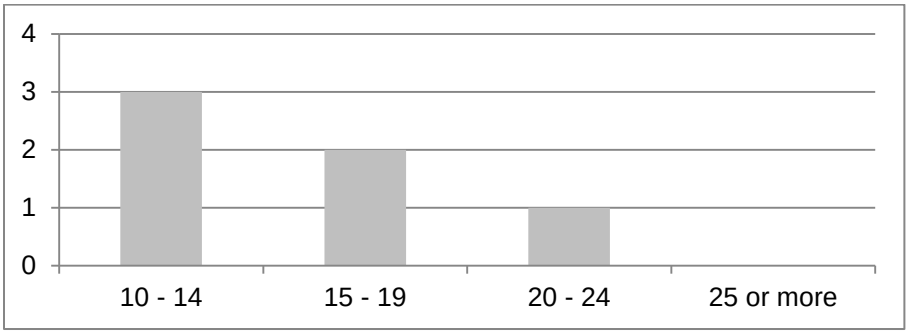

Figure I.4: Financial Services Project Managers - Years of IT Project Management Experience (N = 6)

Pre-Discussion Skill Ranking Results

The results from the Financial Services Project Managers pre-discussion skill category ranking (see Appendix E) are provided in Table I.2. Based on averages, the Financial Services Project Manager group ranked the skill categories, in order of importance, as follows: 1.

Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. The group unanimously identified interpersonal skills as the most important skill category, ranking this skill set as absolutely critical. It was interesting that there was no clear agreement between the relative priority between project management knowledge and application and IT knowledge and skills in this group. In fact, the group was evenly divided with 50% ranking project management knowledge and application above IT knowledge and skills, and 50% ranking them in the opposite order. Collectively, the group ranked project management knowledge and application higher that IT knowledge and skills, with the average ranking falling between very and moderately important. This provides evidence that there is a perception that project managers are expected to have IT knowledge in this organizational context.

Table I.2: Financial Services Project Managers Pre-Discussion Skill Category Ranking (N = 6)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS PM 1	2	1	3
FS PM 2	3	1	2
FS PM 3	2	1	3
FS PM 4	4	1	2
FS PM 5	2	1	3
FS PM 6	5	1	2
Averages	3	1	2.5

Table I.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. In the IT knowledge and skills category, basic IT, or industry, knowledge was identified as important by five (5) of six (6) participants. In the interpersonal skills category, it is important to note that communication skills were included in the top three interpersonal skills by all six (6) participants. Scope management, highlighted by specific references to scope management, scope definition, and work breakdown structure

(WBS) development was the skill with the highest agreement in the project management knowledge and application skill set.

Table I.3: Financial Services Project Managers Pre-Discussion Top Three Skills by Category (N = 6)

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS PM 1	Agile	Communication	Pragmatic application
	SDLC	Problem solving	Scope management
	Terminology	People skills	Change management
FS PM 2	SDLC	Negotiation	Scope definition
	IT Infrastructure	Communication	Risk management
	Basic coding knowledge	Stakeholder management	WBS development
FS PM 3	Basic terminology	Communication	PM tools
	Systems architecture and design	Meeting management	Methodology
	Systems integration	Conflict resolution	Risk management
FS PM 4	Applications engineering	Stakeholder management	Methodology
	IT terminology	Communications	MS Project
	Infrastructure	Listening	Prioritization
FS PM 5	IT lingo	Communication	Planning
	System impacts	Negotiation	Scheduling
		Problem solving	Risk Management
FS PM 6	Identify SMEs	Team building	WBS decomposition
		Communication	Scope management
		Conflict resolution	Communications planning

Focus Group 2 Observations and Analysis

Table I.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. Similar to their Senior IT Leader counterparts, the discussion about factors that contribute to either *project success* or failure focused on a combination of soft skills and effective project management. Descriptions of their experiences with contributors to *project success* or failure centered on the project managers ability to manage

stakeholder expectations and earn the level of support and engagement necessary to remove obstacles and facilitate decision-making. For example, digging deeper into sponsor support, setting and maintaining realistic expectations and user engagement, the group agreed that the project manager's ability to control these important factors was dependent upon their leadership and ability to influence the associated stakeholder groups. This group also made a distinction between processes related to stakeholder management, such as creating and maintaining a stakeholder register and communications planning, and successfully leading stakeholders in such a way to benefit the project.

Table I.4: Financial Services Project Managers Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
Communication	Communication
Leadership	Knowledge of the PM tools
Sponsor support	Stakeholder management
Time dedicated to planning	Team leadership
Conflict management	Gaining consensus and buy-in
Strong team	Facilitation
Resource availability	Mediation / Negotiation
Focus on end-state goals	Focused on user needs
Flexibility	Emotional intelligence
Sufficient time to meet expectations	Learner
Realistic expectations	Meeting management
User involvement	Scope management

When asked to about skills or knowledge most important for *project manager efficacy*, this group used a structured approach of focusing on skills and knowledge that specifically enable the factors identified that contribute to *project success*. Instead of labeling types of communication skills, they used project-related examples to emphasize the importance of communicating to stakeholder groups based on their information needs and ensuring that messaging not only targeted the information they needed, but also took into consideration a respect for their time and preferences. Expanding on this concept, the group provided examples

of how knowing when to communicate can be as important as knowing what to communicate. A participant added,

> "I needed to be aware of my sponsor's mood before discussing anything that required debate or a decision. If he seemed distracted, his decision was always to take the path of least resistance. Almost like he didn't want anything else on his plate. If I waited until I had his full attention, we could have a healthy discussion about what was best for the project."

Consistent with the thick descriptions provided, the Financial Services Project Manager group ranked communication as the most important skill, followed in order by stakeholder leadership, facilitation, and emotional intelligence. Reflecting on the lists, and participant commented, "You know, this list wouldn't be any different if this < research > wasn't focused on IT-centric project environments." This led to the subsequent discussion on how leading an agile team influences either the list of skills or relative priority. After a limited debate, both the list of skills and priorities remained unchanged.

Post-Discussion Skill Ranking Results

The results from the Financial Services Project Managers post-discussion skill category ranking (see Appendix F) are provided in Table I.5. Based on averages, the Financial Services Project Manager group skill category rankings did not change; however, the level of agreement increased. The group still unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance increased slightly as the relative importance of IT knowledge and skills decreased.

The variances between the pre-discussion skill category rankings in Table I.2 are highlighted in the post-discussion skill category rankings in Table I.5.

Table I.5: Financial Services Project Managers Post-Discussion Skill Category Ranking (N = 6)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
FS PM 1	3	1	2
FS PM 2	3	1	2
FS PM 3	3	1	2
FS PM 4	3	1	2
FS PM 5	2	1	3
FS PM 6	5	1	2
Averages	3.17	1.00	2.17

Table I.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. While there were variations in perceived priority related to specific skills in each category, there are no noteworthy trends associated with new skills or emerging trends in the top three skills by category. The variances between the pre-discussion skill category rankings in Table I.3 are highlighted in the post-discussion skill category rankings in Table I.6.

Table I.6: Financial Services Project Managers Post-Discussion Top Three Skills by Category (N = 6)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
FS PM 1	Agile	Communication	Pragmatic application
	SDLC	Problem solving	Scope management
	Terminology	Conflict resolution	Change management
FS PM 2	SDLC	Communication	Scope definition
	IT Infrastructure	Negotiation	Risk management
	Agile	Stakeholder management	Real-world application
FS PM 3	Basic terminology	Communication	PM tools
	Systems architecture	Meeting management	Methodology
	Systems integration	Conflict resolution	Risk management
FS PM 4	SDLC - Including Agile	Stakeholder management	Methodology

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
	IT terminology	Communications	WBS development
	System integration	Listening	Prioritization
FS PM 5	IT lingo	Communication	Planning
	System impacts	Negotiation	Scheduling
	Agile	Problem solving	Risk Management
FS PM 6	Identify SMEs	Team building	WBS decomposition
	Development methodologies	Communication	Scope management
	IT terminology	Conflict resolution	Communications planning

Appendix J. Focus Group 3 – Academia Senior IT Leaders

Participant Demographics

The participants in this focus group were Senior IT Leaders from Academia. Table J.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table J.1: Academia Senior IT Leaders Demographics (N = 9)

Age	25 – 34: 35 – 44: 45 – 54: 55 – 64: 65 or older:	0 0 2 7 0	0% 0% 22% 78% 0%
Gender	Female: Male:	6 3	67% 33%
Primary Language	English:	9	100%
Highest Level of Education	Bachelor's degree: Master's degree: Doctoral degree:	6 2 1	67% 22% 11%
Ethnicity	Caucasian/white:	9	100%
Years in Current Organization	4 or less: 5 – 9: 10 – 14: 15 – 19: 20 or more:	0 2 0 1 6	0% 22% 0% 11% 67%
Years of IT Experience	10 – 14: 15 – 19: 20 – 24: 25 or more:	1 1 0 7	11% 11% 0% 78%
Years of Project Team Member Experience	5 – 9: 10 – 14: 15 – 19: 20 or more:	3 0 2 4	33% 0% 22% 44%
Years of Project Leadership Experience (i.e. Resource Mgmt, Project Sponsor, Project Manager)	5 – 9: 10 – 14: 15 – 19: 20 or more:	1 1 1 6	11% 11% 11% 67%

Figure J.1 shows the participants' age ranges. Six (6) of the participants were female, and three (3) of the participants were male. The primary language, 100% of the participants, was English. Figure J.2 provides a representation of the highest level of education for each participant, with all participants holding a Bachelor's degree or higher.

