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Epistemic Skills Deficiency in the Project Management Body of Knowledge

Alex Hosch
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Alex Hosch

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2016

Abstract

Epistemic Skills Deficiency in the Project Management Body of Knowledge

by

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MBA, Keller Graduate School of Management of DeVry University, 2004

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Information Systems Management

Walden University

August 2016

Abstract

Information Technology (IT) projects continue to fail despite being managed by certified Project Management Professionals (PMP) and professionally trained non-certified Project Managers (PM). This study addressed PMPs and qualified PMs who continue to experience IT project failure at a high rate. The purpose of this qualitative multiple case study was to explore perspectives of PMs and their understanding of project management best practices in the Guide to the Project Management Body of Knowledge (PMBOK). There were 5 research questions focused on IT project failures, lessons learned, trends, deficiencies in project management framework, and adherence to standard PM practices. This study utilized a phenomenological approach and an inductive analysis based on Koskinen's theory that a lack of project management knowledge can contribute to project failure. Data were collected from open-ended interviews with 20 project managers; these data were then inductively coded and analyzed for themes and patterns. Findings yielded categories of poor scope management, cost overruns, unmanaged resources, un-realistic requirements, inadequate stakeholder management, and deficiencies in content in the PMBOK standards. The results could influence positive social change for PMs to assess the depth of project management training needed to understand early warning signs of IT project failure. These changes could promote awareness within the project management community and encourage more in-depth PM competency training.

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Dedication

This dissertation is dedicated to my wonderful and beautiful wife Lisa Gordon-Hosch; my son Brandon Hosch; and my mother Janester Hosch. They have provided me with the support and love throughout this portion of my career. May God bless each member of my family.

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The journey to pursue a Doctorate of Philosophy in Information Systems Management has been a long journey and one that has been an aspiration of learning and applying what I have learned to help me reach my highest academic milestone. I want to thank Dr. David Bouvin for his countless support and encouragement. Dr. Bouvin served as my dissertation chair, mentor, and professor for a good portion of my dissertation process. He helped me through good and bad times with full support and encouragement. His knowledge is superb and substantiated in the areas management, technology, and engineering. I want to also thank Dr. Godwin Igein, dissertation committee member, for his participation and encouragement during my dissertation process. Although not a committee member, I want to also thank Dr. Karla Phlypo for her facilitation and collaboration with Dr. Bouvin who both provided doctoral support and mentoring.

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Chapter 1: Introduction to the Study

Introduction

A project management strategy has become a standard for many industries seeking to improve business plan deliverables. Edmonds (2010) noted that organizations and businesses have invested in programs to train potential project managers (PM) or hire those who have been trained as professional PMs to engage with the organization's strategic objectives and to successfully complete projects. Drouin et al. (2012) stated that PM at the strategic level is considered a means to implement corporate strategy. Management has recognized that if PMs learn about PM within academics or professional learning organizations, there could be a higher success rates for their organization's projects. Ward and Daniel (2013) noted that within industries, the role of information systems and information technology (IT) is to use PM to ensure business success. For this objective, management should be strategizing on the benefits of PM learning and how the IT PM can successfully meet organizational strategic deliverables.

When practitioners begin to learn about PM, they can encounter a variety of learning choices. One of the main focal points of PM is learning, understanding, and applying the project management bodies of knowledge (PMBOK). Shepherd and Atkinson (2011) suggested that PMBOKs are a good source to learn and practice PM. However, Shepherd and Atkinson also noted that bodies of knowledge can pose a problem to those with rationalist and empiricist views (p. 155). According to the rationalist view, when building upon the experience of PM from a logical prior experience stance, lessons learned, or viewed from an empiricist observation, knowledge

is obtained through a person's own senses (Shepherd & Atkinson, 2011). For this reason, PM candidates should be using a knowledge source that meets industry standards.

The Project Management Institute (PMI) is one of the largest nonprofit organizations providing education and training to project management practitioners (PMPs). Individuals who desire to become a PM learn through PMI's accredited training or affiliate programs to become a certified PMP. The PMP certification is one of the best PM credentials for PMs to earn as they become a certified PM. The PMP also includes the PMI's (2013) set of standards, methods, processes, best practices, and competencies that are contained in a PMBOK (PMI, 2013). PM candidates and organizations will choose a PM standard to increase the success rate of project deliverables.

Learning to become a PM involves learning the best practices of opportunities, challenges, and what could be learned from mistakes. Reich and Yong (2006) reported that learning was seen as knowledge management and through the lenses of what was being shared, integrated, created, stored, and used. Reich and Yong stated that as PMs learn from their mistakes, their experiences act as opportunities for reassessing an individual's knowledge inventory (p. 20). Establishing a good best practice standard, a set of knowledge based foundations of learning, and applying them in PM is a process of learning and application.

In this qualitative study, I used the PMBOK with new and seasoned PM practitioners to determine what they believed to be successful and failed projects. Shepherd and Atkinson (2011) contended that "current versions of project management bodies of knowledge are poorly served by underpinning research" (p. 152). This research

extended not only what Shepherd and Atkinson viewed as gaps in the bodies of knowledge versions, but also a gap based on Koskinen's theory (2010) that the PM bodies of knowledge includes possible epistemological connections of a person's understanding of what knowledge was gained and what was produced that contributed to project failure (Koskinen, 2010). PMs were interviewed about their experience with technology project success and failure, and their experiences were compared and contrasted against the versions of the PMBOK used as standards in the workplace.

Background of the Study

There are a variety of PM development programs for new learners and practitioners to choose from as they learn and apply standards of PM. Alam, Gale, Brown, and Khan (2010) asserted the bodies of knowledge (BOKs) offer a structure of standard processes and procedures to manage project planning from beginning to end. Alam et al. investigated the following BOK: the International Project Management Association (IPMA); the Association of Project Management (APM UK); and the Project Management Institute's (PMI) PMBOK, Fifth Edition, published in 2013.

In this study, I investigated one project management BOK standard, and it is referred to as the PMI's PMBOK, Fifth Edition. It was analyzed for epistemic content to understand how PMs understood the overall use. The PMBOK offers guidelines to manage projects and what PMs are required to know, understand, and apply in "hard or soft skills" to projects. An individual's knowledge of hard skills is defined as "technical knowledge" and soft skills is defined as "intrapersonal and interpersonal" (Laker & Powell, 2011, p. 112). Alam et al. (2010) defined soft skills as a person's interpersonal

ability to understand the overall competencies of projects; the processes that they render are critical to the success of project. Alam et al. stated that there should be a developmental period that draws attention to the importance of human skills in PM and knowledge awareness, and suggested best practices when studying from bodies of knowledge (p. 496). It is important to extrapolate the skills learned and how they are applied in PM best practices for technology PMPs.

Learners can learn from a variety of project management BOKs and practicing PMs. PMBOK offers a good approach to PM skills to learn, understand, and practice project planning. PM associations offer BOK guides for learners and for organization to standardize PM. Because there are a variety of BOK guides and standards for PM candidates, as well as professional project managers, the choice should be a standard of best practices, such as the PMBOK, to reach project success.

I chose to investigate PMBOK in this qualitative study although other practice guides are available. Cicmil, Williams, Thomas, and Hodgson (2006) stated that criteria of PM standards are possible contradictions of alternative published standards. There could be ambiguity and equivocality relating to project performance criteria, which leads to project success or failure when the use of one standard, such as the PMBOK standards, is the sole standard (Cicmil et al., 2006). Because of the ambiguity and possible gaps of knowledge that could be missing from the PMBOK, I included a variety of IT project managers.

When project success is directly related to IT or business units managing the project requirements and needs, the success of the project can be based on the knowledge

of how well the project requirements and PM skills are understood. IT professionals who adopt PM skills necessary to effectively approach, align, and manage project could detect early warning signs that a project could fail. Kappelman, McKeeman, and Zhang (2007) believed there are early warning signs when project failure is imminent, and projects can be evaluated throughout the course of the plan's schedule to determine if good and/or poor performance is an indication in the project itself. The PMBOK offers ways to detect early warning signs of projects that are subject to fail. However, validation needs to occur of what is contained in the PMBOK on learning, training, and practice of epistemic knowledge and awareness.

Qualitative inquiry was used to examine if there was enough learning breadth and depth of the PMBOK standards, techniques, processes, and best practices for the IT professional or PM to be successful. Kappelman et al. (2007) shared key areas that determine poor performance, such as un-engaged stakeholders, weak and untrained PMs, and a lack of involvement from team stakeholders. These areas were examined to determine the reason for technology project failure if and when the source learned from was the PMBOK standards.

Problem Statement

Information technology project failure is a known problem. According to Kappelman et.al (2007), IT project failure was amongst the highest trends of project failure in the industries. Technology professionals who are either certified as a PMP through the PMI or an accidental project manager are among those leading such projects. Gaps about the role, competence, and skill sets of a PMP were a part of this research. The

PMI published PMBOK, and it is used as a study guide for learning about PM methodologies. It is widely used in business coursework in universities and professional learning organizations to teach students and project professionals about the elements used to take the PMI certification examination and to become a certified PMP. In this study, I investigated if the PMBOK was the primary source for learning about PM and how practitioners understood it as a primary or secondary learning standard of references to standardize the best practice of PM. In this study, I examined if the PMBOK was contributed to PM BOK failure for IT PMs.

Researchers have argued that project failure is a result of poor communication, unengaged stakeholders, and untrained project managers. Kappelman et al. (2007) claimed that project failure is attributed to not only a lack of communication, but also a lack of management support to PMs with little training. Talet and Talet (2014) found that technology project failure is also caused by improper scope management. However, there is limited research about the PMBOK and the causes of a PM's success or failure in projects, and I investigated gaps in to determine why IT projects fail. The Practice Guides – Navigating Complexity (2013) emphasized that communication is one of the primary reasons for program and project failure partly due to social communication channels. Extended research to understand the reasons why technology projects fail due to a lack of communication and unengaged stakeholders needs to be understood.

Resources about project failure are available although limited. In this study, I addressed project failure when there is a lack of knowledge and comprehension about the PMBOK at the PM's knowledge level that contributes to project failure. Projects fail

because they do not achieve their desired result. This could be a weakness in many of the PM domains, including those that relate to the PMBOK. In this study, I focused on the impact of PMs and their experiences of when, where, and how PM knowledge was gained, retained, and used to reach project success.

Purpose of the Study

The purpose of this qualitative study was to examine to what extent a PMBOK lacks in epistemic awareness and contributes to IT or systems projects that fail to meet expectations. Research was conducted on whether the PM was or was not trained to be a PM through acquired epistemic knowledge from the PMBOK, and whether the PMBOK contributed to project failure. In this study, participants were IT professionals, certified PMPs, and accidental PMs who were interviewed to gather a sampling of qualitative data. The findings of this study could provide researchers phenomenological and epistemic awareness about the validity and reliability of the PMBOK for IT professionals and other business professionals.

Research Questions

The objective of this study was to determine if there was an epistemological deficiency in PM BOK's and what could be lacking when acquiring the skills to be an effective technology PM. Shepherd and Atkinson (2011) concluded that such issues are not adequately addressed in the development of existing PM BOK. Further, researchers could address epistemic deficiencies if the PM is learning from a PM standard or BOK, such as PMI's PMBOK. Epistemic deficiencies were noted by Monteiro de Carvalho (2014) who addressed a lack of research in the areas of adopting a standard PM

framework and the need to further the awareness of gaps in technology projects. To extend the research about information systems, technology project failure, and epistemic deficiencies of what was studied, the following research questions were developed.

The research questions for this study were

1.   What, if any, is there a relationship between information systems project failure and the PMP's certification tenure?

2.   What, if any, is there awareness between information systems project failure and PMs who are trained solely from the PMBOK?

3.   What, if any, is there contrasting success or failure trend of projects of those who have studied other PM BOK's other than the PMBOK?

4.   What, if any, is there any epistemological knowledge deficiency in PMs who had, or had not, studied from the PMBOK trending project failure?

5.   What, if any, is there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning?

Conceptual Framework

The PMI's PMBOK is the North American accepted BOK of standards used by PMs. However, there is a global foundation of BOKs that should be understood. As Shepherd (2011) noted, there are current BOKs that serve as evidence of knowledge, and their purpose have proven to be less than useful. Published versions of PM BOKs and competency baselines are

1.   The PMI PMBOK Fifth Edition published in 2013

2.   The Association of Project Management (APM) BOK 6th Edition

         published in 2012

3.   The Guide for Project and Program Management for Enterprise Innovation

         (P2M) published in 2002 and issued by the Project Management

         Professionals Certification Center of Japan and the Project Management

         Association of Japan.

4.   The Project Management Austria Institute (PMA), Project Management –

         BOK.

5.   The International Association of Project Management (IPMA Competence

         Baseline (ICB3.0) published in March 2000.

For the purpose of this study, I focused on the PMBOK to discover personal, PMP, and organizational behavior of adapting to the PMBOK. Lessons learned about what was applied knowledge, best practices, and gained competencies to be successful with projects was also included. There is limited research about the PMI's PMBOK and the success it has with practitioners. In this study, I sought to discover how well the PMP could use the PMBOK to practice from and continue learning to satisfy project completion among IT community of professionals, PMPs, PMP candidates, and accidental PMs.

The research design was a qualitative, multiple case study that addressed outcomes of project failure across similar technology project cases. I used multiple case studies to focus on technology PM failure when the PMBOK was the sole source of PM knowledge. Chapter 2 includes an analysis of literature on select articles and journals

about the technology that PMPs, PMP candidate(s), or accidental PMs used and whether they had successfully completed (or not) projects when the primary source of learning the body of PM was from the PMBOK.

Nature of the Study

For the purpose to continue the nature of the lack of knowledge awareness in project management this study will add to the BOK. Biedenbach and Müller (2011) believed that there was not enough research on epistemological knowledge and assumptions applied in PM BOKs. This study extends the understanding of project failure not only from a philosophical point of view, but also from an epistemological point of view. I used a case study strategy to interpret assumptions about project failure of IT professionals who had or had not studied the methodologies of PM (Halaweh, 2012). Halaweh (2012) stated,

> Three important reasons why the case study method was suitable for this research: (1) the researcher could collect data and obtain evidence from a natural setting, then generate theories from practice; (2) the case study research method would enable the researcher to answer "how" and "why" questions; (3) the case study method was an appropriate way to research an area in which few previous studies have been carried out. (p. 34)

The nature of this study included the literary context of PM challenges when there are validated epistemic deficiencies in the learning outcomes.

Definitions

Association of Project Management (APM UK): The association is a registered charity with over 21,150 individual and 550 corporate members making it the largest professional body of its kind in Europe (AMP UK, 2014).

Early warning signs (EWS): EWS referenced project management that can be events or indications predicting caution or alerts of possible impending problems (Kappelman et al., 2007).

Epistemic knowledge: "Epistemic assumptions influence how individuals understand the nature of problems and decide what kinds of strategies are appropriate for solving them" (Kitchner, 1983, p. 222).

Epistemological awareness: In this research, epistemological awareness included individuals in management and PM where there could be a prevailing philosophical paradigm of the organization, environments, and management (Ison, Blackmore, Collins, & Furniss, 2007).

Epistemological deficiency: "This deficiency was expressed in the difficulty in identifying ontological postures, epistemological perspectives, dominant paradigms, and conceptual approaches that might allow these themes to have a greater coherence so that they may be researched within the scope of management studies" (Balbinot & Borim-De-Souza, 2012, p. 153).