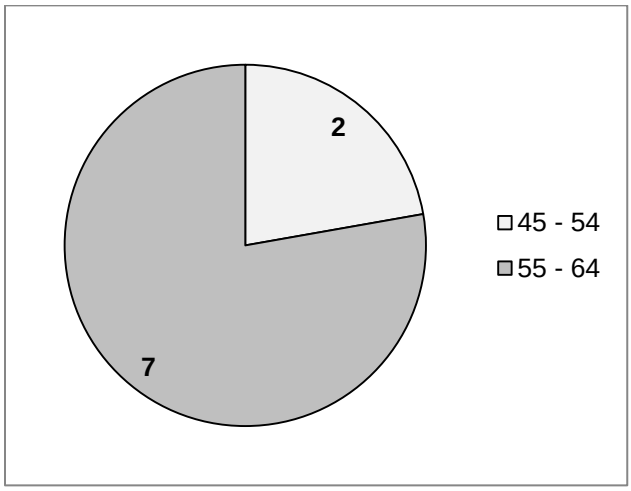

Figure J.1: Academia Senior IT Leaders - Participants by Age Range (N = 9)

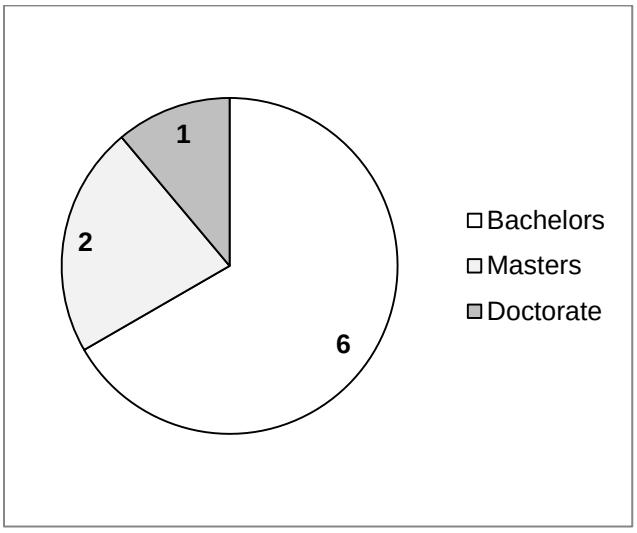

Figure J.2: Academia Senior IT Leaders - Highest Level of Education (N = 9)

Nine (9) of nine (9) participants classified themselves as Caucasian. Figure J.3 represents the participants' tenure in their current organizations. Since experience is an important inclusion criteria for participants, their years of IT experience, project team member experience, and project leadership experience are provided. Figure J.4 represents the participants' years of IT experience. Figure J.5 represents the participants' years of project team member experience. Figure J.6 represents the participants' years of project leadership experience as a resource manager, project manager, or project sponsor.

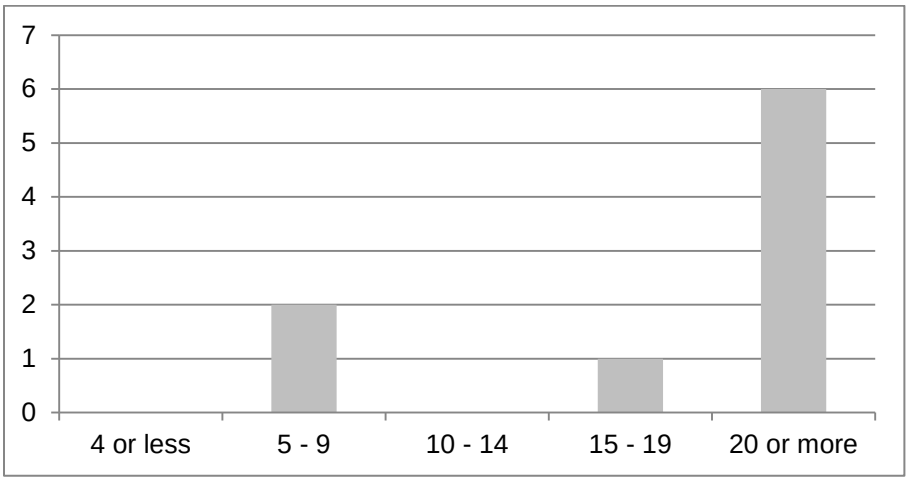

Figure J.3: Academia Senior IT Leaders - Years in Current Organization (N = 9)

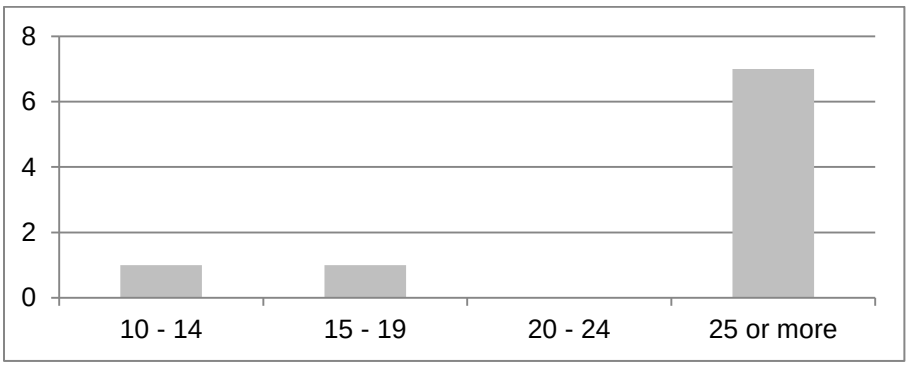

Figure J.4: Academia Senior IT Leaders - Years of IT Experience (N = 9)

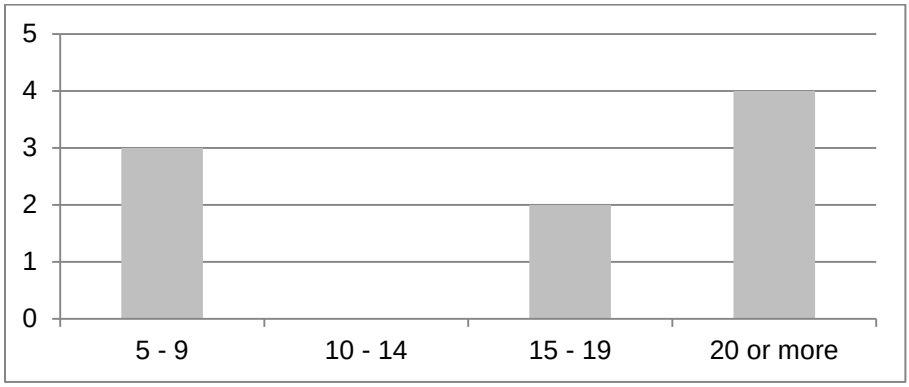

Figure J.5: Academia Senior IT Leaders - Years of Project Team Member Experience (N = 9)

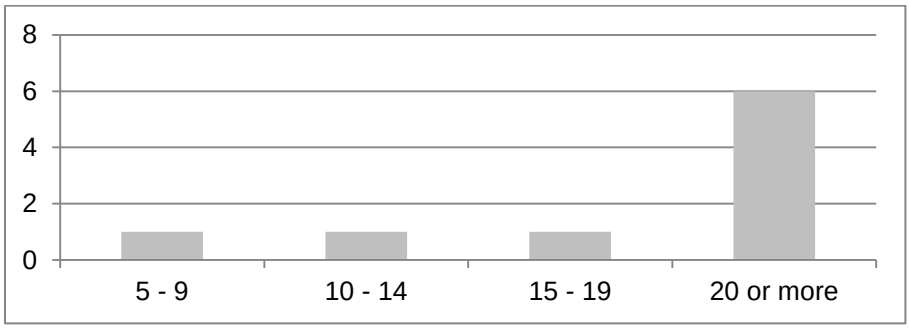

Figure J.6: Academia Senior IT Leaders - Years of Project Leadership Experience (N = 9)

Pre-Discussion Skill Ranking Results

The results from the Academia Senior IT Leaders pre-discussion skill category ranking (see Appendix E) are provided in Table J.2. Based on averages, the Academia Senior IT Leader group ranked the skill categories, in order of importance, as follows: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Interpersonal skills and project management knowledge and application were ranked closely by this stakeholder group during the pre-discussion exercise, with three (3) of nine (9) participants ranking both skill sets as absolutely critical. Seven (7) of the nine (9) participants ranked IT

knowledge and skills as less important than either interpersonal skills or project management knowledge and application.

Table J.2: Academia Senior IT Leaders Pre-Discussion Skill Category Ranking (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A IT 1	1	2	2
A IT 2	3	2	1
A IT 3	3	1	2
A IT 4	2	1	1
A IT 5	3	1	1
A IT 6	3	1	1
A IT 7	2	2	1
A IT 8	4	1	3
A IT 9	3	1	2
Average	2.67	1.33	1.56

Table J.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. While there is no evidence of agreement in either skills or priorities before the discussions, there are several trends identified. In the IT knowledge and skills category, a basic understanding IT, or industry, knowledge was identified as important by nine (9) of nine (9) participants. Communication was included in the top three interpersonal skills by eight (8) of nine (9) participants. Comparatively, there was less agreement in the project management knowledge and application skill the project manager's depth of experience demonstrated through certification and exposure to practical application in an IT environment emerging as theme.

Table J.3: Academia Senior IT Leaders Pre-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
A IT 1	Industry trends	Communication	Managing progress
	Basic IT understanding	Listening	Adaptable to change
		Team building	Learner
A IT 2	Infrastructure knowledge	Listening	Certification

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
	Desktop systems	Negotiating	Actual PM experience
	Architecture knowledge	Communication	
A IT 3	Business systems	Honest	Project planning
	Identify IT subject matter experts	Tactful	Schedule management
	Project management tools	Communication	Conflict management
A IT 4	IT project management experience	Open-minded	Certification
	Technical skills	Personable	PM Training
	IT organization	Team building	Follows a methodology
A IT 5	Systems knowledge	Teamwork	Requirements gathering
	Understand interfaces	Communication	Timeline management
	Security awareness	Listening	PM Tools
A IT 6	Technical environment knowledge	Communication	Project management processes
	Infrastructure knowledge	Team building	Documentation
	Software development processes	Listening	Project management software
A IT 7	IT subject matter expert	Communication	Planning
	Experience in IT	Emotional intelligence	Organized
	Training in IT concepts	Listening	Communication
A IT 8	Understand design concepts	Communication	Experience
	IT operations understanding	Emotional intelligence	
		Leadership	
A IT 9	Understand IT goals	Listening	PM methodology
	Understand IT infrastructure	Negotiating	Practical application
	Understand software development	Personable	Experience with various projects

Focus Group 3 Observations and Analysis

Table J.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. When sharing their experiences related to factors that contribute to either *project success* or failure, there was a blend of factors associated with each of

the three skill categories. For IT knowledge and skills, the Academia Senior IT Leaders highlighted the importance of including a proactive impact analysis for both IT systems and user groups in the early planning phases and understand the value of thorough system test planning and execution. In the project management application and knowledge skill set, emphasis was placed on clearly defining project goals and objectives, eliciting and documenting user requirements, and managing progress through effective monitoring and controlling. Communication with various stakeholder groups, active listening, and team building and leadership were identified for the interpersonal skills category.