International Project Management Association (IPMA): "A Federation of over 55 Member Associations (MAs). The management association develops project management competencies in their geographic areas of influence, interacting with thousands of

practitioners and developing relationships with corporations, government agencies, universities and colleges, as well as training organizations and consulting companies" (IPMA, n.d., p. 1).

Knowledge areas: The PM BOK includes 10 knowledge areas: integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholder management (PMI, 2013).

Project Management Institute - Project Management Professional (PMP) Certification: PMI's comprehensive credential program for project practitioners of all educational and skill levels (PMI, n.d.).

Process groups: Key competences for the project life cycle were identified as five standards: initiating, planning, executing, monitoring/controlling, and closing map to 10 knowledge areas of a PMBOK (PMI, 2013).

Project constraints: Constraints used in this study included the fifth Edition PMBOK (PMI, 2013) constraints: scope, time, cost, resources, risk, and quality (PMI, 2013).

Project Management Body of Knowledge (PMBOK): The PMI's PMBOK Fifth Edition identified subsets of standards about the PM BOK that are accepted and generally used as best practices for PM (PMI, 2013).

Project management competency: The ability to determine an optimal approach to PM (Jaafari, 2003).

Project Management Institute (PMI): Project Management Institute, the world's leading non-profit professional membership association for the project, program and

portfolio management profession. Founded in 1969, PMI delivers value for more than 2.9 million professionals working in nearly every country in the world through global advocacy, collaboration, education and research (PMI, n.d.).

Project manager (PM): PMs in this study were accidental, certified PMPs, or uncertified PMs.

Assumptions and Limitations

Assumptions in this research included the honesty of the IT PMs interviewed specific to those who were certified, or not certified, as PMs. The interviews included direct questions to the PMs about the effectiveness of the PMBOK in relation to successful and unsuccessful project work. I did not assume both the unsuccessful and successful projects were a result of attempting to approach and practice learning from the PMBOK standard.

Limitations of the study included PMPs who were certified and uncertified and those who were classified as accidental PMs. The groups surveyed contained variables of the data collected. The responses to the descriptive questions were similar to what Creswell and Clark (2009) asserted about dependent and independent variables. This posed a limitation to the research. Nevertheless, I made no assumptions about the responses and the validity of what was understood as project success and failures.

Significance of the Study

This study was intended to discover gaps in the literature about the PMBOK and the impact it had on project success and failure in a population of technology professionals who had studied and passed (or not) the PMP examination. There was an

epistemological impact on PMPs with regards to epistemic knowledge management of the PMBOK and what was contributing to project failure.

Learning the skills and competency about project management is a practice that requires the right literature. Cicmil et al. (2006) explored successful practitioners, also referred to as PMs, and contrasted their epistemic knowledge with their practical wisdom on the subject, suggesting that this reification of the traditional PM discourse could be partly the problem with project success and or failure. Cicmil et al. shared that there was a lack of literature on the competency of PMPs and those with a much broader understanding of PM as embedded within the PMBOK. Gaps in literature found during this research included circumstances when PM knowledge was the failure and was linked to a given PM BOK. This resulted in a lack of applicable knowledge and content within the PMI's PMBOK. Setting the correct recourse for project success for the PMP was important to address in this research.

Significance to Practice

PM learners, organizations, and researchers are looking closer to the variety of PM BOKs to consider learning and framing a standardization project management strategize to learn from. According to Oyegoke (2011), learning the significance of PM extends into an evaluation of the epistemological awareness of knowledge about the success of PM. Reich and Yong (2006) shared that an appreciation of knowledge that was gained from a body of PM knowledge could influence project success. Reich and Yong also pointed out that knowledge management required focus on the content elements of the PMBOK to differentiate observations of learning. PM learners, organizations, and

researchers have many options to determine the right PM practice to follow to be successful. The goal of learning must be to understand the knowledge gained and to apply the standards successfully to maintain an expected project success rate.

Significance to Theory

The PMBOK is considered one of the best practices BOK standard that is published for project management learning. Shepherd and Atkinson (2011) contended that PM BOKs consist of an array of encapsulated short and single volumes, which leads to conceptually narrow views with little to no legitimacy. When learning and preparing to become a PMP, problems could stem from only addressing the content of limited PM BOKs. Shepherd and Atkinson identified the significance of applying and contributing to a combination of research about PM development in areas of knowledge, necessary changes to bodies of knowledge, and issues with ontological issues that have not been resolved and require further investigation. Shepherd and Atkinsons conveyed that projects that continue to fail due to poor performance reflect on the possibility of poor management knowledge and could stem from a lack of practical discipline of what could be a need for a broader and in-depth project management BOK when learning. If the limitations remain in PM BOKs, projects will continue to fail unless the knowledge content is broadened to promote epistemic PM knowledge and awareness.

The PMI's PMBOK Fifth Edition version, and what could be limited content of other PM BOK, provides an alternative view to the views of the PMBOK. I examined literature about other PM BOKs, such as what the AIPM a Reference Curriculum for Project Management, or the PMA and or the Norwegian Association of Project

Management (NAPM) - the Fundamentals of Project Management, provide as evidence of success in projects.

Significance to Social Change

Positive social change in the community of PM could occur within the PMI's professional social community. They promote and encourage communities of PMs to learn and engage in the best practices sought from PMBOK. Martin, Hatzakis, Lycett, and Macredie (2004) stated that the goals of community practice can be obtained through a common bond of working together and learning to understand how to become PMs and how to encourage learning. As practitioners learn about the variety of project-related BOKs, there can be implications that contribute to positive social change within the PM community.

The project management community is growing in promote positive social awareness among the PMP professionals. Stephens (2013) stated that, to achieve positive change, PMs have to recognize their own subjectivity to sociocultural reality and belief in a system, such as what was taught, practiced, and applied through the use of the PMBOK. Conversely, when learning from the community of the PMBOK, the PM candidate or practitioner could be swayed to consider alternative BOKs to learn from. Change to the content of knowledge area skills in a BOK could suit a variety of epistemic learners. What was determined in this study was supported by Akhavan and Zahedi (2014) who stated that process groups and knowledge areas represent stages of success factors and may not be the same approach for all. The findings of this study promote investigation

into the revisions to key knowledge areas of the BOK. This discovery could increase

project success and contentions about learning the knowledge areas.

Chapter Summary and Organization of the Study

In this study, I examined the effectiveness of successful, or failed, IT projects of

PMs who have studied from the PMBOK. Chapter 1 included the introduction of

technology and information systems project failure as the problem within the community

of IT project managers. The background of the study included reasons why the research

was being conducted on PMBOK as a contributing knowledge-based cause. The problem

statement, the purpose of the study, research questions, the significance of the study, the

significance of practice, and implication of social change to the community of PMs were

also included. Key terms were included, and assumptions and limitations were presented

to account for the level of integrity and honest to be upheld. In Chapter 2, I will present

the literature review.

Chapter 2: Literature Review

Literature Search Strategy

In this study, I examined literature relating to the successes and failures of IT projects based on PMs who studied from PMI's PMBOK. Examination of project success, and or failures, included Reich and Yong's (2006) conceptual view of differentiating knowledge elements through the researcher's view of business objectives related to IT projects, and how acquired and use of knowledge was obtained using PM BOKs. Research about epistemological knowledge assumptions, relationships, and development stages in the PM field were reviewed and compared and contrasted against knowledge awareness of project managers by Biedenbach and Müller's (2011).The theory that was framed for this study contended that technology project failure was due to limited epistemic knowledge in the PMBOK.

The strategy used to access literature was primarily found in the ProQuest Central and Ebsco databases. Because my field of study was IT and technology project failure related, I used *key terms* to access creditable journals and articles using a snowballing process to provide a depth of content relevant to the research study. *Key terms* used but not limited to include; *Accidental Project Manager, Competency, Epistemic, Hard Skills, Information Technology Project, Knowledge Management, Phenomenology, PMBOK (a Guide to the Project management Body of Knowledge), PMP certification, PMP Examination Candidate, Project Failure, Project Management, Project Manager, and Soft Skills.* The collection of the articles were categorized and prepared for an in-depth review to support and build the foundation of the study.

This literature review is divided into three sections. The first section includes a conceptual framework on the foundation and purpose of a PMBOK and how the BOK was constructed. The next section is about how PM is learned in the academic and professional context. It includes information on knowledge awareness of PM candidates, the PMI's PMP process, and PM knowledge as a loss or gain. In the next section, I conclude the literature review and discuss project successes and failures from an organizational perspective. IT professionals who lead projects may not expect to successfully complete projects due to a lack of competency, knowledge awareness, and management about the soft skills that were taught, practiced, and applied to projects. This lack of knowledge may lead to poor social, interpersonal intelligence that prevents the PM from meeting the requirements of what a PM is required to achieve.

Conceptual Framework

Project failure can be attributed to detecting early warning signs in the project. Kappelman et al. (2007) asserted that early warning signs of project failure can be attributed to a failure in PM training. If the individual responsible for the project is not properly trained on how to manage and lead projects, the project will most likely be a failure in the areas of scope management; cost overruns; unmanaged resources; unrealistic requirements; mislead stakeholder management; or best practices, such as the tools and techniques to successfully manage projects. Maguire and Redman (2007) discussed that elements of PM training in areas such as soft skills may be underdeveloped, which may affect the PM's ability to achieve success with IT projects. However, some soft skills knowledge can be obtained through training from a PM BOK.

Petter and Randolph (2009) noted that technology PMs who are not using soft skills are overlooked by many organizations. PMs are responsible for ensuring that employees have the needed soft skills, knowledge, and project success. Continued project failure could result in the organization failing.

PM BOKs include a variety of best practices and competency modalities that meet the PMP credential requirements to become a certified PM. Talet and Talet (2014) emphasized that there can be a lack of knowledge amongst those leading technology projects, thus providing reason why projects fail. Shepherd and Atkinson (2011) mentioned that PM BOKs have inconsistent reflective knowledge content, which is reflected in publication. PMs need reliable knowledge and best practices to obtain and successfully manage and complete projects. However, there is literature about the epistemic knowledge that PMs require, which contributed to what was published as practical knowledge in the PMBOK. However, phenomenological weaknesses were discovered in the epistemic knowledge content of the competency modalities.

The capability to understand project management and retain the knowledge is an important element of learning for PMs. Balbinot and Borim-De-Souza (2012) stated that knowledge refers to information that can be historically contextualized by those with the ability to understand, validate, and apply it. Balbinot and Borim-De-Souza further stated that to sustain the development of its interpretation, there must be training on the differences between social communities, such as training methods and testing. PMs should understand where gaps in training could exist to ensure a higher PM success rate.

Knowledge in relationship to project management development is an important phase for PMs. Biedenbach and Müller (2011) contended that epistemological knowledge is a part of what others have researched about the relationship between PM developmental stages and knowledge. However, there may be differences between the PM knowledge that is taught and the knowledge that is retained, which is a weakness in the BOK. In addition, what is taught in academic or professional training may differ from what is learned through actual PM. According to Mustata, Andronie, and Barbalata (2014), successful learning depends on the communication between the producers (educators and researchers) and those who obtain the knowledge (learners). Mustata et al. noted that there must be levels of epistemic competency transferred from the producers to learners, and both should possess the capacity to be able to process and connect the knowledge. However, if knowledge is learned, retained, and practiced in the PM domains, there should be a higher success rate of projects.

Figure 1 depicts a conceptual framework of sources of PM BOKs from training areas within academia and professional development channels to elements of epistemological, social community, and phenomenon experience.
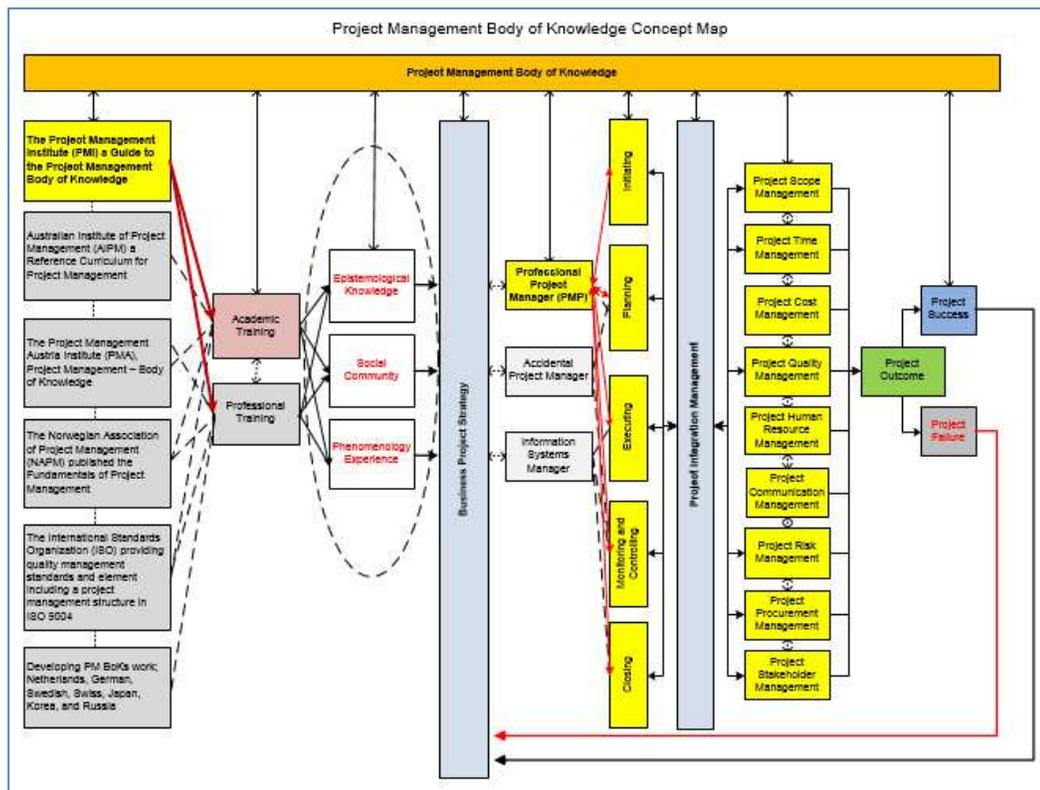
Figure 1. Project management body of knowledge framework
Note. Adapted from the Project Management Institutes a Guide to the Project Management Body of Knowledge (PMBOK) Fifth Edition

Introduction to Project Management Bodies of Knowledge

There are formal, published PM BOKs from three main PM institutions. North America's PMI published their first PMBOK in 1996, and the fifth edition was recently published. The PMBOK is used for training and reference standard guides for those seeking to learn about PM standardization or those seeking recertify as a PMP in the academics and professional development programs.

The International Association of Project Management (IAPM) serves European countries primarily at an international level. The most current version of the IAMP is published and referenced as the International Competency Baseline (ICB) version 3.0. ICB 3.0 serves as a baseline for those who practice international-related projects for practitioners and organizations (Peng, Junwen, & Huating, 2007). The APM promotes program and PM mainly in Europe. The current BOK version is the 6th Edition, which was published in 2012.

Project management knowledge and the means to retain the learned knowledge is a critical competency for learners and practitioners. Owen and Burstein (2005) posited that explicit knowledge is important to manage projects and those in the role of PM must be able to develop and reuse knowledge to be successful. Morris, Crawford, Hodgson, Shepherd, and Thomas (2006) examined the three formal PM BOKs promoted by the PMI, IAPM, and APM and found them to have an inconsistent baseline to learn from. Morris et al. contended that they do have a general BOK that is referenaceable; however, they lack developmental competency and merely follow an elicit knowledge base. Because explicit knowledge is important to the success of a trained or certified PM and

his or her likelihood of project success, the BOKs must include a standard of extended competency to be successful for the learner.