Table J.4: Academia Senior IT Leaders Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
People working together	Positive attitude
Organization	Flexibility
Dedicated team	Leadership
Communication	Communication
Defined requirements	Trustworthiness
Staying the course	Listening
Clear goals	Perseverance
Stakeholder buy-in	Negotiating
Impact analysis – IT systems and users	Facilitation
Testing	Creates a shared vision
Follow-up	Manages stakeholders
Conflict management	Team building
Proactive problem-solving	Scope management
Right skill sets	Holds others accountable
Teamwork	Problem-solving
Listening	Conflict resolution
Training	

When the discussion shifted from *project success* factors to skills or knowledge most important for *project manager efficacy*, the first comment made was they must have a positive attitude. The participant elaborated with the following statement,

> "We can be a change adverse environment. < The entire groups' non-verbals supported the statement. > We need a project manager that focuses us on the goals instead of the

challenges, that emphasizes how the difficulties related to change are temporary, acknowledges that the work can be hard and encourages people, and reminds us every day of the benefits we expect to receive after the work is done."

As described by the participants, this was more than a structured approach to change management, but an attitude towards change. This was also more than an approach to communicating impacts, and included how tone and non-verbals contribute to how team members receive the information. Continuing this line of discussion, a participant stated, "They have to be attractive. I don't mean good looking; I mean people have to want to be around them."

In alignment with focusing on the positive, this stakeholder group also emphasized the importance of eliciting and documenting clearly defined goals and objectives and using that information to create a shared vision of success with all of the stakeholder groups. The Academia Senior IT Leaders emphasized the relationships and dependencies between being positive, having a clear direction, and the ability for a project manager to lead a team and manage various stakeholders.

When asked to rank the attributes most important for *project manager efficacy* in order of importance, the group did not hesitate to nominate and quickly agree on having a positive attitude as the most important. When asked why, they explained how projects tend to be perceived as negative by many of the staff because projects inherently bring change. A participant summarized the need for a positive attitude by stating,

"They < project managers > want to hold us accountable to deadlines. They want to add work to our already full plates. They want to identify risks that could prevent success. They want to monitor our progress and report to leadership if we're doing our part. They want to make us work with people we don't know or work with all the time. This is all

necessary, and we even listed this on the board. However, if they do this without being personable, are you surprised that people are resistant?"

The Academia Senior IT Leaders completed their ranking with including facilitation skills as the second most important and holding others accountable ranked third.

When asked how leading an agile team influences attributes contributing to *project manager efficacy*, the group unanimously agreed there was not a difference in the required skills or their ranking; however, they noted the project manager should understand how agile is applied in their environment. This qualification highlighted that this stakeholder group's response was targeting agile software development practices, not agile project management planning approaches.

Post-Discussion Skill Ranking Results

The results from the Financial Services Senior IT Leaders post-discussion skill category ranking (see Appendix F) are provided in Table J.5. Based on averages, the Academia Senior IT Leader group skill category rankings did not change; however, the level of agreement increased. The group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance decreased overall from 1.56 to 2.22 on a scale of 1 – 5, or between very and moderately important. The IT knowledge and skills category ranking changed slightly; however, the group still ranked the skill set as moderately important and the least important of the three skill sets. The data clearly demonstrates a skill set preference based on experience in this stakeholder after the collaborative discussions defending the individuals' perceptions. The variances between the pre-discussion

skill category rankings in Table J.2 are highlighted in the post-discussion skill category rankings in Table J.5.

Table J.5: Academia Senior IT Leaders Post-Discussion Skill Category Rankings (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A IT 1	2	1	3
A IT 2	2	1	3
A IT 3	3	1	2
A IT 4	2	1	1
A IT 5	3	1	2
A IT 6	3	1	2
A IT 7	3	1	2
A IT 8	4	1	3
A IT 9	3	1	2
Average	2.78	1.00	2.22

Table J.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. There were only a few changes in the participants' perceptions related to the top skills in each category, and the majority of the changes were influenced by the discussion related to a project manager's attitude. There no other noteworthy trends associated with new skills or emerging trends in the top three skills by category. The variances between the pre-discussion skill category rankings in Table J.3 are highlighted in the post-discussion skill category rankings in Table J.6.

Table J.6: Academia Senior IT Leaders Post-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
A IT 1	Industry trends	Communication	Managing progress
	Basic IT understanding	Listening	Adaptable to change
		Positive attitude	Learner
A IT 2	Infrastructure knowledge	Listening	Certification
	Desktop systems	Negotiating	Actual PM experience
	Architecture knowledge	Communication	

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A IT 3	Business systems	Honest	Project planning
	Identify IT subject matter experts	Tactful	Schedule management
	Project management tools	Communication	Conflict management
A IT 4	IT project management experience	Open-minded	Certification
	Technical skills	Personable	PM Training
	IT organization	Team building	Follows a methodology
A IT 5	Systems knowledge	Positive attitude	Requirements gathering
	Understand interfaces	Communication	Timeline management
	Security awareness	Negotiating	PM Tools
A IT 6	Technical environment knowledge	Communication	Project management processes
	Infrastructure knowledge	Team building	Documentation
	Software development processes	Listening	Project management software
A IT 7	IT understanding	Negotiation	Planning
	Experience in IT	Emotional intelligence	Organized
	Training in IT concepts	Listening	Communication
A IT 8	Understand design concepts	Communication	Experience
	IT operations understanding	Emotional intelligence	
		Positive attitude	
A IT 9	Understand IT goals	Listening	PM methodology
	Understand IT infrastructure	Negotiating	Practical application
	Understand software development	Personable	Experience with various projects

Appendix K. Focus Group 4 – Academia Project Managers

Participant Demographics

The participants in this focus group were Certified Project Management Professionals (PMP®) in Academia. Table K.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table K.1: Academia Project Manager Demographics (N = 5)

Age	25 – 34:	0	0%
	35 – 44:	1	20%
	45 – 54:	3	60%
	55 – 64:	1	20%
	65 or older:	0	0%
Gender	Female:	1	20%
	Male:	4	80%
Primary Language	English:	5	100%
Highest Level of Education	Bachelor's degree:	1	20%
	Master's degree:	4	80%
Ethnicity	Caucasian/white:	4	80%
	Native American:	1	20%
Years in Current Organization	4 or less:	3	60%
	5 – 9:	1	20%
	10 – 14:	1	20%
	15 – 19:	0	0%
	20 or more:	0	0%
Years of IT Project Leadership Experience	10 – 14:	3	60%
	15 – 19:	1	20%
	20 – 24:	1	20%
	25 or more:	0	0%

Figure K.1 shows the participants' age ranges. Four (4) of the participants were male, and one (1) of the participants were female. English was primary language for all five (5) participants. Figure K.2 provides a representation of the highest level of education for each participant, with all participants holding either a Bachelor's or Master's degree.

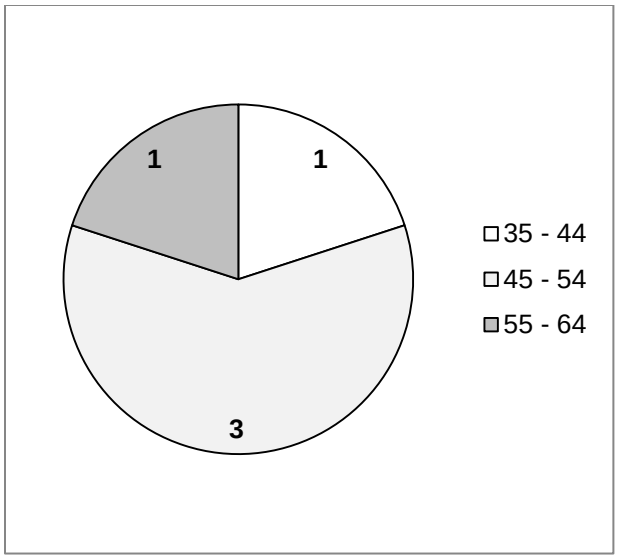

Figure K.1: Academia Project Managers - Participants by Age Range (N = 5)

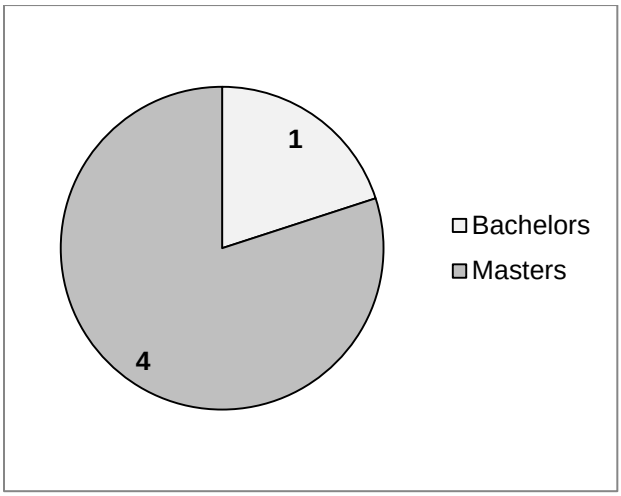

Figure K.2: Academia Project Managers - Highest Level of Education (N = 5)

Of the five (5) participants, four (4) classified themselves as Caucasian, and one (1) classified themselves Native American. Figure K.3 represents the participants' tenure in their current organizations. Since experience is an important inclusion criterion for participants, their years of IT project management experience are presented in Figure K.4.

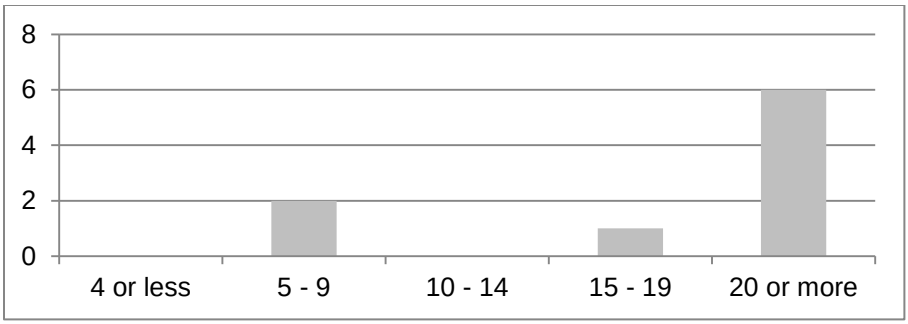

Figure K.3: Academia Project Managers - Years in Current Organization (N = 5)

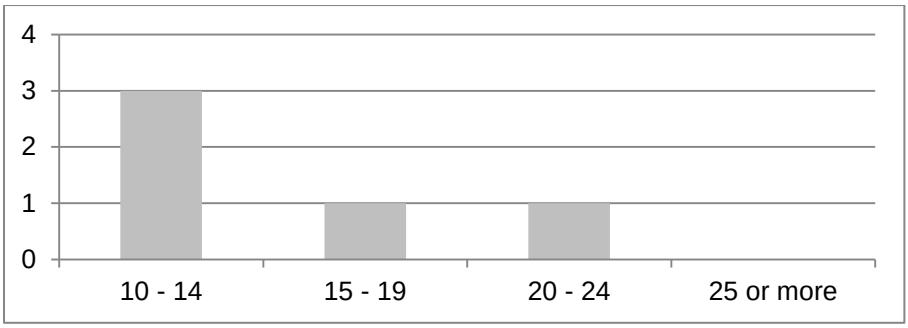

Figure K.4: Academia Project Managers - Years of IT Project Management Experience (N = 5)

Pre-Discussion Skill Ranking Results

The results from the Academia Project Managers pre-discussion skill category ranking (see Appendix E) are provided in Table K.2. Based on averages, the Financial Services Project Manager group ranked the skill categories, in order of importance, as follows: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Four (4) of the five (5) participants identified interpersonal skills as absolutely critical, with one (1) participant ranking interpersonal skills as very important. This provides evidence that there is a perception that project managers are expected to have IT knowledge in this organizational context.

Table K.2: Academia Project Managers Pre-Discussion Skill Category Ranking (N = 5)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A PM 1	4	1	3
A PM 2	2	2	3
A PM 3	3	1	2
A PM 4	3	1	2
A PM 5	4	1	2
Averages	3.20	1.20	2.40

Table K.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. In the IT knowledge and skills category, basic IT, or industry, knowledge was identified as important by four (4) of five (5) participants. In the interpersonal skills category, it is important to note that communication skills were included in the top three interpersonal skills by all five (5) participants. Project management expertise was included in the top three project management knowledge and application skills by all five (5) participants. Specific references to project management expertise included not only an understanding of the project management tools set, but also an understanding of which tools to use in different situations based on the complexity of the project and amount of rigor necessary for monitoring and controlling.

Table K.3: Academia Project Managers Pre-Discussion Top Three Skills by Category (N = 5)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
A PM 1	General IT structure	Communication	Lean project management
	SDLC	Facilitation	Tools & techniques
	Project related IT skills	Manage expectations	Scope management
A PM 2	Communicate in IT terms	Confidence	Key artifacts (lean)
	Email	Empathy	Organizing
	Planning software	Communication	Prioritizing
A PM 3	MS Project	Conflict management	Setting scope
	MS Excel	Facilitation	Monitoring progress
		Listening	Planning

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A PM 4	Software development	Problem solving	Risk management
	Network & infrastructure	Listening	Managing work / execution
	System administration	Flexibility	Planning
A PM 5	Applications development	Communication	Project integration
	Basic terminology	Leadership	Risk management
	IT architecture	Emotional intelligence	Human resource management

Focus Group 4 Observations and Analysis

Table K.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. Factors that contribute to *project success* or failure centered on interpersonal skills and project management expertise. When describing strong project management skills, the participants highlighted the need for a project manager to be confident, willing to proactively engage stakeholders regardless of positional authority, have a high tolerance for ambiguity in the early phases of a project, willing to accept change. A participant elaborated by stating, "The project manager has to be committed to the project objectives and people, not their project plan."

Table K.4: Academia Project Managers Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
Planning	Communication
Communication	Facilitation
Conflict management	Problem-solving
Sponsor support	Conflict management
Emotional intelligence	Enthusiasm
Clear scope and expectations	Flexibility
Cooperation	Listening skills
Leadership support of project management	Persistence
Application of lessons learned	Open to change
Team commitment	Focus on big picture
Resource availability	Detail oriented
Institutional knowledge	Motivator
Talented project manager	Team development
Patience	Optimism

Flexibility	
Leadership	

Other than being organized and understanding the project's strategic fit, all of the attributes most important for *project manager efficacy* were soft skills. This group dedicated time debating the meaning of interpersonal skills and insisted soft skills was a more comprehensive term that included both people skills and individual traits. It is interesting that although the group argued that individual traits, such as optimism and persistence, were just as important as interpersonal skills, their rankings indicated otherwise.

The Academia Project Manager group ranked communication skills as the most important contributor to *project manager efficacy* and included that communication skills is a comprehensive term that covered both sending and receiving, or listening, skills, adapting your style to match your audience, and ensuring the message content is at the appropriate level of detail. Conflict management and problem solving were also identified as the second and third most important skills, respectively.

Post-Discussion Skill Ranking Results

The results from the Academia Project Managers post-discussion skill category ranking (see Appendix F) are provided in Table K.5. Based on averages, the Academia Project Manager group skill category rankings did not change; however, the level of agreement increased. The group unanimously ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*. While project management methodology knowledge and application remained the second most important skill category of the three, the relative importance increased slightly as the relative importance of IT knowledge and skills decreased. The variances between the pre-discussion skill category rankings in Table K.2 are highlighted in the post-discussion skill category rankings in Table K.5.

Table K.5: Academia Project Managers Post-Discussion Skill Category Ranking (N = 5)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
A PM 1	4	1	3
A PM 2	3	1	2
A PM 3	3	1	2
A PM 4	3	1	2
A PM 5	4	1	2
Averages	3.40	1.00	2.20

Table K.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. While there were variations in perceived priority related to specific skills in each category, there are no noteworthy trends associated with new skills or emerging trends in the top three skills by category. A PM 4 changed their top three Interpersonal skills based on how the group defined communication skills to include the project manager's listening skills. The variances between the pre-discussion skill category rankings in Table K.3 are highlighted in the post-discussion skill category rankings in Table K.6.

Table K.6: Academia Project Managers Post-Discussion Top Three Skills by Category (N = 5)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
A PM 1	General IT structure	Communication	Lean project management
	Agile	Facilitation	Agile
	SDLC	Manage expectations	Scope management
A PM 2	Communicate in IT terms	Enthusiasm	Key artifacts (lean)
	Planning software	Listening	Organizing
	Agile	Communication	Prioritizing
A PM 3	PMIS	Conflict management	Setting scope
	MS Project	Facilitation	Monitoring progress
	MS Excel	Listening	Planning
A PM 4	Software development	Problem solving	Risk management
	Network & infrastructure	Communications	Managing work / execution
	System administration	Flexibility	Planning
A PM 5	Applications development	Communication	Project leadership
	Basic terminology	Leadership	Project integration

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
	IT architecture	Emotional intelligence	Risk management

Appendix L. Focus Group 5 – Government Senior IT Leaders

Participant Demographics

The participants in this focus group were Senior IT Leaders from a Government organization. Table L.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table L.1: Government Senior IT Leaders Demographics (N = 9)

Age	25 – 34:	0	0%
	35 – 44:	6	67%
	45 – 54:	1	11%
	55 – 64:	2	22%
	65 or older:	0	0%
Gender	Female:	5	56%
	Male:	4	44%
Primary Language	English:	9	100%
Highest Level of Education	Associates degree:	2	22%
	Bachelor's degree:	4	44%
	Master's degree:	3	33%
Ethnicity	Asian:	2	22%
	Black:	1	11%
	Caucasian/white:	6	67%
Years in Current Organization	4 or less:	3	33%
	5 – 9:	3	33%
	10 – 14:	2	22%
	15 – 19:	0	0%
	20 or more:	1	11%
Years of IT Experience	10 – 14:	4	44%
	15 – 19:	3	33%
	20 – 24:	2	22%
	25 or more:	0	0%
Years of Project Team Member Experience	5 – 9:	7	78%
	10 – 14:	1	11%
	15 – 19:	1	11%
	20 or more:	0	0%
Years of Project Leadership Experience (i.e. Resource Mgmt, Project Sponsor, Project Manager)	5 – 9:	8	89%
	10 – 14:	0	0%
	15 – 19:	1	11%
	20 or more:	0	0%

Figure L.1 shows the participants' age ranges. Four (4) of the participants were male, and five (5) of the participants were female. The primary language, 100% of the participants, was English. Figure L.2 provides a representation of the highest level of education for each participant.

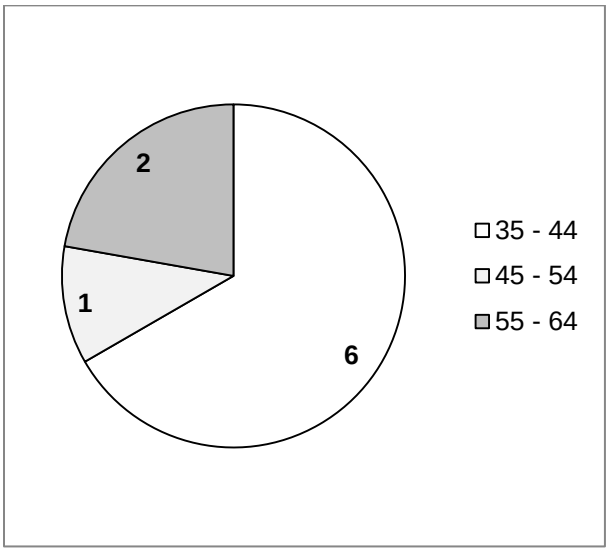

Figure L.1: Government Senior IT Leaders - Participants by Age Rage (N = 9)

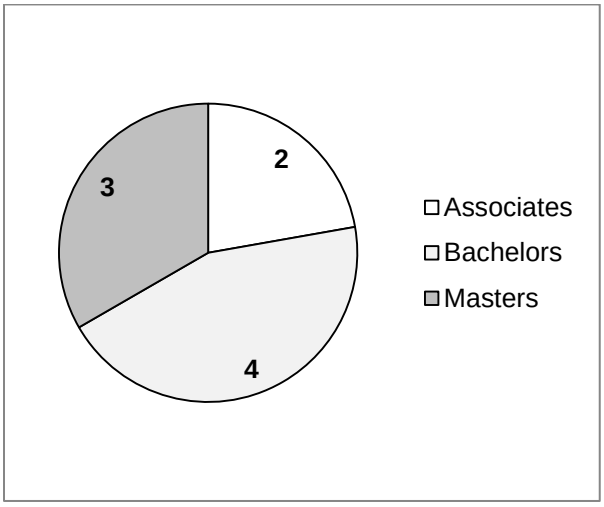

Figure L.2: Government Senior IT Leaders - Highest Level of Education (N = 9)

Six (6) of nine (9) participants classified themselves as Caucasian, one (1) of nine (9) participants classified themselves as Black, and two (2) of nine (9) participants classified themselves as Asian. Figure L.3 represents the participants' tenure in their current organizations. Since experience is an important inclusion criteria for participants, their years of IT experience, project team member experience, and project leadership experience are provided. Figure L.4 represents the participants' years of IT experience. Figure L.5 represents the participants' years of project team member experience. Figure L.6 represents the participants' years of project leadership experience as a resource manager, project manager, or project sponsor.