PM BOKs are intended to be the source of PM standards. However, there is a problem with how the PM standards are interpreted by learners. Researchers such as Cicmil et al. (2006), Reich and Yong (2006), and Shepherd and Atkinson (2011) supported the use of the PM BOKs as guides for objective learning. However, some PM BOKs failed to explain how to manage the knowledge. Investigations of the discovered gap(s) were analyzed to validate Cicmil et al.'s and Shepherd and Atkinson's research. This research was used to extend the analysis of the researchers and further the literacy about the PM BOK standards to promote proficiency.

A Guide to the Project Management Body of Knowledge

Literature on the various PM BOKs was widely distributed and referenced around the world. The foundation of this study was the PMI's PMBOK Fifth Edition and the contribution it had on IT project failure. The PMBOK includes the necessary framework for an IT project and the PM. As Reich and Yong (2006) asserted, projects require effective knowledge management, and PMs should learn from the BOKs to ensure the success of projects. The purpose of the PMBOK was to promote a generally accepted PM BOK in the PM community, model positive social practices, and reference good PM practices and knowledge (PMI, 2013). Harrington and Voehl (2014) noted that good social practice starts with what makes sense to those who are sponsoring the projects and those who are intending to support, implement, and sustain projects. However, the PMBOK had weaknesses in the social practice content, and it no longer was accepted as

the general BOK in the community, but as a point of reference for select knowledge content.

The PMI supports conveying what makes sense when practicing PM in literature other than the PMBOK. In 2013, the PMI published a practice guide called Managing Change in Organizations. The purpose of the practice guide was to suggest strategies for improving project delivery of change programs and PM, which was considered innovative in the minds of management (PMI, n.d.). Other elements from the guide included social awareness and practice, suggesting that it was important to meet project expectation if sense making was not a part of the individual's mindset while contributing to the overall success of the project through social practices and conversations (PMI, n.d.).

Although this study was primarily focused on the PMI's PMBOK, the Managing Change in Organizations contains pertinent knowledge management elements to consider when becoming a PM. The PMI's strategy for the Managing Change in Organizations was to expand the BOK about PM methodologies. Because the PMBOK was the core framework of PM, Morris (2009) emphasized that there needs to be an extension of the PMI's PMBOK that expands the traditional PM models into the essence of the scope, the reliability of the knowledge about the subject (the epistemology), and the methodologies of collecting the information needed to further the growth of PM learning. Morris (2010) asserted that the PMBOK had an epistemological framework that built upon the theory of positivism. But, Morris (2010) contended that there needs to be more evidence about the basis of the methodology of knowledge and the evidence contained within. Practice

guides do expand the knowledge base of PM best practices. However, practice guides are limited extensions of the overall PM framework, and they only offer suggestive practice methodologies.

Structure of a Guide to the Project Management Body of Knowledge

The structure of the PMI's PMBOK was primarily written for the United States, and according Seymour and Hussein (2014), it is a compilation of processes and knowledge areas generally accepted as best practice within the PM discipline. The PMI's first published guide to the PMBOK was published in 1996. It advanced throughout the years to the current 2013 fifth edition. Research about the structure of the PMBOK is limited. Peng et al. (2007) documented the development work of the various editions, and noted that the earliest PMBOK standards dated back to 1983 and were published as a white paper. The following are the PMBOKs editions and their years of publication:

- First edition published in 1996

- Second edition published in 2000

- Third edition published in 2004

- Fourth edition published in 2008

- Fifth edition published in 2013

Over the years, the PMBOK structure and content evolved through the development of the standards and suggestive best practices known as the process groups and knowledge areas (KA). Table 1provides an outline of the knowledge areas.

Table 1

Knowledge Areas

Section	Knowledge Areas
4.0	Project Integration Management
5.0	Project Scope Management
6.0	Project Time Management
7.0	Project Cost Management
8.0	Project Quality Management
9.0	Project Human Resource Management
10.0	Project Communications Management
11.0	Project Risk Management
12.0	Project Procurement Management
13.0	Project Stakeholder Management

The PMBOK is a source to standardize on a project management framework. According to the PMI (2013), the PMBOK KAs provide a standard framework of knowledge that includes a set of concepts, terms, and activities that make up what PM professionals use to successfully engage in PM methodology. The 10 PM KAs are used to structure the interaction of each KA with the process groups to promote a process flow. The following are the purpose of each KA:

- Project Integration Management-an overall function that coordinates the work of all KAs and the process groups

- Project Scope Management-ensures the project will include all, and only, the required work to complete the project successfully

- Project Time Management-includes the processes as required deliverables by the scope to accomplish the project timely to completion

- Project Cost Management-includes the deliverable processes that are involved with planning, estimating, budgeting, and controlling costs for the project to be completed within the approved budget

- Project Quality Management-includes the processes of activities and deliverables of performing quality policies, objectives, and responsibilities to satisfy the project objectives appropriately

- Project Human Resource Management-includes the processes that organize and manage the project resources

- Project Communication Management-employs the necessary processes to ensure timely and appropriate generation, collections, distribution, storage, retrieval, and disposition of project information

- Project Risk Management-includes the processes to conduct risk management planning, identification, analysis, responses, and monitoring of possible project threats

- Project Procurement Management-includes the processes to purchase or acquire the products, services, or required results needed from outside the project team to perform the work

- Project Stakeholder Management-includes the processes required to identify the individuals, groups, or organizations that could be impacted by the project.

KAs are not a new component of the PMBOK. KAs were first introduced in the BOK in 2000. However, as researchers analyzed the importance of the KAs over the

years, they have found that PMs may give a lesser priority or awareness and importance of the KAs. Zwikael (2009) argued that if the KAs provide a model to follow, then it is important that all PMs consistently follow them. Zwikael also criticized the use of the PMBOK KAs, finding them inappropriate and time consuming for projects. This argument in part justified the research into BOKs as a part of the reason for project failure.

Interpreting the Knowledge Areas and Process Groups

In the PMBOK, the KAs are considered key attributes to create a project management framework. Reich and Yong (2006) affirmed that PM knowledge contributes to the total knowledge within the profession of PM. If knowledge is referred to as a main source of successful best practices within the PM profession, then BOKs such as the PMI's PMBOK's KAs would include explicit or epistemic knowledge of information framed as hard and soft skills application and/or practice in the KAs. Further, the PMI (2013) asserted that PM is the application of knowledge and includes the necessary skills and understanding of how to apply the knowledge. However, to effectively assert the knowledge, an individual must have understanding of the business management process, which is known as the process groups.

The PMI's PMBOK (2013) KAs are published in 10 sections that can be used for any given project type. The 10 sections are known as project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, project procurement management, and project

stakeholder management (PMI, 2013). Table 2 displays the mapping of the KAs and

process groups.

Table 2 Project Management Process Groups and Knowledge Area Mapping

Project Management Process Groups and Knowledge Area Mapping

| | Process Groups | | | | |
Knowledge Areas	Initiating	Planning	Executing	Monitoring and Controlling	Closing
4.0 Project Integration Management	4.1	4.2	4.3	4.4, 4.5	4.6
5.0 Project Scope Management		5.1, 5.2 5.3, 5.4		5.5,5.6	
6.0 Project Time Management		6.1,6.2,6,3,6.4 6.5,6.6		6.7	
7.0 Project Cost Management		7.1,7.2,7.3		7.4	
8.0 Project Quality Management		8.1	8.2	8.3	
9.0 Project Human Resource Management		9.1	9.2,9.3,9.4		
10.0 Project Communications Management		10.1	10.2	10.3	
11.0 Project Risk Management		11.1,11.2,11.3,11.4,11.5		11.6	
12.0 Project Procurement Management		12.1	12.2	12.3	12.4
13.0 Project Stakeholder Mgmt.	13.1	13.2	13.3	13.4	

Note. Adapted from the Project Management Institutes a Guide to the Project Management Body of Knowledge (PMBOK) Fifth Edition

Table 2 also includes 47 PM subset processes within the five PM process groups and the 10 KAs (PMI, 2013). These subsets include suggested standards of a process flow of inputs, suggested tools and techniques to use, and outputs ending the subset process before starting the next.

Figure 2 represents a contextual example of the process flow using 4.0 Project Integration Management and the subsets 4.1- Develop Project Charter, 4.2-Developing Project Management Plan, 4.3-Direct and Manage Project Work, 4.4-Monitor and Control Project Work, 4.5-Perform Integrated Change Control, and 4.6-Close Project or Phase.
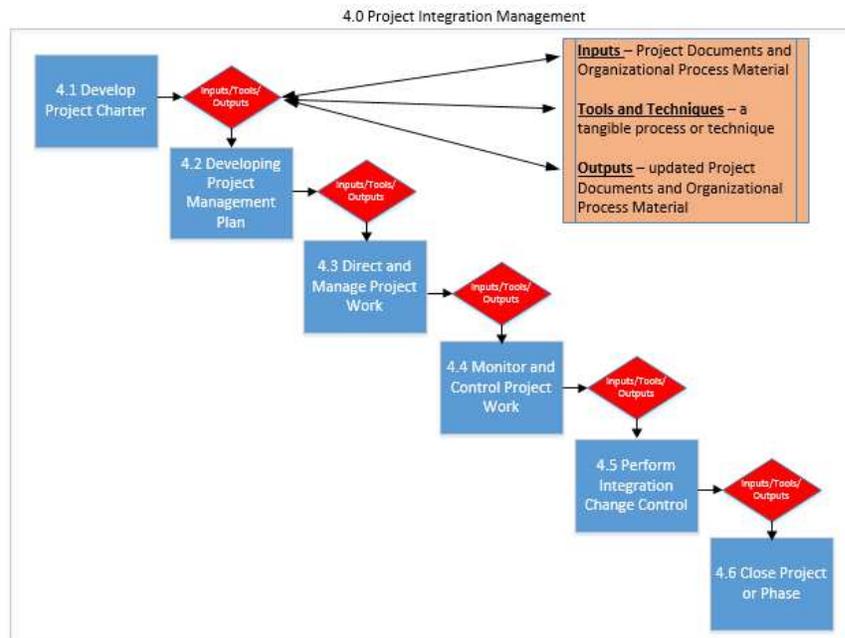
Figure 2. Project integration management process flow
Note. Adapted from the Project Management Institutes a Guide to the Project Management Body of Knowledge (PMBOK) Fifth Edition

When a PM professional candidate learns from the PMBOK, they must learn about the KAs and how they interrelate with the process groups and subsets. The PMBOK promotes the use of process groups as project phases that are used to interact with subset inputs and outputs as project activities (PMI, 2013). They are designed to use as a set of established processes to help minimize confusion and uncertainty for PMs. They also ensure the effective progress of the project from initiation through the plan close-out. Figure 2 represents the PMBOK process groups flow.
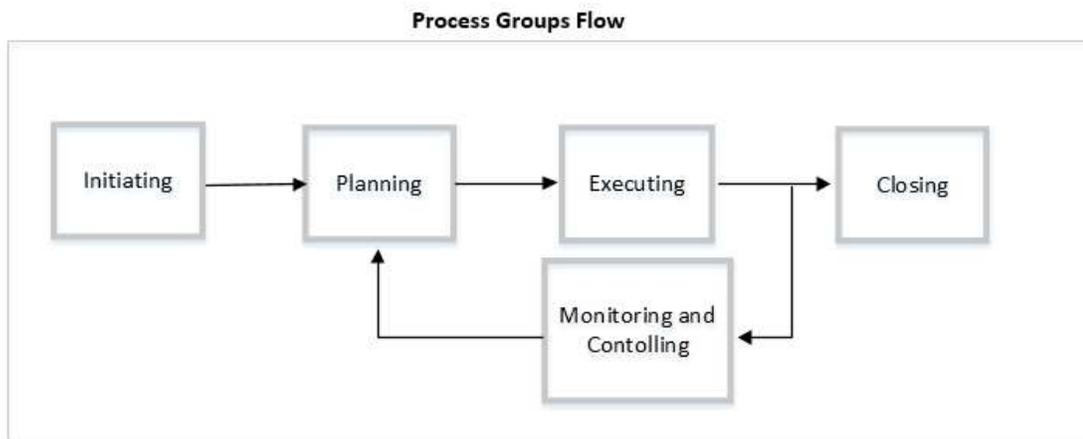
Figure 3. Project Management Body of Knowledge process groups glow
Note. Adapted from the Project Management Institutes a Guide to the Project Management Body of Knowledge (PMBOK) Fifth Edition

Learning a Guide to the Project Management Body of Knowledge

Project management practitioners should seek to learn all they can about BOKs. Brill, Bishop, and Walker (2006) expressed that as organizations strategize to implement and employ PMs, they look for adequate knowledge, leadership skills, and the ability to manage internal projects. In the PMBOK, the PMI (2013) suggested that a PM should have skills that include not only technical and knowledge skills, but also soft skills.

Brewer and Strahorn (2012) emphasized that PMs require technical and human soft skills knowledge expertise. As organizations seek the best in PM skills, they should consider those who have successfully passed the PMP's certification exam. Gasik (2011) mentioned although project knowledge is one of the main success factors in PM, knowledge about PM is explicit or even tacit-driven. Knowledge about successful factors in PM includes process-based understanding, documentation-based understanding, and knowledge-based understanding on how to implement all sources collectively.

Research about the PMBOK and how it is learned, taught, and practiced in learning establishments are addressed by researchers. Reich and Yong (2006) contended that knowledge learning, such as what the PMBOK's KAs create a framework classification. Organizations that need to address a lack of a PM framework also need to understand that the knowledge required can be the basis of what was taught from the PMBOK. Reich and Yong further reported that as organizations adopt the PMBOK as the PM framework for what constitutes a successful project, there should be an examination of the knowledge obtained and retained from the studies. As organizations seek to understand the approach to PM, they should develop a practical awareness of how the PM knowledge remains intact and how it will be used within the organization.

As organizations seek to improve on strategic technology and operational planning, they look to who has and who can provide the best knowledge about a subject matter or possible a strategic objective. Technology and information system professionals should gain a broader understanding of how to successfully implement projects. Johnston and Wierschem (2007) shared that the significant growth in the number of projects is due

to the development of IT and traditional projects using formal PM practices. Individual learners in the technology community should have the organizational knowledge needed through learning from academics or education, professional training, and through practicing what has been successful from within the organization. If PM within the organization is growing, PM roles may increase. As companies attempt to establish a means to promote higher PM quality and knowledge management, they will promote a return on investment in order for PM success can be obtained (Johnston & Wierschem, 2007). PMs and organizations must be aware of these trends and the expected KAs to be effective and successful. Furlong and Al-Karaghouli (2007) conducted a study to examine the challenges within the PMBOK and the challenges facing technology projects. Furlong and Al-Karaghouli discovered that technology PM experience and knowledge gained were reflective of what was successfully achieved in projects. Technology competency is gained through training and best practices. PM competency is also gained through training and application.