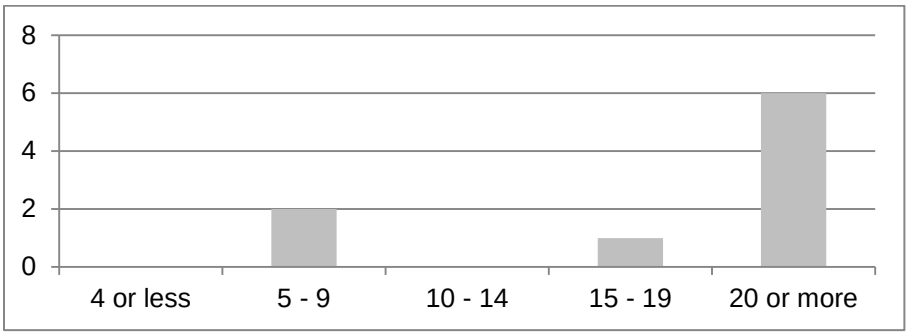

Figure L.3: Government Senior IT Leaders - Years in Current Organization (N = 9)

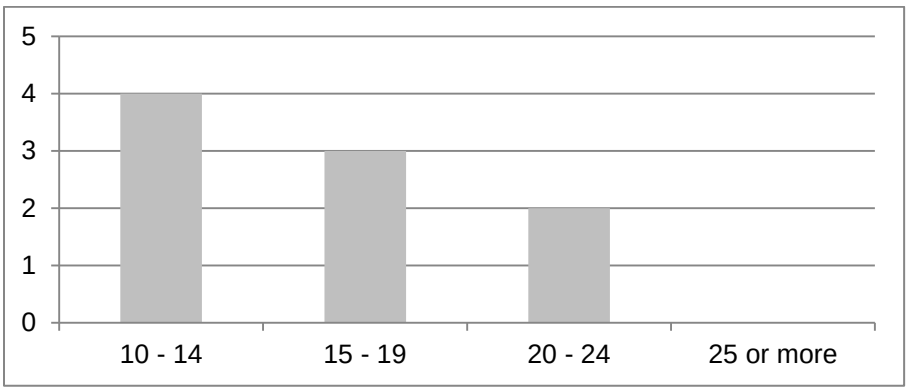

Figure L.4: Government Senior IT Leaders - Years of IT Experience (N = 9)

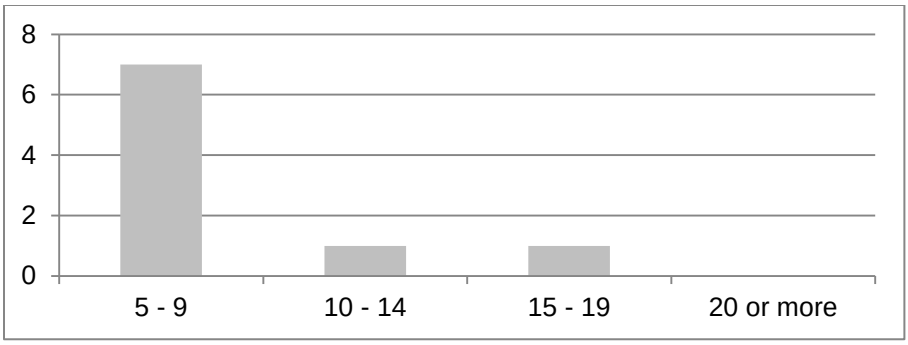

Figure L.5: Government Senior IT Leaders - Years of Project Team Member Experience (N = 9)

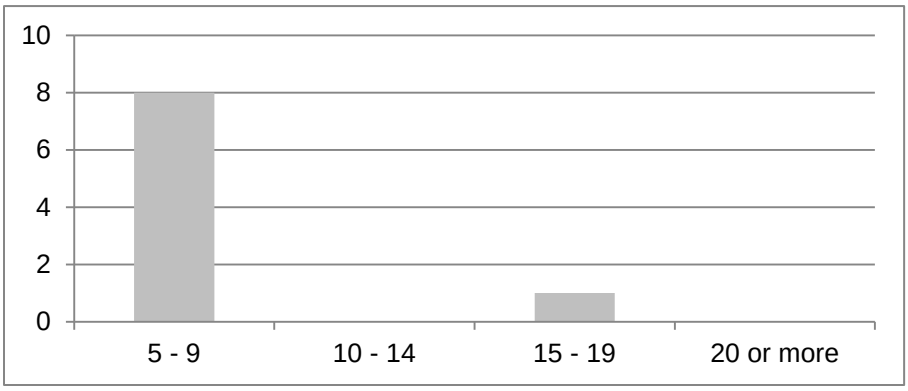

Figure L.6: Government Senior IT Leaders - Years of Project Leadership Experience (N = 9)

Pre-Discussion Skill Ranking Results

The results from the Government Senior IT Leaders pre-discussion skill category ranking (see Appendix E) are provided in Table L.2. Based on averages, the Government Senior IT Leader group ranked the skill categories, in order of importance, as follows: 1. Interpersonal skills, 2. Project management knowledge and application, and 3. IT knowledge and skills. Seven (7) of nine (9) participants ranked interpersonal skills as absolutely critical, and two (2) of nine (9) participants ranked interpersonal skills as very important. Two (2) of nine (9) participants ranked project management knowledge and application as absolutely critical, and two (2) of nine (9) ranked project management knowledge and application as very important. It is important to

note that the Government Senior IT Leader group unanimously ranked IT knowledge and skills lower than either interpersonal skills or project management knowledge and application skills, with nine (9) of nine (9) participants ranking IT knowledge and skills as moderately important. Based on averages, the data demonstrates a skill set preference based on experience.

Table L.2: Government Senior IT Leaders Pre-Discussion Skill Category Ranking (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G IT 1	3	1	2
G IT 2	3	1	2
G IT 3	3	1	2
G IT 4	3	1	2
G IT 5	3	2	1
G IT 6	3	1	2
G IT 7	3	1	2
G IT 8	3	1	2
G IT 9	3	2	1
Averages	3.00	1.22	1.78

Table L.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. Coding revealed that this stakeholder group unanimously included a basic knowledge of, not expertise in, IT terminology and processes in their top three skills in the IT knowledge and skills category. Seven (7) of nine (9) participants included communication in the list of top three interpersonal skills. While no one skill dominated the project management knowledge and application skill set, it is noteworthy that five (5) of nine (9) participants in the Government Senior IT Leaders group identified project management expertise as an important contributor to *project manager efficacy*. They further described expertise as a combination of certification, experience with a variety of project types, and the ability to adapt their project management approach to the organization's culture.

Table L.3: Government Senior IT Leaders Pre-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G IT 1	IT Terminology	Communication	Pragmatic project management
	Basic IT knowledge necessary to plan	Listening	Documentation
		Personable	
G IT 2	General understanding of IT	Work with all stakeholders	Practical application of PM
	Ask intelligent IT related questions	Lead teams	Regular communication
		Conflict management	PM best practices
G IT 3	Basic software/network knowledge	Communication	PMP
	IT Infrastructure	Facilitation	Templates/documentation
			Continuing education in PM
G IT 4	SDLC	Communication	Certification
	System administration	Conflict resolution	PM Tools
	Visio, MS Project		Scope management
G IT 5	Basic IT systems knowledge	Communication	Project planning
	Identify correct/best SMEs	Facilitation	PM best practices
	Resource assignments	Stakeholder leadership	Project reporting/dashboards
G IT 6	Data analysis	Conflict resolution	Risk management
	Business process flow for systems	Team building	Scope management
		Presentation skills	Quality management
G IT 7	Understand IT environment	Communication	Scope management
	IT security awareness	Team building	Stakeholder management
	Business continuity requirements		Risk management
G IT 8	Communication	Relate to stakeholders	Experienced
	IT related analysis	Negotiation	
	Organized documentation	Follow-up	
G IT 9	Business continuity	Communication	Stakeholder management
	IT Security	Team building	Scope management
		Leadership	Risk management

Focus Group 5 Observations and Analysis

Table L.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. It is interesting to note that IT knowledge and skills were not identified as either factors that contribute to *project success* or missing ingredients that may have contributed to project failure; however, the group unanimously agreed that a project manager must have basic IT knowledge in an IT-centric project environment. Emphasizing general IT knowledge, one participant stated,

> "I need a project manager to understand basic IT terminology, understand the IT roles, and really know how important it is for us to have engaged user groups and clear requirements. I do not want a project manager that is an IT expert, or worse, a project manager that thinks they are an IT expert. They should rely on their team to be the experts and focus on their project management role. Their < project manager > IT knowledge, real or not, can get in their way."

The Government Senior IT Leader group also focused their discussion on factors that contribute to *project success* to stakeholder management concepts such as gaining agreement on objectives, clearly defining roles and responsibilities, gaining buy-in from team members, keeping stakeholders engaged throughout the project, including the appropriate stakeholders in testing, and maintaining executive support.

Table L.4: Government Senior IT Leaders Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
Executive support	Audience analysis
Teamwork	Team building
Clear requirements	Certification
Frequent communication	Experience
The right resources (skills)	Communication
Documentation	Flexibility

Thorough testing	Negotiation
Realistic timeline	Conflict resolution
Realistic budget	Facilitation
Engaged stakeholders	Basic IT knowledge
Risk management	Business knowledge
Team buy-in	Positive
Strong project manager	Empowered
Clearly defined objectives	Self-confident
Knowledge of business processes impacted	Trustworthy
Defined roles and responsibilities	Respected
	Listening
	Humility
	Follow-up
	Diplomacy

When describing their experiences related to project manager skills, they continued the stakeholder management theme by relating the attributes most important for *project manager efficacy* to how those skills contribute to a project manager's ability to lead various stakeholder groups. For example, diplomacy was described as a combination of political savvy and emotional intelligence. A participant elaborated with,

> "They must have the political savvy to know who the real decision makers and influencers are, have the ability to connect with those folks, be able to negotiate for the support needed for the project based on an understanding of what is important to them < decision makers and influencers >, and have the self-awareness to not let agendas or initial rejection negatively influence their < project manager > resolve."