As projects evolve technologically, there are changing environments at the organizational level. The level of PM knowledge and awareness becomes a specialty of knowledge and skills. The PMI (2007) supported the necessity of transferring knowledge and awareness across all areas of the organization as components of PM competency, based on the Project Management Institute's Project Manager Competency Development (PMCD) framework. Cortez, Dutta, and Kazlauskas (2004) shared the importance of the need to manage knowledge in the business environment. Cortez et al. argued that effective technology, PM knowledge, and skills are necessary to meet the demands of the

changing industry landscape to be competitive. In developing frameworks that align with the organizaiton, Smith, Smarkusky, and Corrigall (2008) claimed that the PMBOK offers a developed project knowledge roadmap. As change in the organizational landscape evolves, PM BOK competencies must also adapt.

Learning the Project Management Body of Knowledge through Academics

Learning project management based on the variety of BOKs are taught in several academic venues. Du, Johnson, and Kell (2004) shared that PM courses began to incorporate published journals, business cases, and subsets of business processes to increase the success rate of projects. Du et al. noted that it was not until higher education teachers acknowledged that PM course material needed more depth in understanding specific PM techniques and coursework that they started to include the PMI's second edition PMBOK that was published in 2000. Turner, Anbari, and Bredillet (2013) confirmed the trend of building depth in PM coursework, but found that emphasis about learning PM did not occur until the mid-1980s when more interest in PM learning gained popularity in areas of engineering, construction, defense, and IT. Turner et al. further validated that academic PM programs leading to degrees in PM increased from 1990 onwards, and they became evident in higher education programs in the United States, Europe, Australia, Japan, and other parts of the world. This growth was seen in the academics and the PM education and training material.

Research about PM learning can be approached in different ways. Learning the essentials of PM is a fundamental step for beginners to learn project scheduling and control. PM is taught in community colleges, extension programs, and advanced levels of

PM taught extensively in the academics. Universities such as DeVry University, Keller

Graduate School of Management, Georgia State University, the University of Wisconsin,

and Stanford are a few of the schools that have undergraduate- and graduate-level PM

programs. However, learning PM at the academic level can include different approaches

to delivering the coursework. For example, information systems graduate-level

coursework is offered at Georgia State University. PM studies include coursework taught

from the PMBOK. Du et al. (2004) mentioned that project failure is due partly to

emerging PM practitioners who are not developing the necessary hard and soft skills to

lead knowledge-required projects in professional organizations. However, what is taught

in the academics to promote active learning about PM is still not understood.

Starkweather and Stevenson (2011) claimed that both academics and practitioners had a

vested interest in the PM environment. Starkweather and Stevenson contended that a

constituency was being recognized about a rigorous theoretical framework of the

methodology. Starkweather and Stevenson shared that it was necessary to establish the

validity of the BOK and the reliability of a prescribed organizational structure and human

resource pool. If there continues be contention amongst academics and practitioners, the

PM BOK should not lack in hard and soft skills training or education.

There is a difference to learn about hard and softs skills project management.

Laker and Powell (2011) distinguished between hard and soft skills training in the

facilitation of training and transfer. Laker and Powell noted that there was a difference

between hard skills (technical skills that involve working with equipment, data, software,

etc.) and soft skills (intrapersonal skills such as a person's ability to manage himself or

herself, as well as interpersonal skills, such as how an individual handles his or her interactions with others). An individual may not be an effective PM if his or her cognitive learning is weak.

Approaching a project management learning objective can be a challenge. Turner et al. (2013) stated that educational programs in PM have grown, and this growth will continue to segment knowledge and skills training between projects, organizations, communities, networks, and social environments. Within these segmented categories are individuals who seek to learn about PM. Further research is needed on diverse knowledge, such as the epistemic awareness that could dictate a person's ability to comprehend the training and application required to be successful at PM. Schryen (2013) researched how the success of IT and systems affected an organization. If epistemological deficiencies are not a part of the educational program and are not taught in the PMI's PMBOK, project failure will continue. Turner et al. furthered attest that there must be growth in PM knowledge globally to create competitive climates among the academics. Global and competitive states could create communities to support PM standards. Hällgren, Nilsson, Blomquist, and Söderholm (2012) stated that communities of professional programs and PM professionals and candidates are seeking the means to achieve recognition as practitioners. Promoting the need to extend PM training and development supports growth and awareness of the community.

Project failure in the IT world continues to be a problem Jewels and Ford (2014) recognized the growing issue of IT failure and the complexity of knowledge management in a society that requires problem-solving abilities. As PMs learn, train, and manage

projects, they are trained at being systemic, disciplined, and multifunctional. However, these skills are acquired through knowledge awareness and not from the PM BOK.

Educators are aware of the challenges of learning PM through the use of the PMBOK. Jugdev (2012) researched what contributes to project failure when lessons learned were a part of the PM process. Jugdev revealed that knowledge not only must be explicit and the PM be aware of PM methodology, but also knowledge management must include a social sharing of knowledge in addition to the technical skills. Owen and Bursten (2005) asserted that knowledge is predominantly created and used across professional and social networks. Knowledge creation and sharing at the professional organizational level includes explicit knowledge within social networks (Owen & Burstein, 2005). There is limited current literature about the hard and skills that apply to projects.

Learning from experience, and particularily as a project manager or project learner can be a learning attribute to consider. Chow, Woodford, and Lambe (2014) expressed that as students graduate and begin careers in business, they make use of their experiences as a student team member or team leader. To that extent, Chow et al. stated that, to be successful at coaching the student to be an effective member of a class project team, the instructors must also learn how to be a successful employee in a real world business project team. As students enter into the workforce and attempt to apply PM best practices learned, they can take their success or failure from the classroom to the workplace.

Learning PM from academic and professional training is known as teaching PM hard and soft skills. Taylor (2013) noted that instruction should include a cross-functional representation of both PM hard and soft skills to the success, implementation, and sustainment of PM knowledge. Bullen, Abraham, Gallagher, Kaiser, and Simon (2007) proposed that organizations profess to seek well-rounded individuals, although they advertise for those with hard skills and technical backgrounds. Bullen et al. indicated that IT professionals need to have a balance that demonstrates a foundation in the traditional hard skills and experience with softer business-oriented skills. A cross-functional representation of both PM hard and soft skills is not a known attribute of learning in the academics.

Epistemic Awareness of the Body of Project Knowledge Management

Apply what project managers learn to the real world can be a growing problem. Koro-Ljungberg, Yendol-Hoppey, Smith, and Hayes (2009) stated that epistemological awareness is problematic when PMs lack knowledge and the means to apply the knowledge transparency. Biedenabach and Müller (2011) provided research about PM knowledge that shared a philosophical stance. Biedenabach and Müller contended that learners attempt to link ontology, epistemology, and methodology to learning, but fail within the learning development stage. Cicmil et al. (2006) acknowledged that knowledge about conduct in a local situation presented combinations of both epistemic knowledge (of universal regularities) and practical knowledge (prudence), which arise through action and experience. Cicmil et al. implied that heterogeneity, context dependent knowledge, and reflexivity in learning and action are social and psychological

processes of knowing or adopting and enacting knowledge and recommendations. This learning deficiency has resulted in continued project failure amongst the PM community.

Understanding the distinction of learned knowledge and skilled knowledge can separate the difference between being success at project management or not. Cicmil et al. (2006) explored the discourse of successful practitioners and contrasted their epistemic knowledge with practical wisdom on the subject. Cicmil et al. suggested ways to rectify traditional PM discourse that hinders the development and identity of competent PMs. Competent practitioners learn a broader and more intellectually complex understanding of PM than the discourse embedded in the PMBOK (Cicmil et al., 2006). Because there is a gap in the discourse of learners, researchers should revisit the traditional PM learning objectives.

There is an epistemic deficiency in the knowledge base framework for PM practitioners and researchers. What is needed is further discovery of literature associated with the competencies gained from learning about PM and if the any knowledge could be missing. Martelli (2012) claimed that if knowledge variety is a special form of the requisite variety, each set of epistemic knowledge categories represent an equal balance by decision makers in a strategic decision-making process. Somani (2007) stated that a person must be willing to learn knowledge capacity and the source of the knowledge, as well as the acquisition of the said BOK. Martelli and Somani addressed the same concern about the necessity of knowledge awareness and having the epistemic capacity to retain and reuse knowledge for projects. Vlahov (2014) shared that measuring knowledge includes measuring the lack of knowledge. There should be an extension of literature

about the deficiency in PM knowledge and competency to present practitioners with an objective to fill in the learning gaps.

It has been determined choice learned knowledge can be a poor decision. Koro-Ljungberg et al. (2009) argued that PM candidates make choices about what PM knowledge is needed. Through epistemological awareness points, PMs are taught how projects are monitored and controlled with the end of the project in mind. However, as noted by Martelli (2012), at some points in the time of a project, a PM could fail based on a lack of observation. Giegerich (2002) mentioned that some PMs have improper training and lack epistemic awareness about what should be the considered as contingent early warning signs. A PM's lack awareness may not be confirmed until a project begins to fail.

Framing the Hard and Soft Skills of Project Success and Failures

Project failure occurs within technology projects. Shepherd and Atkinson (2012) stated that the history of failed projects has promoted continuous research to understand why projects continue to fail. Project successes and failures can be a result of selecting the wrong person to lead the project. Kerzner (2013) stated that a PM not has to have the technical capability to understand the information systems and technology side, but also must understand the PM approach and execution view point. Project success in PM takes into account the competency and epistemic knowledge of the skilled PM. Organizations evolve based on the success of the entire organization, and project-oriented organizations use competencies such as PM skills to help align the organization's expectations. Salajeghe, Sayadi, and Mirkamali (2014) researched methods to detect relationships

between hard and soft skills and the competency a person provides for the organization and found that in some cases, knowledge competency was not as detailed in the BOK as expected in a PMP examination. This could be due to a lack of knowledge expectation for IT professions who work on projects for the organization, which could lead to project failure due to the lack of appropriate development or recognition of the PM.

IT and system project success or failure should be tied to how the PM is evaluated. Bourne and Walker (2004) recognized challenges with project success based on the level of study used. Bourne and Walker argued about the competency and focus necessary to be successful and noted that acquiring the PM techniques is a hard skill that can be learned from the PMBOK. Bourne and Walker also argued that PM learning requires the development of the soft skills found to be a factor in IT projects failing. Project success requires hard, soft, and relationship knowledge.

Soft skills, or the lack of, can be a major problem for a project manager. Bartoška, Flégl, and Jarkovská (2012) stated that the majority of PM failures are due to human factors, such as poor leadership and poor communication. Information systems, technology skills, and capabilities are no different than the skills required to be a PM. Bullen et al. (2007) addressed that information systems and technology professions must have hard skills and competencies, such as programming and hardware competency. Bullen et al. concluded that if hard skills are missing, managing people and relationships can be difficult for the PM. Furlong and Al-Karaghouli (2010) framing identified weaknesses in managing projects and noted that PMs should be improving not only technology, but also human computer interaction, thus promoting a soft skill competency.

Identified early signs of weaknesses in managing projects can be a factor to consider. Kappelman et al. (2007) stated that as projects are evaluated based upon on performance, the failure of an IT project can be revealed in a PM's lack of hard or soft skills. These PMs may not be able to meet the expected requirements found in the PM BOKs (Kappelman et al., 2007). Kappelman et al. further pinpointed the soft skills required that should be obtained from training, compared to what is suggested within the PMI's PMBOK. Other researchers supported the theory that there is a lack of epistemic awareness taught in the PM BOK. Table 3 depicts the top 10 (out of 53) project failure warning indicators that are used to determine early signs (Kappelman et al., 2007). Considering the items described are the responsibility of the PM, there is difference between the hard or soft skills acquired from training versus the PMBOK or through the academics.

Table 3

Top 10 Early Warning Signs of IT Project Failure

Rank	Top 10 Early Warning Signs Ranked by Mean Importance	Mean Importance Score	Original Source	Hard or Soft Skill	PMBOK Domain
1	Lack of top management support or commitment to the project	6.59	Schmidt et al. 2001	Soft	Project Stakeholder Management
2	Functional, performance, and reliability requirements and scope are not documented	6.58	Winters, 2002	Hard	Project Scope Management
3	Project managers cannot effectively lead the team and communicate with clients	6.38	Schmidt et al. 2001	Soft	Project Human Resource Management
4	No change control	6.33	Schmidt et al. 2001	Hard	Project Integration Management
5	Project stakeholders have not been interviewed for project requirements	6.32	Ward, 2003	Soft	Project Stakeholder Management
6	No documented milestone deliverables and due dates	6.3	Ward, 2003	Hard	Project Scope Management
7	Undefined project success criteria	6.22	Ward, 2003	Hard	Project Scope Management
8	Project team member have weak commitment to the project scope and schedule	6.17	Schmidt et al. 2001	Soft	Project Human Resource Management
9	Communication breakdown among project stakeholders	6.17	May, 1998	Soft	Project Communications Management
10	Key project stakeholders do not participate in major review meetings	6.16	May, 1998	Soft	Project Stakeholder Management

Note. Adapted from the Kappelman, McKeeman, and Zhang – IT Project Management Early Warning Signs of IT Project Failure: The Dominant Dozen

Ranking what are early warning signs of project failure can illustrate focus areas of concern about weak project management soft skills. Based on the initial cross reference of the warning signs to the PMBOK domains, the PMBOK KAs are consistent where there is a possible failure of soft skills on the part of the PM, project communications management, project human resource management, and project stakeholder management. Table 4 illustrates the top 6 early warning signs based on content in the PMBOK. However, changes occurred in the formal fourth edition PMBOK to the fifth edition. The change moved content from the original Project Communications Management to section 13 – Project Stakeholder Management in the fifth edition.

Table 4

Top 6 Early Warning Signs of IT Project Failure with Project Management Body of Knowledge Domains

Rank	Top 6 Early Warning Signs Ranked by Mean Importance	Mean Importance Score	Original Source	Hard or Soft Skill	PMBOK Domain
9	Communication breakdown among project stakeholders	6.17	May, 1998	Soft	Project Communications Management
3	Project managers cannot effectively lead the team and communicate with clients	6.38	Schmidt et al. 2001	Soft	Project Human Resource Management
8	Project team member have weak commitment to the project scope and schedule	6.17	Schmidt et al. 2001	Soft	Project Human Resource Management
1	Lack of top management support or commitment to the project	6.59	Schmidt et al. 2001	Soft	Project Stakeholder Management
5	Project stakeholders have not been interviewed for project requirements	6.32	Ward, 2003	Soft	Project Stakeholder Management
10	Key project stakeholders do not participate in major review meetings	6.16	May, 1998	Soft	Project Stakeholder Management

Research about early warning signs of IT project failure has been conducted for years, and Table 4 outlines examples of PMBOK domains that continue to be a problem. Johnston and Wierschem (2007) noted that there was a growth in the number and complexity of project failures. IT project management may be inadequate due to poor planning, which was one of the top reasons for failure (Johnston & Wierschem, 2007). This led to PM learning and the standardardization of best practices.

Project Communications Management Skills

The communication style of PMS may also lead to failure, as well as how the message is conveyed and interpreted. Kappelman et al. (2007) claimed that project failure is attributed not only a lack of communication, but also to a lack of management support, especially with a PM with less training. The PMI promoted project communications as one of the highest priorities in a project. Through the use of the suggestions in the PMI's (2013) PMBOK, communications planning was embedded in most all of the KAs, and the PMI provided a section 10.0 Project Communications Management Knowledge Area that was specific to managing and controlling communication expectations.

Older PMI PMBOKs (2004), such as the third edition, included communication expectations of not just outlining the necessary communications planning, but to also formalizing information distribution, performance reporting, and management of the stakeholders. The PMI's (2008) PMBOK changed the communications approach to first identify stakeholders, plan communication, distribute information, manage stakeholder expectations, and report the performance. Table 5 reflects the changes between the versions.