Related to stakeholder management, many of the skills contributing to *project manager efficacy* were related to stakeholder perceptions, such as trustworthiness, respect, and humility.

When asked to rank the attributes most important for *project manager efficacy* in order of importance, the discussion shifted back to communication skills. Two participants took turns providing examples of a project manager in their organization they considered a skilled communicator.

"She takes the time to know the team members and talks on their level. I do not mean she talks down to them, but uses terms and examples they are familiar with to ensure they understand."

"She chooses the tool < medium > best suited for the message. In other words, she is not stuck in email or conference calls."

"< Project manager name > always listens before she talks. She asks more questions than anything else. You just know she is actually listening and wants to hear you."

"Everyone knows how smart she is, but she makes you feel smart."

This series of statements address audience analysis, proactive communications planning, active listening, and the ability to develop relationships and trust with an audience. The communication skills, ranked first by this group, were followed by experience and emotional intelligence ranked two and three, respectively.

It is important to note that this IT stakeholder group was not experienced in agile software development methodologies or agile project management. When asked how leading an agile team influences attributes contributing to *project manager efficacy*, there was no opinion or experiences offered. After describing agile methodologies and agile teams, the only comment was "I do not see how that changes anything."

Post-Discussion Skill Ranking Results

The results from the Government Senior IT Leaders post-discussion skill category ranking (see Appendix F) are provided in Table L.5. Based on averages, the Government Senior IT Leader group skill category rankings did not change; however, the level of agreement increased to unanimity for all three skill categories. The group ranked interpersonal skills as absolutely critical and most important for *project manager efficacy*, project management

knowledge and application as very important, and IT knowledge and skills as moderately important. The data clearly demonstrates a skill set preference based on experience in this stakeholder after the collaborative discussions defending the individuals' perceptions. The variances between the pre-discussion skill category rankings in Table L.2 are highlighted in the post-discussion skill category rankings in Table L.5.

Table L.5: Government Senior IT Leaders Post-Discussion Skill Category Ranking (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G IT 1	3	1	2
G IT 2	3	1	2
G IT 3	3	1	2
G IT 4	3	1	2
G IT 5	3	1	2
G IT 6	3	1	2
G IT 7	3	1	2
G IT 8	3	1	2
G IT 9	3	1	2
Averages	3.00	1.00	2.00

Table L.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. While there were variations in perceived priority related to specific skills in each category, there are no noteworthy trends associated with new skills or emerging trends in the top three skills by category. The variances between the pre-discussion skill category rankings in Table L.3 are highlighted in the post-discussion skill category rankings in Table L.6.

Table L.6: Government Senior IT Leaders Post-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	**Interpersonal Skills**	**PMM Knowledge & Application**
G IT 1	Basic IT knowledge	Communication	Pragmatic project management
		Time management	Certification
		Emotional intelligence	

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G IT 2	General understanding of IT	Work with all stakeholders	Practical application of PM
	Ask intelligent IT related questions	Lead teams	Regular communication
		Conflict management	PM best practices
G IT 3	Basic software/network knowledge	Communication	PMP
	IT Infrastructure	Facilitation	Templates/documentation
			Continuing education in PM
G IT 4	SDLC	Communication	Certification
	System administration	Emotional intelligence	PM Tools
	Visio, MS Project		Scope management
G IT 5	Basic IT systems knowledge	Communication	Project planning
	Identify correct/best SMEs	Facilitation	PM best practices
	Resource assignments	Stakeholder leadership	Project reporting/dashboards
G IT 6	Data analysis	Conflict resolution	Risk management
	Business process flow	Team building	Scope management
		Presentation skills	Quality management
G IT 7	Understand IT environment	Communication	Scope management
	IT security awareness	Team building	Stakeholder management
	Business continuity requirements		Risk management
G IT 8	Basic IT knowledge	Communication	Communication
		Negotiation	PM knowledge & experience
		Follow-up	Time management
G IT 9	Business continuity	Communication	Stakeholder management
	IT Security	Team building	Scope management
		Leadership	Risk management

Appendix M. Focus Group 6 – Government Project Managers

Participant Demographics

The participants in this focus group were Certified Project Management Professionals (PMP®) in a Government organization. Table M.1 provides a summary of demographics for this stakeholder group. Exact counts are provided with associated percentages; all percentages are rounded to the nearest whole number.

Table M.1: Government Project Managers Demographics (N = 9)

Age	25 – 34:	2	22%
	35 – 44:	3	33%
	45 – 54:	3	33%
	55 – 64:	1	11%
	65 or older:	0	0%
Gender	Female:	2	22%
	Male:	7	78%
Primary Language	English:	9	100%
Highest Level of Education	High School (or equivalent):	1	11%
	Associates (2 year):	1	11%
	Bachelor's degree:	2	22%
	Master's degree:	5	56%
Ethnicity	Black:	2	22%
	Caucasian/white:	7	78%
Years in Current Organization	4 or less:	0	0%
	5 – 9:	3	33%
	10 – 14:	2	22%
	15 – 19:	1	11%
	20 or more:	3	33%
Years of IT Project Leadership Experience	10 – 14:	6	67%
	15 – 19:	2	22%
	20 – 24:	0	0%
	25 or more:	1	11%

Figure M.1 shows the participants' age ranges. Seven (7) of the participants were male, and two (2) of the participants were female. English was primary language for all nine (9) participants. Figure M.2 provides a representation of the highest level of education for each participant.

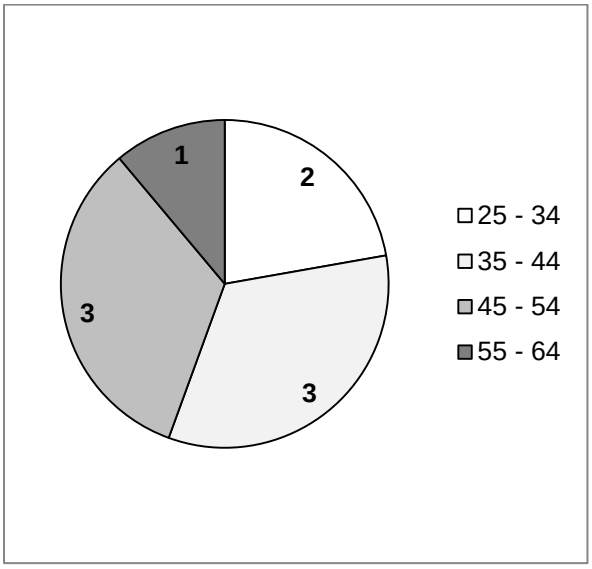

Figure M.1: Government Project Managers - Participants by Age Range (N = 9)

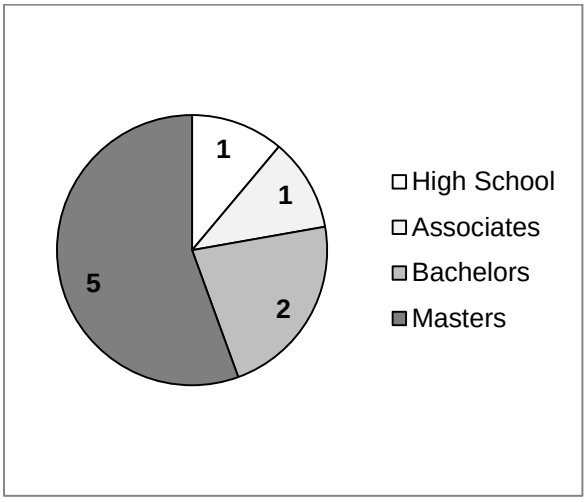

Figure M.2: Government Project Managers - Highest Level of Education (N = 9)

Of the nine (9) participants, seven (7) classified themselves as Caucasian, and two (2) classified themselves as Black. Figure M.3 represents the participants' tenure in their current organizations.

Since experience is an important inclusion criterion for participants, their years of IT project management experience are presented in Figure M.4.

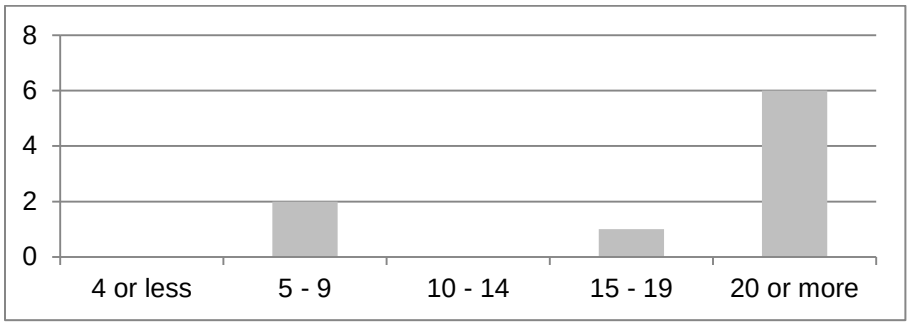

Figure M.3: Government Project Managers - Years in Current Organization (N = 9)

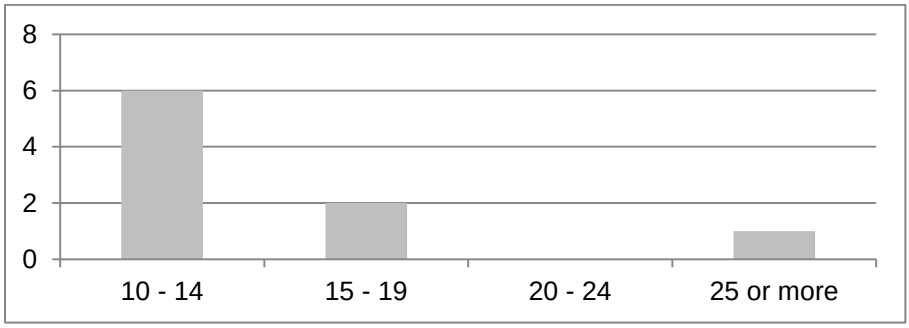

Figure M.4: Government Project Managers - Years of IT Project Management Experience (N = 9)

Pre-Discussion Skill Ranking Results

The results from the Government Project Managers pre-discussion skill category ranking (see Appendix E) are provided in Table M.2. Based on averages, the Government Project Manager group ranked the skill categories, in order of importance, as follows: 1. Project management knowledge and application, 2. Interpersonal skills, and 3. IT knowledge and skills. It is important to note that this is the only group that ranked a skill set, on average, higher than interpersonal skills. The focus group discussion revealed that the participants had recently

completed a project management training program and project management certification was included as a part of their professional development program. Three (3) of nine (9) participants ranked project management knowledge and application as absolutely critical, five (5) of nine (9) ranked this skill set as very important, and only 1 (one) of nine (9) ranked this skill set as moderately important. Another observation is that thee (3) participants ranked IT knowledge and skills higher than interpersonal skills. This provides evidence that there is a perception that project managers are expected to have a combination of project management and IT knowledge in this organizational context.