Table 5

Project Management Body of Knowledge – Project Communications Management
Changes

Project Management Body of Knowledge - Project Communications Management		
Third Edition 2004	Fourth Edition 2008	Fifth Edition 2013
10.1 Communication Planning	10.1 Identify Stakeholders	10.1 Plan Communications Management
10.2 Information Distribution	10.2 Plan Communications	10.2 Manage Communications
10.4 Manage Stakeholders	10.3 Distribute Information	10.3 Control Communications
	10.4 Management Stakeholder Expectations	
	10.5 Report Performance	

When the PMI published the latest fifth edition in 2013, the main areas that were

changed were the project communications management.

There were changes as to where communications should be framed in the

PMBOK. Noted by Eskerod and Huemann (2013), stakeholder management in the fourth

edition Chapter 10 - Project Communication Management focused on providing project

related information to project stakeholders. The information was to be used as advice and

a determinant to support project stakeholder informational requirements. This change

promoted further investigation into why the change was made, and communication was

found to be a weakness that promoted failure on the part of IT PMs. As noted by the PMI

(2013), the change in project communications management was separated into two

sections to help eliminate the confusion created between 10.3 Distribute Information and

10.5 Report Performance. Other changes included breaking out and expanding

stakeholder management concepts because of the impact stakeholder management had on

managing and executing stakeholder expectations (PMI, 2013). Although these were signification changes, the lack of understanding of how to apply this competency could impact project success for PMs.

Changes to the PMBOK did not go unnoticed by researchers, academics, or PM professional groups. Those who were learning, teaching, and training about PM and using the PMI's PMBOK as the standard had to manage had to adopt the changes both academically and in professional organizations. Monteiro de Carvalho (2014) published an investigation of the role of communications in IT projects and noted that "project success had different meanings to stakeholder expectations and what had led to project failure" (p. 39). Considering the recognition of the stakeholder expectations that were designed and published in previous versions of the PMI's PMBOKs, it became clear that the PMI had to revamp the previous version after 5 years. Monteiro de Carvalho expressed that the critical point of project communications was being able to identify stakeholders earlier in the project planning process. Project success had become a main focal point to not only to the PMI, but also to the community of PMs and the organizational workplace.

Project communications is considered a soft skill in the community of PM. Mackey (2015) promoted the need to fill the missing communications gap amongst IT professionals and stated, "communication, culture, and behavior are intermixed within a person's culture impedes the development of behavior conducive to effective communication" (p. 4). The PM community should further recommend methods of

developmental training to be strengthened in what could be a weakness in the PMBOK contents.

Project Human Resource Management Skills

PM researchers have noted areas of concern about PMs who lack hard and soft skills in PM. According to Taylor (2013), competency skills in this area include being able to manage knowledge creation. The PMI (2013) includes a KA about human resource management and suggestive skills for PMs. The PMI's (2013) PMBOK includes suggested areas of knowledge for those who are learning and gaining the competency of hard and soft skills and suggestions for individuals who work on a given project, as well as why the PM should understand the overall team environment. Cortez et al. (2004) addressed the team environment as it relates to technical, technology, and business functional areas and noted that these skills were critical KAs for not only the organization, but for the IT profession and PM practitioners. Hard and or soft skills, when interacting with team environments, is not known as an acquired social trait, but rather a social learned skill that PMs could be failing to be successful at.

Training to gain hard and soft skills exists in many areas of an organization. Laker and Powell (2011) mentioned that there was specific knowledge that was required, as well as the challenges that exist when attempting to transfer the skills from the knowledge base to the skills of the manager. Learning soft or hard skills to become a PM requires consistent training and application. Soft skills can account for effective interpersonal skills. According to the PMI (2013), soft skills include becoming proficient with communication skills, emotional intelligence, team building, and group facilitation.

These areas of soft skills must be sustained and practiced, as well as demonstrated in an individual's capabilities.

Although PM resource management remained consistent in the PMBOK versions for years, there were changes that developed on how to plan human resource plans. Table 6 outlines the similarities in the versions of project human resource management found in the PMBOK third, fourth, and fifth editions. Changes occurred with a name change in the fourth edition 9.1 Develop Human Resource Plan to the fifth edition 9.1 Plan Human Resource Management (PMI, 2013). The change might not be perceived as a significant change; however, as noted in the newer fifth edition, subprocesses were added to circumvent gaps in the interactivities for learners or PMs to use as a best practice interaction tool and technique to reach an outcome of the process.

Table 6

Project Management Body of Knowledge - Project Human Resource Management Changes

Project Management Body of Knowledge - Project Human Resource Management		
PMBOK Third Edition (2004)	Fourth Edition (2008)	Fifth Edition (2013)
9.1 Human Resource Planning	9.1 Develop Human Resource Plan	9.1 Plan Human Resource Management
9.2 Acquire Project Team	9.2 Acquire Project Team	9.2 Acquire Project Team
9.3 Develop Project Team	9.3 Develop Project Team	9.3 Develop Project Team
9.4 Manage Project Team	9.4 Manage Project Team	9.4 Manage Project Team

Project managers are considered to be trained leaders. According to Henville (2012), learning to become a leader requires training, and the training should consist of developing the soft skills to be able to manage conflict and coaching. The versions of the PMI's PMBOK include limited tools and techniques that are considered a part of the

knowledge base of PM. However, I further investigated if IT project failure includes the

lack of competency in the PM domain as a weakness in a PMBOK.

Stakeholder Project Management Skills

Project stakeholder management is vital to the success of any project, and it can

be categorized under general management knowledge and skills. However, PMs must be

able to understand and apply the methodology to be successful not only at managing

stakeholder expectations, but to also be successful with the project outcome. Bourne and

Walker (2004) argued that achieving project outcomes that fully address stakeholder

expectations throughout the project was a special skill and competency that must be

understood by both the PM and the stakeholder. Stakeholder management does not fall

under the hard skills category, but is otherwise referred to as a human relation soft skill.

Managing project expectations can be a challenge for some PMs. As noted by

Schwalbe (2013), IT PMs must be able to make effective use of technology as it relates to

specific projects. However, Schwalbe mentioned that PMs need to have good soft skills

to meet stakeholder expectations, as well as to be able to lead, communicate, negotiate,

and solve problems. When the time comes to manage stakeholder expectations, a part of

the expectation, as referred to by the PMI (2013), is to engage their support and

commitment early on in the project. These individuals will be decision makers, investors,

sponsors, and team members whose interest can have a positive or negative impact on

project success.

Meeting the expectations of stakeholders can also lead to a lack of support.

Kappelman's et al.'s (2007) early warning signs ranked issues of project failure from lack

of management support, the PM not being able to effectively lead the team and communicate to the client and stakeholders alike, and the project stakeholders not being given the project requirements such as the scope and schedule. These all attribute to levels of adequate stakeholder engagement. Kee and Newcomer (2008) mentioned that inadequate engagement of critical stakeholders affected by change is a shortcoming in leadership. This resulted in further research, such as the focus of this on sharing the gaps that relative to IT project failure when the knowledge on how to manage projects, as such within stakeholder management, is also a part of the failure.

The versions of the PMBOK changed over the years, and one of the most significant changes between the editions occurred when the stakeholder involvement moved from Section 10 - Communication Knowledge to its own Section 13 - Project Stakeholder Management. In the fourth edition of the PMBOK (2008), project communications management included suggested processes to gather information about stakeholders to attempt to effectively manage their expectations (PMI, 2008). However, as modified in the fifth edition, a change was made to specifically separate the effort to develop and manage a strategy to meet stakeholder expectations (PMI, 2013). The focus of the change was to promote continuous communications, address issues as they occur, and manage conflicts of interest.

Table 7 depicts the changes from the previous version that did not have specific sections for stakeholder management.

Table 7

Project Management Body of Knowledge - Project Stakeholder Management

Project Management Body of Knowledge - Project Stakeholder Management		
PMBOK Third Edition (2004)	Fourth Edition (2008)	Fifth Edition (2013)
Stakeholder management was integrated throughout	Stakeholder management was integrated throughout	13.1 Identify Stakeholders 13.2 Plan Stakeholder Management 13.3 Manage Stakeholder Engagement 13.4 Control Stakeholder Engagement

During this study, researchers discovered issues when IT PMs are required to lead diverse teams. Stagnaro and Piotrowski (2014) reported that some PMs are not able to provide direction and motivate stakeholders, and they instead focus on delivery of the finished product. Stagnaro and Piotrowski also shared that the role of the PM can be considered that of a social architect and one who develops active participation. They (2014) shared that IT PM leadership principles are emerging; however the leadership role is not becoming a well-recognized leadership role in the industries. This could be a reason why some PMs fail to meet the role and responsibilities of a certified PM.

Organizational Implications of Information Technology Project Success and Failures

IT Project success and failure has a high degree of visibility within the organization. Jewels and Ford (2006) investigated when IT projects continue to perform with poor success in performance and knowledge awareness and found that factors of project success and failure exist in the literature of knowledge management. Kappelman et al. (2007) argued that as technology projects grow, early warning signs of failure

become evident, and PMs who do not gain the needed knowledge and/or training will put the project at risk of failing. These facts promote the need for awareness of early project failure warning signs.

PMs in the workplace typically focus on doing their job. In some cases, they are asked to take on a role that puts them in a leadership position, such as managing a project. Hunsberger (2011) stated, "organizations must understand when they assign a resource to deliver a project, they are creating a project management position, and as such, they need to train their resources appropriately" (p. 31). However, some organizations are not recognizing the extended PM training that is needed. An organization could create a false expectation of PM individual(s) and what is deemed as a good approach to PM methodology.

Accidental Project Managers

Becoming a project management can be accident. According to Darrell, Baccarini, and Love (2010), research about the accidental PM was coined to illustrate a trial-by-fire nature of introducing those who entered into the world of PM by accident. Darrell et al. stated that accidental PMs have excelled in the field. However, those who do become managers should come demonstrate project leading skills as well as project knowledge (Gomez, 2007). Hunsberger (2011) stated those who are trained in the skill, such as within the technology field, will require some form of PM skills validation. The necessity of learning how to become a PM might not have been the sole purpose of those placed in the position to lead projects. Learning how to become a PM requires skills, education, and knowledge. Darrell et al. (2010) stated that at the onset, PMs are thrust

into the position by luck or by way of force of will. Those who meet the need and learn about how to be a PM find themselves seeking guidance from mentors of the profession and from organizations such as the PMI.

Studies about accidental PMs started decades ago, but limited research has been conducted in recent years. Tarne (2003), Darrell et al. (2010), and Hunsburger (2011) continued research shared about those who are in a function role, such as an operational or technical position, who found themselves leading projects. Studies have been conducted to find how accidental PMs are being replaced by professional project PMs. Bergman, Gunnarson, and Räisänen (2013) contended that accidental PMs will continue to be replaced by professional PMs. According to Englund and Bucero (2014), accidental PM will remain as common of those that enter into the profession. Accordingly, accidental PMs are continuing to find and share the role of PMs in many industries and organizations. As noted by Richardson, Earnhardt, and Marion (2015), PMs who come into the organizational PM role must be able to individually gain the technical competencies to stimulate projects across the organization. The onset of accidental PMs will continue to evolve. The transition to professional PMs could also be a contribution to the trend of technolgy project failures.

Project Manager Professional

The PMI created the PMP credential in 1982, and it was approved by the organization's board of directors in October 1983. Stretton (2007) conveyed that the first PMP examination was administered in 1984, and it was comprised of 320 multiple choice questions within eight PM functions. PM functions were categories of what is now

referred to as KAs. However, in 1996, the first version of the PMBOK was published, it only included six functions, which were known as the KAs, for project cost, time, quality, scope, human resources, and communications. A seventh PM function, project contract/procurement, was later added and published in the second edition PMBOK in 2000. Subsequent versions of the PMBOK were published, such as the third edition (PMI, 2004) published in 2004, the fourth edition in 2008, and current fifth edition in 2013.

The PMBOK was designed to provide a reference point of collaborative standards and knowledge for PM professionals. Given that there are formal PM associations publishing BOKs, as well as competency standards, the following organizations are known to have published BOKs:

- The PMI PMBOK fifth edition published in 2013

- The APM BOK sixth edition published in 2012

- The P2M published in 2002 and issued by the Project Management Professionals Certification Center of Japan and the Project Management Association of Japan.

- The PMA Project Management – Body of Knowledge.

- The IPMA ICB3.0 published in March 2000.

There has to be validity of content put on each of the BOKs. Morris et al. (2006) researched the validity of the PM association's BOK and published notoriety about the certificate program and the amount of time spent developing them. Morris et al. noted the associations used in the formal certifications to recognize, observe, and distinguish those

professionals who have studied and were able to satisfy the certification process. The

certification process and formal designation as a PMP is a creditable resume builder for

potential candidates.

Specific to the PMP, the certification requires candidates to take the examination

offered by the PMI to obtain certification. The PMP candidates are required to qualify to

be considered eligible to take the examination. According to the PMI (2013), potential

PM candidate must have 7,500 hours in a position of responsibility leading and directing

PM tasks within 60 months of PM experience. Not only is the 60 months of PM

experience required, but candidates must have a baccalaureate degree (or higher), 35

contact education hours, and have 4,500 hours leading and directing project tasks within

36 month of PM experience (PMI, 2013). Deciding and pursing to become a certified

PMP requires a personal commitment to pursue what Starkweather and Stevenson (2011)

denoted as a mastery of skills, experiences, and knowledge. Mastering the skills and

experience of PM does not necessarily mean mastering the skills through professional

training, but through real-world work experiences. The skills and competencies required

are tested against the process groups and KAs referenced in Table 2. A blueprint of the

examination is noted in Table 8.

Table 8

Blueprint of the Project Management Professional Examination

Domain	Percentage of Questions
Initiation	13%
Planning	24%
Executing	30%
Monitoring and Controlling	25%
Closing	8%

The PMP program, certification and credentials in PM disciplines include

- Certified Associate in Project Management (CAPM)

- PMI Agile Certified Practitioner (PMI-ACP)

- PMI Risk Management Professional (PMI-RMP)

- PMI Scheduling Professional (PMI-SP)

- Portfolio Management Professional (PfMP)

- Program Management Professional (PgMP)

- PMP

The PMP credential is internationally accredited by the American National Standards Institute (ANSI), which is contrasted against the International Organization for Standards (ISO) 17024: the requirements for examination development, maintenance, and quality management systems for continuous quality assurance.

The source of competency validity can be placed at the competency of the individual. Starkweather and Stevenson (2011) investigated the relationship between the PMP certification and core PM competency in the IT industry and contended that "project manager competencies has faced validity in that there was an assumed learning component, as opposed to innate quality, has regards to one's development of the competencies" (p. 35). This contention could continue to result in poor PM competency if it is not corrected.

Project Management Competency and Organizational Implications

PM knowledge must be put to the test. Kappelman et al. (2007) noted that IT projects provide early warning signs that they will fail, including a major lack of knowledge about PM. Jewels and Ford (2006) contended that as PM learners engage in grasping the BOK, there is still yet an empirical factor that enables the adoption of the methodology that directs an individual to be able to manage knowledge in a project management environment. Reich and Yong (2006) claimed that knowledge evidence is an ability to effectively manage and lead projects and to be able to manage the knowledge learned from the PMBOK. In this study, I sought to discover gaps in the literature related to what is known as what is successful about the PMBOK and how it contributes to project failure in the minds of stakeholders of an organization.

Epistemic knowledge in PMs should continue to be addressed. Martelli (2012) discovered difficulties in management-based projects and focused on the project role and use of the knowledge captured by addressing epistemic uncertainty in management. Doherty (2011) provided insight about organizational behavior and project success and claimed that if a project is failing, it will be terminated. As Mustata et al. (2014) noted, learning a new skill requires learning how to learn, as well as learning how to apply it. PM skills mandate learning a new skill and using the applicable training of what and how to learn to apply the skill. According to by Davern, Shaft, and Te'eni (2012), similarity in epistemic knowledge and cognitive knowledge required to conduct technology and software development tasks has spanned the phases of development life cycle and can be compared to the KAs and process groups within the PM methodology. As organizations

gain more leverage to influence what PM practices should be used, they should consider candidates who can prove to be successful at PM using compency skills or tests before managing them.

Summary and Conclusions

The source of project success will come from only meeting the plan objective within the approved time, cost, and scope requirements, as noted by Taylor (2013). Project success includes the impact of knowledge management, leadership, and stakeholder management skills, which all contribute to the overall value of the goal (Taylor, 2013). Chapter 2 focused on how the leader in charge of the project, such as the IT PM, acquires and uses the knowledge obtained from a single source of a PM BOK, such as the PMBOK.

As the literature review shared, there is a foundation of structure and framework that was adapted in the fifth edition a PMBOK. Research about the PMBOK has found that it is one of the best known BOK standards for learners of PM, but it also continues to be the cause of failing projects. However, evidence of gaps in the literature about the changes made to the PMBOK versions denoted epistemic knowledge awareness of the hard skills and soft skills required to be successful in PM.

There are gaps in literature about technology-related projects and their success and failure. Bullen et al. (2007) stated that IT PMs, and the individuals who manage them, are not being recruited as qualified individuals trained with the right business knowledge and the soft skills required. Rather, organizations are still focused on the hard skills of technical candidates (Bullen et al., 2007). Organizations that focus on the softer

skills of managing projects, and the lack of studies about the PM BOKs, are leading to projects that would fail. Organizations that recognize the failure and trend should seek the need for a PM to focus on a balance of hard and soft skills that are taught in the academics and professional learning organizations.

The learning methods from academics, professional development programs, and self-taught trainings were found to promote knowledge-based practices and training that could be applied to the programs. Managing the acquired knowledge about the standards and best practices about the BOK was emphasized. There is a need to study the interpretation of the PMBOK and how it applies not to only all industries, but also to the technical society of PMs who typically meet the hard skills required to be successful at their job, and those who may not meet the social requirements of adapting and relating to managing people, conflict awareness, and stakeholders expectations.

Literature about knowledge awareness is lacking in PM training and how to manage people. Most who are learning about PM continue to use the PMBOK as the main source for studying and applying PM best practices. Literature about PMI's PMBOK continues to be a leading source and reference for a collective PM frameworks for learning and applying PM methodologies. However, there continues to be a gap in the knowledge awareness about the soft skills competencies and knowledge needed to manage people and the impact it is had on the success or failure of technology-related projects.

Chapter 3 provides the framework for the qualitative multiple case design. I discuss the phenomenological experience of PM candidates, PMPs, and accidental PMs

during the phase of learning and applying PM methodology to technology projects.

Chapter 3 includes the role of the researcher, the participation process, and the

instrumentation and data collection for the analysis. Detailed content is explained about

meeting ethical procedures and adhering to trustworthiness, integrity, and privacy

methods that was used during the research.

Chapter 3: Research Method

Introduction

The objective of this qualitative research study was to discover what additional information could be uncovered about the epistemic knowledge missing from the PMI's PMBOK. According to Taylor (2013), a knowledge management strategy could be the link to successfully implementing and sustaining the knowledge of IT PMs. The limited knowledge about how PMS use the PMBOK as a primary source of information to complete technology projects successfully could lead to project failure.

If epistemic knowledge is a weakness for PMs, there should be an awareness of the source. Dunlap (2015) explained that a qualitative study can be used when there is an epistemological assumption about knowledge gained or sustained from the real experiences of each participant. In this study, the PMBOK was analyzed through multiple cases in this qualitative study. Smith (2007) validated the use of qualitative case studies when there is a need to use an inductive approach to categorize the data. I considered what Smith and Koopman (2015) shared as a modeling process of how a real or proposed conceptual theory applies when principles from concept to a theoretical phenomenon situation are discovered. Lincoln (2009) recommended that this method is used to look at a phenomenon through a difference lens and system of meaning. Learning about PM using a body of BOK standard as the key source was investigated. However, the PM participants' experiences of technology project failure when using the PMBOK as the sole source of learning was a part of this validation.

The source of technology failure needs to be studied. Bourlakis and Bourlakis (2006) validated this type of research approach would the researchers wishes to gain a breadth and depth of understanding of what real life strategic context occurs in planning and approaching projects to generalize a theory about how projects are implemented. The approach included a casual interpretation. Yin (2009) noted that a multiple case design could be an advantage in constructing replication in cases to determine if there is a prediction of similar results across multiple cases. The data were analyzed to determine what was known about PM knowledge in the key areas of PM learning, knowledge transfer, and the reliability of the content taught within PM academics and within a professional course structure to for IT professionals. According to Ghasemi, Gholami, and Akhgar (2010), PMs must demonstrate knowledge transfer in technology projects. These findings aligned with the gaps in knowledge of the participants and promoted the need to outline early warning signs of project failure.

Chapter 3 includes a detailed description of the qualitative multiple case approach to investigating knowledge sustainment in PMs and how that knowledge is applied to technology projects.

Research Design and Rationale

This study followed a constructive research process, and I used a qualitative multiple case study methodology and an inductive approach. I decided to use a qualitative method to create a mix of inference and validation objectives to extend the historical trends of the theory. The design included observations, data collection, and multiple case

studies. An analysis of the multiple case data collection proved to be the best analysis for determining if the PMBOK contributed to project failure.

The main research questions focused on the information system PM's ability to learn and retain knowledge from the PMBOK and the use (or lack of) knowledge management as part of meeting the project objective. The research questions are as follows:

1. What, if any, was there a relationship between information systems project failure and the PMP's certification tenure?

2. What, if any, was there awareness between information systems project failure and PMs who are trained solely from the PMBOK?

3. What, if any, was there contrasting success or failure trend of projects of those who have studied other PM BOKs other than the PMBOK?

4. What, if any, was there any epistemological knowledge deficiency in PMs who have, or have not, studied from the PMBOK trending project failure?

5. What, if any, was there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning?

As stated in Chapter 1, the purpose of this study was to extend the research on the personal, PMP, and organizational behavior of adapting to the PMBOK. The study included interviews with PMs to understand the lessons learned about applying knowledge, best practices, and competencies to be successful with projects (Appendix D Research Questions). The research share included the phenomenon of continued

paradigms of IT project failures in which the PMP used the PMI's PMBOK as the source of training material.

Qualitative Tradition

I used Creswell and Clark's (2011) qualitative research design to narrow the focus to what and how the PM participants learned PM and how they shared and understood the knowledge. Teddlie and Tashakkori (2009) used this approach in an inductive manner and stated that this type of research would support a need for continuous research. Teddlie and Tashakkori identified the challenges of learning from a BOK standard and how the gaps pertained to the said knowledge within the real world. The use of a quality inquiry included a focus on the collected data and applying it to the collection of activities to form an outcome.

The explanatory and transformative mixed-method design was considered for this study. However, these methods were not chosen. In the explanatory design, the researcher first collects the quantitative data and analyzes them. The transformative design may not have the right focus for my study. Creswell and Clark (2011) noted there may be too much focus on possible injustice, or what may be considered change, which could reflect bias. Mackenzie, Hodge, and Boyes (2013) suggested that, if providing an informative theoretical framework, the scholars should investigate what would lead to a better understanding of the influences. Selecting a multiple case study approach allowed me to form a conceptual theory about epistemic behaviors, or the lack of, of the necessary knowledge management when transferring and retaining content from the PMI's PMBOK when information system professionals are seeking to gain and practice project success.

Researcher's Role

My role as the researcher in this qualitative research included collecting

qualitative data as recommended by various qualitative researchers. Morse (2015) stated

that there is reliability in well-developed, semi structured interviews. I used open-ended

questions to determine if there was a trend or phenomenon in the information gathered

from the participants. I connected the theory about the PMI's PMBOK to challenges

about learning from a BOK standard from participants' IT project experiences. The

interviewees had to have PM experience to be a part of the research. This approach used

an inductive nature of qualitative questioning to connect the participant responses to

theory (Teddlie & Tashakkori, 2009).

The data collection required reciprocity with the participants to ensure their

willingness to share their insights about PM learning. Morse (2015) asserted that the

researcher must make the inquiry rigorous to make the research valid, reliable, and

trustworthy. I made sure I expressed respect for the participants and ensured their

integrity and privacy. I followed good ethical collection and interpretation protocols until

saturation was met.

The process used to gather sample data started with inviting members of three

LinkedIn PMP groups to participate in a Project Management Professional survey. The

groups were the Project Management Institutes San Diego Group, The Project Manager

Network - #1 Group for Project Managers, and the Ph.D. Program and Project

Management Group. The survey focused only on technology and information systems

professionals who had, or were still, studying from the PMI's PMBOK (Appendix A:

Survey Invitation Announcement). The survey questions included nine closed-end

questions. I use nine questions to offer the participants a less complicated list of questions

that were easy to answer in less than 5 minutes. I used qualifying criteria to get up to 20

participants or until saturation was reached. I sought PMs who worked in the IT industry,

were currently in the role of a PM, who passed the PMP certification from the PMI, or

who were currently a PM who had not obtained a PMP certification or considered a

trained PM from academics or a professional organization.

Methodology

Participant Selection

In this study, I targeted participants of three LinkedIn professional social

networks: the Project Management Institutes San Diego Group, The Project Manager

Network - #1 Group for Project Managers, and the Ph.D. Program and Project

Management Group. The goal was gather participants from a variety of industries.

However, the objective was focus only on IT professionals who had managed projects,

who were PMPs who had successfully passed the PMP examination, and those who were

accidental PMs.

Sample Size

The sample size consisted of 20 invited participants who were PMs from a variety

of industries. However, I extended the invitation only to PMs who had studied from the

PMI's PMBOK. I focused on the following industries: health care, education, financial

services, IT/software development, and government contracting organizations. Although

only 20 PM participants were invited, saturation was reached of those with the required

training to become a PM and those who used the PMBOK as a primary source of PM

knowledge material to implement projects.

I requested to interview professional PM candidates from Walden University's

Institutional Review Board (IRB). Permission was granted by the IRB before contact was

made to any member of the LinkedIn PM social networking groups. An Invitation

Announcement was used to invite members of the LinkedIn professional groups. The

invitation was sent to members from the Project Management Institutes San Diego

Group, The Project Manager Network - #1 Group for Project Managers, and the Ph.D.

Program and Project Management Group. (Appendix A: Survey Invitation

Announcement). In the invitation, I invited members to consider participation and asked

them to provide additional information about the study in a Project Management

Participant Consent and Survey (Appendix B Participant Consent and Survey). The

Participant Consent and Survey provided background about the purpose of the study,

inclusion criteria, and procedures to follow to continue with the participation invitation. It

also included the necessary privacy information to ensure that the invited participant

would feel comfortable with his or her participation.

Instrumentation

The instrumentation tool used was the QSR International's NVivo 10 software for

the qualitative strand. The survey results and current literature review provided a

sampling of each strand and sequence staging for the data collection. Creating and

designing a sampling strategy was beneficial for this research. Through QSR

International's NVivo 10's instrumentation, I categorized similarities in a visual of the

populous. Chapter 4 includes how a model creation method was used to collect data and code them into a visualization using model visualization features embedded in the software application. Classifications and coding were used to create fields noted from the collection of articles, reports, surveys, and interview transcripts. The coding was used to identify relationships in each source and report similarities in references and relationships.

Data Collection Procedures

The surveys and the literature reviewed provided a path to collect samplings to construct a staged data collection for sequencing. The creation and design of a sampling strategy created was beneficial to investigate and analyze the staged samples. The construct and sampling strategy method suggested by Patton (2002) was used, who shared that leading with a sampling and comparison could be as simple as the use of random samples, stratified random, and/or cluster samples. However, the procedure needed to start with the 20 participants. An initial smaller sample was used to ensure that saturation was met. The content of each sample was needed to explain validate the samples. Patton suggested three approach methods: attract, purpose, and specificity and explained that the preliminary data gathering techniques would be considered as what was gathered in the case studies and article review. Appendix E Data Collection Protocol contains the steps of the data collection protocol.

Data Analysis Plan

The data analysis plan for the qualitative research included a small database of responses that corresponded to each of the specific research questions. Hellström (2011)

found this approach to be viable as long as the data set to be inspected included plots and cross-tabulation using a few cases. Through qualitative data analysis, trends of data were fully screened and filtered according to the group of participants. A small table with the results is display in the study to show the relationship between each of the groups. I ensure triangulation by collecting multiple sources of information within business operations, IT, and systems. Collaboration of the data was conducted through QSR International's NVivo 10 for Windows to detect evidence of similarities in learning PM from academic or professional studies.

Validity and Reliability

There was commonality between the samplings used in the data collection. I detected commonality in the coding of each of the cases. However, the cross-commonalities were not biased and did not require a validation based on the technique of the sampling. Teddlie and Tashakkori (2009) suggested this method when using case material sampling of written information and artifacts of best practices and narratives. The qualitative sampling generated statistical data about the number of times there was a probability of purpose that was detected in the analysis. This information was used to continue the step-by-step process to analyze the qualitative data.

Steps were used to assess the sampling of data and to triangulate the interview results to discover frequency checks and similar descriptive observations. Creswell (2013) noted value in assessing the accuracy of the findings and suggested corroborating evidence from the sources and methods to promote the perspective. The goal was to provide a perspective that addressed readiness, validity, and trustworthiness for other

researchers. It was critical to uphold the purpose of the study and to ensure that there would be collaborating inferences that were referenaceable to be validated during the study and future research.

<center>**Trust and Ethical Consideration**</center>

There was adherence to trust and ethical consideration during and following the research study. All ethical requirements were followed consistent with Walden University's policies that relate to research studies.

Ethical Issues

Trust and ethical consideration was a priority. According to Houghton, Casey, Shaw, and Murphy (2010), ethical challenges and issues could arise in a qualitative research, and it is pertinent to ensure that there are no issues of non-informed consent procedures between the researcher and the participants. Permission to extend an invitation to select social networking LinkedIn project PM was important to ensure trust and that ethical procedures were followed. Other issues that could be misconstrued, but were not, were from the technological methods used to survey, collect, and analyze the data. A private Survey Monkey website was used to monitor and track ethical responses and inquiry. Potential candidates were able to contact me by e-mail or by phone to explore any further questions about the study before participation began.

My approach for the study used reasonable technology. Cilesiz (2011) noted technology has made it reasonable, assessable, and less complicated to conduct interviews. I used technological advancement in this qualitative research. Because this study used a phenomenological approach to constitute the possibility of an

epistemological content of what could be lacking in the PMI's PMBOK, there were not any issues of misconstrued interpretation of the data.