Table M.2: Government Project Managers Pre-Discussion Skill Category Ranking (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G PM 1	1	3	2
G PM 2	2	1	3
G PM 3	4	2	1
G PM 4	2	3	1
G PM 5	3	1	2
G PM 6	3	1	2
G PM 7	3	1	2
G PM 8	3	2	1
G PM 9	1	3	2
Average	2.44	1.89	1.78

Table M.3 lists the three top skills in order of perceived importance pre-discussion in each category for this stakeholder group. While there is no evidence of agreement in either skills or priorities before the discussions, there are several trends identified. In complete alignment with the information this group had recently completed a project management training program and earning the PMP® certification was part of their professional development plans, nine (9) of nine (9) participants used specific project management terms and related theory to identify their top three skills in the project management knowledge and application category. A basic

understanding of IT systems, terminology, and infrastructure was identified as important by eight (8) of nine (9) participants. Communication skills were included in the top three interpersonal skills by eight (8) of nine (9) participants.

Table M.3: Government Project Managers Pre-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G PM 1	Systems infrastructure	Communication	PM theory
	Software	Writing	Scheduling
	Hardware	Computer	Risk management
G PM 2	Basic systems	Influencing others	Planning
	Business applications	Listening	Stakeholder management
	User perspective	Communication	Risk management
G PM 3	IT terminology	Communication	Planning
	System compatibility		Resource management
	Cost		Risk management
G PM 4	Basic IT knowledge	Communication	PM Terminology
		Stakeholder management	Pragmatic application
		Strategic focus	Team management
G PM 5	IT product lifecycle	Communication	Scope management
	Systems infrastructure	Conflict management	Change management
	SDLC	Team building	Project execution
G PM 6	IT terminology	Communication	PM tools
	IT culture awareness	Patience	
	IT trends	Persistence	
G PM 7	IT terminology	Presentation skills	Conflict resolution
		Conflict resolution	Leadership
			Six sigma
G PM 8	Configuration management	Eliciting requirements	Scope management
		Building relationships	Scheduled management
		Training team members	Stakeholder management
G PM 9	Project-related IT knowledge	Communicate expectations	Risk management
	IT Trends	Consistency	Project planning
		Follow-through	

Focus Group 6 Observations and Analysis

Table M.4 presents the raw data when brainstorming lists of factors based on their experience that contribute to *project success* and failure and skills they identified as most important for *project manager efficacy*. Factors that contribute to *project success* or failure centered on interpersonal skills and project management expertise. The discussion about factors that contribute to *project success* included two basic themes; 1) stakeholder identification and leadership, and 2) planning processes. A participant commented, and the group universally agreed, that,

> "Having executive support or sponsorship is only half the battle. The project manager needs to earn the support of all the stakeholder groups and ensure the right people are on the bus. The sponsor isn't doing the work; it is the project team that is doing the work, and their direct leadership needs to be fully bought into the project goals and objectives."

Discussions related to the second theme, project planning, included comments such as "a lack of planning significantly increases risk", "a one-size-fits-all approach to planning does not work", and "planning is pointless without agreed upon project objectives".

Table M.4: Government Project Managers Brainstorming Lists

Factors that contribute to project success or failure	Attributes most important for project manager efficacy
Executive support	Conflict resolution
Buy-in from non-executives	Problem-solving skills
Right resources on the project	Stakeholder identification
Communication	Communication
Risk assessment	Setting ground rules
Historic, organizational knowledge	Flexibility
Dedicating planning	Leadership
Iterative project planning	Influencing others
Stakeholder management	Motivator
Clear objectives	Bold and confident
	Honest, trustworthy
	Focused on project objectives
	Change management
	Internal consulting skills
	Experienced

Other than ensuring agreed upon project objectives and project management experience, all of the attributes most important for *project manager efficacy* were soft skills. The group included understanding the organizational strategy, internal politics, and organizational business processes is critical for effective project leadership in their context. An exchange by the participants described the relationship between organizational knowledge and project expertise as follows,

> "Project management expertise is very important, but insufficient by itself. The project manager has to know the organization to get the benefit from their project management experience."
>
> "Yeah, but how do that get that knowledge? They have to develop relationships with people in the organization, learn how things really get done in < the organization >, and figure out how to navigate the politics."
>
> "So, how do you get that quickly here?"
>
> "Seek out the people that have that experience and let them mentor you. Listen and learn."

The group was evenly split between leadership and communication; however, the Government Project Manager group ranked leadership as the most important contributor to *project manager efficacy* after considerable debate. Communication was ranked second by vote; however, four (4) of the nine (9) considered communication skills more important that leadership skills. When asked how leading agile teams influences their list or ranking, they concluded that the list and ranking should be the same with an increased need for flexibility.

Post-Discussion Skill Ranking Results

The results from the Government Project Managers post-discussion skill category ranking (see Appendix F) are provided in Table M.5. The data provides evidence that the collaboration discussion influenced six (6) of the nine (9) participants' skill category ranking. Interpersonal skills changed from an average of very important to agreement between eight (8) of nine (9) participants that interpersonal skills are absolutely critical. One participant still considered project management knowledge and application as absolutely critical and interpersonal skills as moderately important. Based on averages, the group ranked project management knowledge and application as very important and IT knowledge and skills as moderately important. The variances between the pre-discussion skill category rankings in Table M.2 are highlighted in the post-discussion skill category rankings in Table M.5.

Table M.5: Government Project Managers Post-Discussion Skill Category Ranking (N = 9)

Ranking on a scale of 1 – 5, with 1 being absolutely critical			
	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G PM 1	3	1	2
G PM 2	3	1	2
G PM 3	4	1	3
G PM 4	2	1	3
G PM 5	3	1	2
G PM 6	3	1	2
G PM 7	3	1	2
G PM 8	3	1	2
G PM 9	2	3	1
Average	2.89	1.22	2.11

Table M.6 lists the three top skills in order of perceived importance post-discussion in each category for this stakeholder group. While there were variations in perceived priority related to specific skills in each category, there are no noteworthy trends associated with new skills or emerging trends in the top three skills by category. The variances between the pre-

discussion skill category rankings in Table M.3 are highlighted in the post-discussion skill category rankings in Table M.6.

Table M.6: Government Project Managers Post-Discussion Top Three Skills by Category (N = 9)

	IT Knowledge & Skills	Interpersonal Skills	PMM Knowledge & Application
G PM 1	Systems infrastructure	Communications	PM theory
	Software	Writing	Scheduling
	Hardware	Computer	Risk management
G PM 2	Basic systems	Influencing others	Planning
	Business applications	Listening	Stakeholder management
	User perspective	Communication	Risk management
G PM 3	Terminology	Leadership	Planning
		Communication	Resource management
		Conflict resolution	Risk management
G PM 4	Basic IT knowledge	Communication	Team management
		Stakeholder management	Pragmatic application
		Strategic focus	PM terminology
G PM 5	IT product lifecycle	Trustworthiness	Scope management
	Systems infrastructure	Leadership	Change management
	SDLC	Problem solving	Project execution
G PM 6	IT Terminology	Communication	Risk management
	IT culture	Leadership	Project planning
	IT trends	Transparency	
G PM 7	IT terminology	Presentation skills	Conflict resolution
		Conflict resolution	Leadership
			Change management
G PM 8	Collaboration tools	Communication	Scope management
	Configuration management	Boldness	Team management
		Honesty	Stakeholder management
G PM 9	Basic IT knowledge	Communication	Risk management
		Follow-through	Project planning
		Problem solving	Scope management

Curriculum Vitae

PERSONAL INFORMATION

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EDUCATION

Degree: Doctorate of Professional Studies – Information Management
Syracuse University, Syracuse, New York
Year Conferred: 2015, GPA 3.92

Degree: Master of Science in Project Management
University of Wisconsin, Platteville, Wisconsin
Year Conferred: 2003, GPA 4.00

Degree: Master of Business Administration
University of Florida, Gainesville, Florida
Year Conferred: 2000, GPA 3.83

Degree: Bachelor of Science Management
Southern Illinois University, Carbondale, Illinois
Year Conferred: 1993, GPA 4.00

EMPLOYMENT HISTORY

Vice President of Process Improvement and Execution; Reporting to CIO
Farm Credit Mid-America, Louisville, KY
June 2014 - present

Director of Program Management (Project Management Office); Reporting to CTO
Churchill Downs Incorporated, Louisville, KY
April 2007 – June 2014

Manager, Information Technology Project Management Office
Humana Inc, Louisville, KY
Oct 2004 – Apr 2007

Program Manager – Project Management & Quality Management Training Programs
University of Louisville Delphi Center, Louisville, KY
Nov 2005 - present

EMPLOYMENT HISTORY (Continued)

Project Manager & Department Head
United States Navy, Naval Station Mayport, FL
Sep 2000 – Oct 2004

Intelligence Instructor & Division Officer
United States Navy, Naval Air Station Jacksonville, FL
Aug 1997 – Sep 2000

CERTIFICATIONS

Program Management Professional (PgMP)
Organization: Project Management Institute (PMI)

Project Management Professional (PMP)
Organization: Project Management Institute (PMI)

Certified Agile Practitioner (PMI-ACP)
Organization: Project Management Institute (PMI)

Certified Business Analysis Professional (CBAP)
Organization: International Institute for Business Analysis (IIBA)

Six Sigma Black Belt
Organization: American Society for Quality (ASQ)

Manager of Quality/Organizational Excellence
Organization: American Society for Quality (ASQ)

Software Quality Engineer
Organization: American Society for Quality (ASQ)

Managed Healthcare Professional
Organization: Health Insurance Association of America

IT Service Management Foundations Certificate
Organization: itSMF International

TEACHING EXPERIENCE

Sullivan University
Louisville, Kentucky
December 2008 – Present
Topics: Project Management Professional Certification Preparation, Six Sigma Green Belt Certification Preparation

University of Louisville
Louisville, Kentucky
Nov 2005 – present
Topics: Project Management and Program Management – Fundamentals to Advanced Practical Application Concepts and Certification Preparation, Critical Thinking, Career Development

University of Phoenix
Campus: Jacksonville, FL; Louisville, KY; and Online
Mar 2002 - present
Topics: Project Management, Quality Management, Critical Thinking, Operations Management, Fundamentals of Research, and Strategic Implementation

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INSTRUCTIONAL DESIGN AND COURSE DEVELOPMENT

University of Louisville, Louisville, KY
Course Content: Designed, developed, implemented, and manage the Delphi Center's Project and Program Management Seminars and Certification program. Developed all course content, including lectures, assignments, exams, and group learning exercises for project management, program management, portfolio management, operations management, quality management, critical thinking, and management theory topics. Courses are certified through the Project Management institute, earning the program the Registered Education Provider (REP) status.