Confidentiality

Confidentiality was maintained throughout the study. Participants had written acknowledgment to uphold the confidentiality of whom and what information was shared. Participate coding was used to track and validate surveys, interviews, and acknowledgment. Participate coding was coded based on participants from businesses and those who were certified PMs and noncertified PMs. Industry codes were used to identify additional segregation of industries. My database containing the results of the study was password-protected and safeguarded for privacy.

<div align="center">

Summary

</div>

Chapter 3 provided details about the research methodology, description of approach, and rationale for selecting a qualitative research and design for the study of the PMI's PMBOK. The chapter also included the researcher's role and the qualitative method of selecting participates and sample size. The instrumentation and data collection methods, data analysis, and validity were described. The results of the study are detailed in Chapter 4.

Chapter 4: Results

Introduction

Chapter 4 presents the results of the qualitative research assessment of epistemic deficiencies theorized to have developed into IT project failure to assess a lack of knowledge-based skills in the PMI's PMBOK. This study was conducted was to investigate multiple cases of trained PMs who worked in the IT industry and who had studied from the PMBOK. The study only surveyed and interviewed IT PMs certified by the PMI as PMPs, noncertified PMs, and accidental PMs to analyze their responses to specific questions. The goal of the assessment was to provide a cause for technology project failure due to a lack of PM knowledge. I also believed that there could be a trend about a lack of hard and/or soft skills training material found in the PMI's PMBOK. This chapter includes an examination of (a) research questions, (b) participation selection, (c) data collection, (d) data presentation and analysis, (e) results relative to the research questions, (f) qualities of discrepancy, (g) saturation analysis, (h) evidence of trustworthiness, and (i) study results and conclusions.

Research Questions

The five research questions used for this study were the following:

1. What, if any, is there a relationship between information systems project failure and the PMP's certification tenure?

2. What, if any, is there awareness between information systems project failure and PMs who train solely from the PMBOK?

3. What, if any, is there contrasting success, or failure trend of projects of those who have studied other PM BOKs other than the PMBOK?

4. What, if any, is there any epistemological knowledge deficiency in PMs who have, or have not, studied from the PMBOK trending project failure?

5. What, if any, is there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning?

Participant Selection

IT participants were selected from three social network LinkedIn Project Management Professional groups. The groups were

- Project Management Institute – San Diego

- The Project Manager Network #1 Group for Project Managers

- The Ph.D. Program and Project Management

The participant selection process started with an invitation to members of LinkedIn PM professional groups; I asked if they would consider volunteering in a research study. The invitation asked the participants to take part in a research study that would investigate if the PMI's PMBOK was the primary source for learning about the methodology of PM. The invitation also included how practitioners understood the PMBOK as a primary or secondary learning standard of reference, as well as if they standardized best practices of PM from the source. Clarification was included in the invitation that I would investigate if the PMBOK contributed to the failure of technology projects (Appendix A: Survey Invitation Announcement).

After Walden University's IRB approved my application on November 5, 2015, an invitation to each of the LinkedIn PM groups was posted as a general announcement. I selected potential interview candidates from a mix of industry demographics who were recognized as PMs. Specific selection criterion was used for each candidate. The criterion included the following: they must be a certified PM, noncertified PM, or an accidental PM working for an organization primarily within the IT division who answered "1 or greater" if passed the PMP examination.

Data Collection and Demographics

Data collection started on November 7, 2015 after obtaining written approval and consent from Walden University's IRB on November 5, 2015. Walden University's approval number for this study was 11-05-15-0101041, and it will expire on November 4, 2016. Data collection included two phases. Phase I used a secure web-based Survey Monkey hosted survey site. An invitation announcement was posted to the three social network LinkedIn PMP groups: Project Management Institute – San Diego, the Project Manager Network #1 Group for Project Managers, and the PhD Program and Project Management. The invitation targeted members of the networking groups asking for volunteers to participate in the study using a snowballing technique. The request stated that participation was voluntary and that participation will be confidential (see Appendix A - Informed Consent Form - Survey).

The method used to gather the initial Phase I data was through a secure socket layer (SSL) Survey Monkey Survey website that authenticated by my Walden University Google credentials to access the private survey form. The secure form included a

statement of privacy and confidentiality and stated that all information collected would be

confidential to uphold privacy during and after the study (see Appendix C- Research

Questions). The secure Survey Monkey Survey questions asked the volunteer participant

to answer inclusive closed-end questions. See Table 9 – Participant Demographic

Qualifying Information. The first descriptive response was retrieved on November 15,

2015 and continued until December 7, 2015 to narrow to the first 20 participants who met

required and the qualifying responses.

Table 9

Participant Demographic Qualifying Information

No.	Survey Questions	Required	Qualifying Response
Q1	Statement of Consent	Yes	Must be Yes
Q2	Private Contact Information: Name and email address	Yes	Must complete
Q3	What is your Project Management job title?	Yes	Must be a project manager type
Q4	What industry do you work in? (Construction, Finance, Medical)		Open
Q5	What level Project Manager are you?	Yes	PMP, Accidental or Non Certified
Q6	Did you study project management through college or from professional training organizations?		Open
Q7	What is your highest level of education?		Open
Q8	If you passed the PMP certification test, how many times did you take the test?	Yes	1 or greater
Q9	When studying from the PMBOK, do you think it contains what you believe are the necessary ***Hard Skills*** required?		Open
Q10	When studying from the PMBOK, do you think it contains what you believe are the necessary ***Soft Skills*** required?		Open

A total of 32 potential candidates accessed the Survey Monkey website. However, only 22 participants provided answers to complete the Participant Demographic Qualifying Information. As the responses were reviewed, they were indexed and categorized by participant number (P#) in Microsoft Excel as shown in Table 10.

Table 10

Qualified Participant Response

	Q3	Q5	Q8
(P#)	Project Management Job Title	What level Project Manager	How many times was the PMP test taken
P1	Project Manager	Project Management Professional (PMP)	1
P2	Program/project manager	Project Management Professional (PMP)	1
P3	Program/Project Manager	Project Manager (non-certified)	1
P4	Information Systems Security Administrator	Accidental Project Manager	1
P5	Business Applications Project Manager	Project Management Professional (PMP)	1
P6	Business Project Manager	Project Management Professional (PMP)	1
P7	Project Consultant - PM/Analyst	Project Manager (non-certified)	1
P8	Project Manager	Project Manager (non-certified)	1
P9	Project Manager	Project Manager (non-certified)	1
P10	IT Project Manager & Scrum Master	Project Management Professional (PMP)	2
P11	Project Manager	Project Management Professional (PMP)	1

	Q3	Q5	Q8
(P#)	Job Title	What level Project Manager	How many times was the PMP test taken
P12	IT Project Manager/Analyst	Project Manager (non-certified)	3+
P13	Senior Program Manager	Project Management Professional (PMP)	1
P14	Director, PMO	Project Management Professional (PMP)	1
P15	Project Manager	Project Manager (non-certified)	1
P16	Senior Project Manager	Project Management Professional (PMP)	1
P17	Area Program Development Manager	Project Manager (non-certified)	3+
P18	Program Manager	Project Management Professional (PMP)	1
P19	IT SDLC Project Manager	Project Management Professional (PMP)	1
P20	Head of PMO	Project Management Professional (PMP)	1
P21	Sr. Project Manager	Project Management Professional (PMP)	1
P22	Sr. IT Project Manager (Consultant)	Project Management Professional (PMP)	1

Table 11 includes a summary count of the initial qualified participants with

common PM job functions.

Table 11

Summary of Job Functions

Job Functions	Count
Area Program Development Manager	1
Business Applications Project Manager	1
Business Project Manager	1
Director, PMO	2
Information Systems Security Administrator	1
IT Project Manager & Scrum Master	1
IT Project Manager/Analyst	1
IT SDLC Project Manager	1
Program/Project manager	3
Project Consultant - PM/Analyst	1
Project Manager	5
Senior Program/Project Manager	4

Other participant demographic questions (Q#) of information that was asked of

participants, but not required, included the following with cooresponding response rate.

(Q4) What industry do you work in?

- o Banking/ Finance (5) – Response rate of 22.73%

- o Health/Medical (1) – Response rate of 4.55%

- o Other industies (16) – Response rate of 72.73%

(Q6) Studyed Project Management through college or from professonal

organizations:

- o Yes – Response rate of 81.82%

- o No – Response rate of 18.18%

(Q7) Highest Level of Education:

o Bachelors (6) – Response rate of 28.57%

o Masters (12) – Response rate of 57.14%

o In-Progress (3) – Response rate of 14.29%

o Skipped (1) – No response

(Q9) When studying from the Project Management Institute's a Guide to the Project Management Body of Knowledge and if they thought it contains what is believed are necessary *Hard Skills* required for the project manager;

o Yes (it contains the necessary *Hard Skills*) (14) - Response rate of 63.64%

o No (it does not contain the necessary *Hard Skills*) (4) – Response rate of 18.18%

o Don't Know (I don't know if it does) (4) – Response rate of 18.18%

(Q10) When studying from the Project Management Institute's a Guide to the Project Management Body of Knowledge and if they thought it contains what is believed are necessary *Soft Skills* required for the project manager;

o Yes (it contains the necessary *Soft Skills*) (7) - Response rate of 31.82%

o No (it does not contain the necessary *Soft Skills*) (9) – Response rate of 40.91%

o Don't Know (I don't know if it does) (6) – Response rate of 27.27%

Individual e-mails were sent to the first 20 qualified participants that had been chosen to continue with my research study. I asked them to provide at least two convenient dates and times for a telephone interview. See Appendix B – Participant Consent and Survey Form – Interview. Out of the 20 e-mail invitations, 10 responded with convenient dates and times for a telephone interview. The mix of the PM levels included five PMPs and five noncertified PMs. Table 12 provides the list of inteviewed participants.

Table 12

Interviewed Participants

(P#)	Q3 Job Title	Q5 What level Project Manager	Q8 How many times was the PMP test taken
P3	Program/Project Manager	Project Manager (non-certified)	1
P5	Business Applications Project Manager	Project Management Professional (PMP)	1
P6	Business Project Manager	Project Management Professional (PMP)	1
P7	Project Consultant - PM/Analyst	Project Manager (non-certified)	1
P9	Project Manager	Project Manager (non-certified)	1
P12	IT Project Manager/Analyst	Project Manager (non-certified)	3+
P13	Senior Program Manager	Project Management Professional (PMP)	1
P15	Project Manager	Project Manager (non-certified)	1
P19	IT SDLC Project Manager	Project Management Professional (PMP)	1
P21	Senior Program Manager	Project Management Professional (PMP)	1

A combination of audio recording methods was used to capture the oral interviews. Telephone calls made with international participants include the use of a private conference calling bridge line with a feature to record the call. Local U.S. calls were recorded on a Sony ICD-P520 audio recorder. The third method to capture notes was written to capture the contents of the telephone conversation. All methods of collecting the interviews were done in my private office. The audio recordings were

securely stored on my password- protected and encrypted-enabled laptop. A backup of the data is stored on a password-protected external drive in my private and secure office.

Phase II of the telephone interviews was used to establish the research setting. The first telephone interview was with P3 on November 19, 2015 and continuous effort to schedule interview the other participants continued until the last call with P21 was on December 7, 2015 and when saturation was detected. The participants were all from different personal, social, and organizational cultures, which could influence the interpretation of the findings. However, confidentiality and trustworthiness was reflected in the setting. Based on the participants' experiences at the time of study, I was not aware of any influence that could affect the study results. I followed the steps described in Appendix E – Data Collection Protocol. Interview participants were contacted based on an agreed date and time using an agreed method to contact each other through a secure electronic telecommunication.

Data Presentation and Analysis

In the data presentation, I focused on the analysis that was conducted. Morse (2015) stated the importance of reliability in semi structured interviews to ensure rigorous structure and coding. In Phase I, I created a demographic analysis that allowed me to collect data from multiple sources. The sources included personal information, business operations, and social perspectives of what was understood to be advantages and disadvantages of studying and applying skills learned from the PMI's PMBOK. The collection of the qualitative data included a triangulation of evidence to determine the phenomenological results of what was happening in the real world of IT PMs.

The first collection method included up to 32 potential candidates to access the Survey Monkey survey and complete Phase I. However, 10 decided not to continue. This resulted in the first set of data to included selecting 20 out of the 22 participants. Of the 20 participants who were contacted by e-mail, 10 responded with convenient dates and times for a telephone interview. The use of the secure and private telephone calls allowed each participant to answer questions freely. Participants were able to speak freely about their experiences and observations of project success, failures, and the overall use of the PMI's PMBOK.

The contents of the survey and the recorded audio data was collected and transcribed on my secure computer and used to import into NVivo 10.The data were filtered and coded in NVivo 10, and based on the analysis the results, five themes were developed systematically through a variety of queries and coding to present various findings. The following five themes and up to 90 subthemes were created for potential use. Table 13 includes the themes that emerged from the NVivo 10 query analysis.

Table 13

Themes and Subthemes by Research Questions

RQ No.	Research Questions	Themes	Sub-Themes
RQ1:	What, if any, is there a relationship between Information Systems project failure and the Project Management Professional's certification tenure?	Observation of PMP or Non PMP use of the PMBOK.	Continued project failure, weak knowledge of PMBOK source, standards not followed, PMBOK referenced as a lessor source
RQ2:	What, if any, is there awareness between Information Systems project failure and project managers that train solely from the PMBOK?	PMP and Non PMP awareness level related project failure to what is not included in the PMBOK.	Effective practice and use of the right skills, establishing organizational project management effectiveness
RQ3:	What, if any, is there contrasting success, or failure trend of projects of those that have studied other project management bodies of knowledge, other than the PMBOK?	PMP and Non PMP use of other project management bodies of knowledge used to apply practice or training from.	PMBOK, Agile, Scrum, Information Technology Infrastructure Library (ITIL) Certification
RQ4:	What, if any, is there any epistemological knowledge deficiency in project managers that have, or have not, studied from the PMBOK trending project failure?	PMP and Non PMP level of understanding about PMBOK Knowledge Areas and skills proficient.	Deficiency in soft skills and improvement needed in stakeholder management
RQ5:	What, if any, is there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning?	PMPs use 4th Edition PMBOK higher study rate. 5th Edition not referred to.	Study and learning for examination using the 4th Edition.

Results Relative to the Research Questions

I used an inductive analysis to gain responses from participants using closed- and open-ended research questions developed into the results relative to the research questions. Smith (2007) validated this approach and the use of multiple case studies. As the researcher, I was able to categorize the data to reflect what was stated to be true from each participant and categorize the data into commonality and structured themes (Smith, 2007). Out of the 20 participants who had qualified for Phase II, saturation of commonality began to become present out of 10 participants who acknowledged and consented to be interviewed and continue with the research. I uncovered the successes and or failures of PMs had studied and used the PMBOK within their professional work industry.

The five open-ended questions asked during this phase of data collection were presented with trust and validity. The process provided reliability of the professional, academic, and/or social experience of epistemic awareness about the validity of the PMI's PMBOK. The following section presents the response(s) to the research questions and how themes were created to discover subthemes of relevant patterns of business, personal, and social information of what participants responded to during the interviews. The responses from the participants enabled observation to emerge about the success and or failure of the PMs and what was accepted to be trustworthy knowledge about PM.

Research Question 1

The theme that emerged from the 10 participant responses was the following: Out of the successful and failed projects that were observed, what was your observation of

project success or failure of the PMP or Non PMP considering they should be using the PMBOK during the project? The subthemes that emerged from the conversations discussed the following key factors: lack of hard skills knowledge, lack of soft skills knowledge, lack of not using the PMBOK during the phases of a project, using the wrong PMBOK edition, too new of a PMP or certification is new, lack of competency of the organization, and/or a lack of business knowledge.