South University, Savannah, GA & and Online
Course Content: Master of Business Administration (MBA) program Project Management emphasis courses – Designed and developed all course content for graduate courses leveraged for both online and classroom instruction, including lectures, assignments, evaluation criteria and rubrics, exams, and group learning exercises for project management courses.

INSTRUCTIONAL DESIGN AND COURSE DEVELOPMENT (Continued)

University of Phoenix, Jacksonville, FL; Louisville, KY; and Online
Course Content: Designed and developed all course content for both online and classroom instruction, including lectures, assignments, exams, and group learning exercises for project management, operations management, quality management, critical thinking, and management theory courses.

PUBLICATIONS

Refereed Proceedings:

Millhollan, C. (October 2011). The Marriage of Professions: Business Analysis & Project Management Can Live Happily Ever After…Together. PMI Global Congress. Project Management Institute. Newtown Square, PA.

Millhollan, C. (October 2009). The Journey to an Enterprise Project Management Office. PMI Global Congress. Project Management Institute. Newtown Square, PA.

Millhollan, C. (October 2008). Scope Change Control: Control Your Projects or Your Projects Will Control You. PMI Global Congress. Project Management Institute. Newtown Square, PA.

Collaborator:

Millhollan, C. (2014). "Project Success." In Chapter 1 of Kerzner, H. (2014). Project Management Best Practices: Achieving Global Excellence, 3rd Edition. John Wiley & Sons. New York.

Millhollan, C. (2011). "Project Performance Measurement Approaches." In Chapter 3, pp. 89 – 95, of Kerzner, H. (August 2011). Project Management Metrics, Key Performance Indicators and Dashboards. John Wiley & Sons, New York.

Millhollan, C. (2010). "Establishing a Project Management Office." In Chapter 12, pp. 419 – 426, of Kerzner, H. (2010). Project Management Best Practices: Achieving Global Excellence, 2nd Edition. John Wiley & Sons. New York.

Millhollan, C. (2010). "Churchill Downs Incorporated's Project Management Methodology." In Chapter 4 of Kerzner, H. (2010). Project Management Best Practices: Achieving Global Excellence, 2nd Edition. John Wiley & Sons. New York.

PROFESSIONAL MEMBERSHIPS

1. Board of Directors, International Institute for Business Analysis (IIBA), and Louisville, Kentucky Chapter
    a. Chair of Board, November 2011 – July 2012
    b. Member of the Human Resource & Compensation committee, June 2010 – October 2013
    c. Member of the Finance, Audit and Risk committee, June 2010 – October 2013
2. Reviewer – Member of the Peer-Review Panel for the Best Practices for Better Business Analysis publication through the International Institute for Business Analysis (IIBA), January 2013 – present.
3. Senior Member, American Society for Quality (ASQ), and ASQ Northeast Florida Section
4. Project Management Institute (PMI), and PMI Kentuckiana Chapter
    a. Vice President of Education, 2007 – 2010

AWARDS and HONORS

2011 Dr. Kerzner "International Project Manager of the Year" Award Recipient
University of Phoenix graduate "Teacher of the Year" for 2007
University of Phoenix undergraduate "Teacher of the Year" for 2004

PUBLIC SPEAKING ENGAGEMENTS
(Not a comprehensive list; duplicate topics & topics presented before 2008 omitted.)

1. Topic: Developing Your Project Managers: Why Definitions of Process, Person, and Outcome Success Make a Difference
    a. Organization: Southwest Ohio PMI Chapter
    b. Event: 2014 Mega Event
    c. Location: Cincinnati, OH
    a. Date: April 2014

2. Topic: Professional Certifications: What's the Value?
    a. Organization: International Institute for Business Analysis (IIBA)
    b. Event: Chapter meeting
    c. Location: Louisville, KY
    d. Date: January 2014

3. Topic: Dramatic Shift or Subtle Change? Project Managers Shouldn't Fear the Future…Unless They Refuse to Change
    d. Organization: Southwest Ohio PMI Chapter
    e. Event: 2013 Mega Event
    f. Location: Cincinnati, OH
    g. Date: April 2013

PUBLIC SPEAKING ENGAGEMENTS (Continued)

4. Topic: It's Your Career, Drive It Like You Stole It
   a. Organization: Institute for International Research
   b. Event: Project World and World Congress for Business Analysis
   c. Location: Orlando, FL
   d. Date: September 2012

5. Topic: A Case Study in Professional and Career Path Development
   h. Organization: Southwest Ohio PMI Chapter
   i. Event: 2012 Mega Event
   j. Location: Cincinnati, OH
   k. Date: April 2012

6. Topic: Congratulations, You're Certified! Now What? A Case Study on Professional Development.
   a. Organization: Institute for International Research (IIR)
   b. Event: Project World and World Congress for Business Analysis
   c. Location: Orlando, FL
   d. Date: November 2011

7. Topic: The Marriage of Professions – Business Analysis & Project Management Can Live Happily Ever After…Together.
   a. Organization: Project Management Institute
   b. Event: PMI Global Congress
   c. Location: Dallas, TX
   d. Date: October 2011

8. Topic: Out of the Gate Running – A Case Study on Requirements Management.
   a. Organization: Space Coast PMI Chapter
   b. Event: Space Coast PMI Professional Development Day
   c. Location: Melbourne, FL
   d. Date: September 2011

9. Topic: Keynote Address: Generate a Business Case for PMO (Project Management Office) Success
   a. Organization: American Strategic Management Institute & The Performance Institute
   b. Event: The PMO Strategic Summit
   c. Location: Orlando, FL
   d. Date: April 2011

PUBLIC SPEAKING ENGAGEMENTS (Continued)

10. Topic: The International Institute for Business Analysis – Our Strategic Direction
    a. Organization: International Institute for Business Analysis (IIBA)
    b. Event: Chapter meeting
    c. Location: Louisville, KY
    d. Date: February 2011

11. Topic: Integrating Two Proven Processes – Six Sigma & Project Management
    a. Organization: Georgia State University
    b. Event: Lean Six Sigma Open House
    c. Location: Atlanta, GA
    d. Date: February 2011

12. Topic: One Cannot Live by the PMBOK or BABOK Alone – Trust Me
    a. Organization: Institute for International Research (IIR)
    b. Event: Project World and World Congress for Business Analysts
    c. Location: Orlando, FL
    d. Date: November 2010

13. Topic: Out of the Gate Running – A Case Study on Requirements Management
    a. Organization: Institute for International Research (IIR)
    b. Event: Project World and World Congress for Business Analysts
    c. Location: Orlando, FL
    d. Date: November 2010

14. Topic: The Weeks Leading Up to the Greatest Two Minutes in Sports: A Case Study in Project Prioritization & Risk Management
    a. Organization: Atlanta PMI Chapter
    b. Event: Chapter meeting
    c. Location: Atlanta, GA
    d. Date: October 2010

15. Topic: Critical Thinking & Decision Making for Managing Complex Initiatives – A Practical Exercise
    a. Organization: South Florida PMI Chapter
    b. Event: South Florida PMI Professional Development Days 2010
    c. Location: Davie, FL
    d. Date: May 2010

16. Topic: Professional Longevity – Developing Trust with Your Stakeholder Groups
    a. Organization: Kindred Healthcare
    b. Event: International Project Management Day
    c. Location: Louisville, KY
    d. Date: November 2009

PUBLIC SPEAKING ENGAGEMENTS (Continued)

17. Topic: The Journey to an Enterprise Project Management Office
    a. Organization: Project Management Institute
    b. Event: 2009 North America Global Congress
    c. Location: Orlando, FL
    d. Date: October 2009

18. Topic: Advice, Lessons Learned, & Best Practices from Fellow Practitioners
    a. Organization: International Institute for Business Analysis (IIBA)
    b. Event: Louisville chapter meeting
    c. Location: Louisville, KY
    d. Date: August 2009

19. Topic: Getting Started with Portfolio Management
    a. Organization: Institute for International Research (IIR)
    b. Event: National Project World and World Congress for Business Analysts
    c. Location: Baltimore, MD
    d. Date: June 2009

20. Topic: The Real Competitive Edge – Pragmatic Critical Thinking
    a. Organization: Nashville PMI Chapter
    b. Event: 2009 PMI Nashville Spring Symposium
    c. Location: Nashville, TN
    d. Date: April 2009

21. Topic: Leverage the PM Skill Set & Enhance Your Contribution to Your Organization
    a. Organization: Southwest Ohio PMI Chapter
    b. Event: 2009 Mega Event
    c. Location: Cincinnati, OH
    d. Date: April 2009

22. Topic: PMBOK® 4th Edition…What's Really New?
    a. Organization: Kentuckiana PMI IS-SIG
    b. Event: Chapter meeting
    c. Location: Louisville, KY
    d. Date: March 2009

23. Topic: The PgMP Journey and the Fundamentals of Program Management
    a. Organization: International Institute for Research (IIR)
    b. Event: National Project World and World Congress for Business Analysts
    c. Location: Orlando, FL
    d. Date: November 2008

PUBLIC SPEAKING ENGAGEMENTS (Continued)

24. Topic: The First 365 Days: The Genesis of a New PMO
    a. Organization: International Institute for Research (IIR)
    b. Event: National Project World and World Congress for Business Analysts
    c. Location: Orlando, FL
    d. Date: November 2008

25. Topic: The Necessity for Critical Thinking in a Team Environment
    a. Organization: International Institute for Business Analysts (IIBA)
    b. Event: Chapter Dinner Meeting
    c. Location: Orlando, FL
    d. Date: November 2008

26. Scope Change Control: Control Your Projects or Your Projects Will Control You
    a. Organization: Project Management Institute (PMI)
    b. Event: 2008 North America Global Congress
    c. Location: Denver, CO
    d. Date: October 2008

27. Topic: Scope Change Control: A Case Study Approach
    a. Organization: Kentucky Bluegrass Project Management Institute (PMI) chapter
    b. Event: Chapter Meeting
    c. Location: Lexington, KY
    d. Date: May 2008