Out of the 10 participants, P3, P6, P13, and P15 shared similar comments that just because a person has PMP, it does not mean that he or she can be successful with projects. They shared indicated that the PM certification process does not come with privileges granted.

P12 has seen projects that have failed and part of the failure considered the project managers were certified (P12). P15 is not yet a certified project manager, but hopefully to be taking the exam soon. He has seen projects fail, and it is becoming more frequent. Even with P15's experience with the PMBOK, and one who is not certified as a PMP shared that organizations are not following the standard of that what the project manager should be trained to implement. They, meaning the certified project managers, are not following the body of knowledge structure. (P15)

P9 is working on getting his project management professional certification. But, in the meantime, as he has observed project managers, he has recognized those that were certified project management professionals may be just using their title as a means to get into the organization and they have failed with their projects

after the fact. What he has also noticed, the project managers have the book

knowledge but not the application knowledge. (P9)

P6 thinks there is a relationship of failing projects and of those that are supposed

to be trained as project management professionals. P6 believes that if project

managers were to look at the causes of project failure the way they should there

may be less failures. He continued to share another common theme that

organizational management appears to be weak at recognizing the failure and

appear to be unaware of what they should be looking for in a project manager.

(P6)

P21 stated he has been referring to the PMBOK at least 40% of the time while

working at his organization. Projects have been successful but attribute the project

success to non-related project management elements outside of the PMBOK.

(P21)

All 10 participants indicated that they have seen PMs who are PMPs attempt to

gather project requirements or attempt to use standards of the project management guide

to the BOK. But most were failing to execute the necessary standards as suggested by the

PMBOK; P3 stated that PMs have trouble gathering the overall scope of a project.

A few of the participants such as P3 and P5 attest projects failed when

there were newer project managers and new to the project management

methodology in the organization. They have not been able to apply the

practice as most will most likely fail.

P5 believed that there should be more of a relationship with management so they

are able to understand the perspective of project knowledge and both a newer

project manager and a senior manager. He thinks that the project manager that has

a project management certification should not solely use the project management

body of knowledge as the means for a project to be successful. He stated there are

other sources of project management knowledge that one can use and is available

to the project manager to be successful. (P5)

P19 was one of the last of the 10 participants interviewed. P19's experience and

exposure to projects in his own organization was not been a part of what could be

referenced and if projects were successful or failures.

P19 was able to share and what appeared to a similar theme compared to what

other participants have shared. Projects are not following good standards of

following the requirements of the projects and what was considered or a standard

of monitoring the triple constraints. The triple constraints are what project

managers monitor when managing time, cost, and scope of a project. Results of an

imbalanced triple constraint of when more time is added to a project will cost

more than what was original planned for due to a change in a project deliverable.

(P19)

Ten interviews were conducted to determine what the participants thought about

the relationship between an IT project and PMs who were PMPs. Even with the 10

interviews, data saturation was possible. Guest, Bunce, and Johnson (2006) noted that

data saturation could be attained by as few six interviews depending on the sample size of

the population. The objective was to recognize what created a commonality why projects were failing.

Research Question 2

The theme that emerged from RQ2 participant responses focused on the PMP and non-PMP and what appeared to be a lack of awareness in what related to IT project failure and to what was not included in the PMBOK. A lack of epistemic awareness about the knowledge content available in the BOK surfaced when participants were asked about why projects were failing and the relationship to a lack of use of the PMBOK for internal PM standards. The subthemes that emerged from the conversations included the following key factors: a lack of soft skills development, leadership skills appear to lack, and no use of case studies or best practices.

Response evolved from the participant interviews included similar elements. P3 found that organizations that are recognizing increased project failure were seeking people that were experienced with project management. However, P3 also mentioned they are not specifically seeking those that have the PMBOK experience. P3 stated, "his experience with the PMBOK is good. However, there are project related situations that are not available in the PMBOK and thus he will seek outside project management knowledge information. (P3)

P5 believed there might not be a good amount of awareness of what the organization should know about the failure of projects. He (P5) said, "this is based on a specific situation where he worked with a project manager that is PMP

certified. However in some project manager cases, they were not following any of the practice that a qualified certified project manager should be practicing. (P5)

P6 shared, where he has worked, there were a lot of money and projects were failing left and right. People, meaning those with the money and management, were not doing much about it. But recently, they seem to be starting to figure out there was a problem. Those such as organizations, that are looking to gain profits are caring and want to do something about the failing projects. Projects are failing at a 50% rate, and management wants to do something about it. (P6)

P7 has worked with PMs that have failed. But he also wanted to know what was meant by failure. P7 said that in his industry, they are following the PMBOK. They are looking at other tools like SharePoint to collaborate with other IT related guidelines. P7 does not typically hear the term PMBOK during project planning, review, and or executing. What he does not hear some basic terms like schedule or even scope. A project can still be successful but most of our projects are always over budget and behind schedule. (P7)

P9 thinks that when a project manager is trained they are not really using what they are trained at what they are supposed to do. He believes the processes in an organization are not following a project planning process. What was exercised is different than what they were trained at doing and what they should be doing. (P9)

P12 indicated he had not had a lot of opportunities to work in all the PMBOK knowledge areas. Although his organization has worked on a lot of projects, the

project managers seem they did not have the right soft skills, or in my opinion

good interpersonal skills, and could not communicate effectively. (P12)

This type of result shared similarity to what P13 had noticed in his organizations.

He has seen project managers that I did not feel good about project success and

noticed the project fell short of success and also notice the project manager was

seeking training or a certification. (P13)

P15 shared that at most companies that he has seen, it is known that PMP

knowledge and qualifications are required to be the project manager at the

company. But, at his company they do not hire PMPs. According to P15, they

have two managers of which he is a project manager and the other is a product

manager. P15 has a lot of the project deliverables to do and the product manager

simply has to work on the product development items. P15 said, "I have done my

best to try to explain what we should be doing. But, one manager gets it, or the

other does not. They do not want to spend the time. It was even things like risk

management or even creating a WBS. And other areas like budget allocation or

time and resource allocation were found to be a problem." (15)

P19 shared a good summary about what organizations should consider about

project success and or failure. P19 stated "because they get done and without a

project manager like me they probably would be a foundry. I would say that

project managers need to alter their definition of success. Right now there is not

enough project management experience. Most of the managers that I have seen

have been functional managers that came from software developers, and now they

are project managers. They are lacking the people skills and see a lot of people

difference between the two. They do not know how to manage people. They came

from a background with technical expertise and I think it is a hindrance at

managing people. Some of project success is clouded by the organization you are

in. You are probably familiar with CMMI, I would describe some of the

organizations that I have seen and the level they are at with maturity, you have to

alter your level of project management and the level of what project success.

(P19)

What I found interesting was what P21 shared about his involvement and use of

the PMBOK.

I am aware of and currently uses the PMBOK knowledge content. It was

because most of the projects that he has worked on were new and the

company was new too. The benefit as P21 stated was that he had the

opportunity of establishing the project management standards and ground

rules for the PMO. (P21)

Research Question 3

The theme that emerged from RQ3 participant responses on successful and failed

projects was the commonality of both PMP and non-PMPs using other PM BOKs to seek

alternative standards or best practices. The subthemes that emerged from the

conversations included the use of the PMBOK, Agile, Scrum, Prince2, and the

Information Technology Infrastructure Library (ITIL) PM content.

What was an interesting phenomenon was found in several of the participate responses:

Based on what P3 shared, a couple of things that P3 realized was what was not available in the PMBOK were found in other sources of project management material. Knowledge such as what was specific to the task and good estimation with validation. Although, the PMBOK does have good information such as breaking down the project plan into one WBS is very important. However, we have a bit of a different approach and resource use at my organization to gain a good understanding of technology and the project management domains and practices. What P3 referred to was the use and understanding of other tools such as a Microsoft Open Source tool as an example of information that we collect. P3 stated, "Project managers must have project related knowledge and be able to share the experience in an open environment. (P3)

P5 thinks "there could be a trend with the lack of not using the PMBOK as the primary source. P5 understands the issues to be those that have studied project management are not using it, and it could be the PMBOK does not have all the answers. A project manager needs to understand what was within the domain of work and practice to be successful. P5 and P21 together think the PMBOK has a good degree of standards and practice; however other standards like ITIL (Information Technology Infrastructure Library), Agile, and Prince2 and or SDLC (Systems Development Life Cycle) have other good specific project management practice sources that can be used to be successful. The sole use of the PMBOK

will not be the answer for all. (P5) P6 extended an interesting observation sharing "I (P6) kind of recognize the trend of the failing projects and of those (project managers) hopefully looking at how project managers may or may not have the skills and is hoping management will do something about it" (P6).

P9's organizations still requires the PMP certification to be hired. However, when they are in the organization, they are not using the PMI's PMBOK as the internal PM standard.

P9 thinks it is ironic that an organization requires the PMP certification but they are not practicing it. (P9) P13 thinks in some cases there is mismanagement or misuse, of the project stakeholder management and they do not understand the principle of project management. The lesser experienced project managers that do not understand who all the stakeholders are would have a problem. What happens is the project will come back to haunt them. If you understand who they are, it will be worth to the analysis. The other area that I think is a problem knowledge area is scope management. Take for an example the statement of work. If the project manager does not understand how to get down to the deeper layer of the work breakdown structure, you would have a lack of scope. (P13) At P15's company, they do not see the inexperience. P15 is familiar with project management standards, but they do not see that required project management as a deficiency. I am even starting to look at learning more about Agile, and I think that PMI offers an agile certification. (P15)

Research Question 4

The themes that emerged from RQ4 participant responses were a quick ranking of the strengths and weaknesses in the PMBOK KAs. The subthemes that emerged from the conversations include epistemic assumption, awareness, deficiency, and knowledge based. When I asked the participants to share what they thought was deficient in the PMBOK's KAs, they replied with the following:

P5 stated I think it is important to have awareness where you think you can be deficient in skills area. Because you mentioned the definition of project management hard and soft skills, I can see how this could have an impact on a project's success. (P5)

P6 found the question to be interesting because he was shocked to learn that some project managers that supposed to be PMP certified are not certified. And he (P5) was very surprised to have found that out. I have asked them how they are learning about project management and some responded; they are just getting by. P6 on the other hand thinks that Project Management Institute should change the format of how the tests are given so that it could eliminate those that may not be taking it. (P6)

P7 and P9 views deficiencies and or having the right skills on a case by case basis. Some are born with the right knowledge or skills to be a project manager or leader. Some may be project managers, but may work more like a project coordinator.

According to P7, these individuals may have trouble with barriers such as

language and or even know how to find a solution. (P7) P9 thinks it is a

combination where the skills and knowledge are not there. It would be a

problem. P9 also share that "you do not become proficient when you are

not able to continuous use it. They may not be able to expand on the

necessary skills or knowledge through class or through the PMI

organization. They are able to use the repetitive process to keep up the

skills. (P9)

P12, P19, and P21 believed that project planning is a soft skills area that needs

improvement. Planning requires seeking support and guidance from stakeholders. PMs

seem to be weak with regards to stakeholder management. A majority of the PMs

acknowledged a problem with managing the project human resource management side of

projects. The following were some of the collaborative responses:

P12 has not seen anything like where a project manager that believes there was a

lack of deficiency; meaning, the project manager made no attempts to re-learn the

skill that was deficient. (P12) As stated by P19, he would focus on stakeholder

management. Stakeholder management was taken from a few areas in the

PMBOK, and it has more focus on customer value. It was something that project

managers need to improve on. (P19) P21 thinks "project communications

management" is skills that project manager's lack and need help with. He shared

(P21) there appears to be weak or what could be referred to as a soft skills area

needs improvement. I also think that Project Stakeholder Management is an area

that project managers need to pay close attention to. (P21)

Research Question 5

The theme that emerged from RQ5 participant responses included discussions

from the PMs who passed the PMP examination or those had not passed it. Most were

familiar with the PMBOK third, fourth, and fifth edition versions. The subthemes that

emerged from the conversations included the KA changes and the need to promote PM

best practices.

Most PMs had studied from the fourth edition. However, what was interesting

was the commonality and saturation of responses about the changes or lack thereof.

When P3 looked at the latest Edition, he "believed it was the 5th Edition.

However, when he referenced it, he was not looking for answers. He was looking

for pointers on how they are suggesting how things are done. Meaning I was

looking for the tool to use. (P3).

P5 thinks he had "studied from the 4th Edition, and when he had studied it, he had

to use other resources to gain the right knowledge that was believed to get him

pass the test. When P5 took the test, it structured quite differently than what he

was studying in the PMBOK. But, if he had not studied the other references, he

probably would not have passed the examination. (P5).

P6 shared that he learned from the 4th Edition, and I thought it was good.

But I did have to go outside of the PMBOK to find articles about change

policies. But, I think it has good content about learning about the hard and

soft skills. It was very good. I did find out from taking the test that the text includes more soft skills question about specific cases, and it is important how to work with people. (P6)

Well, I (P7) "know the PMBOK does go through versioning. I have seen it date back to early 2000. But I have not been involved with looking at them recent." (P7) I (P9) "think it is a good thing that the versions have changed. Just like what PMI has done, by changing them over time is allowing the project managers to keep up with how society, organizations, and or technology have changed." (P9) I (P12) "have studied from the 3rd Edition PMBOK, and maybe a little from the 4th and I remember it was not easy to get. I have not opened one for a while now. And because I am not certified, I have only looked at other books that were helping me study for the Certified Associate in Project Management test" (P12). I (P13) "am a new PMP and it was just recent so I studied from the 5th Edition (P13). P15 and P19 studied from the 4th Edition. P15 had a hard time reading it and especially when he has to use it to study for the PMP (P15). P19 started with the 3rd Edition and ended up switching to the 4th Edition to finish study and to take the examination. (P19)

At this stage of the data analysis, the participants began to demonstrate a saturation of common themes. As Koch, Niesz, and McCarthy (2014) stated, when an inductive analysis is being performed, saturation can be reached based on how coding has evolved. The following sections will describe the saturation and qualities of discrepancies and how the factors were analyzed.

Qualities of Discrepancy

When I began the search for participates, the original intent was to start with at least 20 participants. However, I found that a majority of participants did not wish to partake in the research study. Out of the 33 participants who accessed the Survey Monkey survey questionnaire, 10 potential participants skipped answering the required questions. Out of the 33 who had assessed the Survey Monkey questionnaire, 22 successfully entered all of the required data to be collected.

Discrepant cases started to reflect in the 22 participants who had successfully completed the questions. When I contacted the 22 participants by e-mail, only 10 participants replied to my e-mail request inviting them to consider continuing with the research study. Of the 10 participants, five were certified PMs and five were noncertified. This sample size should be considered in an analysis of the evidence of trustworthiness. I sent each of the 10 participants an e-mail asking each to provide me with two convenient dates and times to have a telephone call to discuss the remaining five open-ended questions.

Saturation Analysis

The collaboration of the data was conducted in NVivo 10 to detect similarities in learning PM from academics or professional studies. My goal in this phenomenological approach was to gain an appropriate sample size of at least five to 15 participants as recommended by Walden University's phenomenology research tutorial to avoid any bias of the saturated data (Walden University Research Center, 2015). The use of an inductive approach was validated by O'Reilly and Parker (2012) who indicated that most of the

data collected should generate new ideas about the study; however, the majority of the responses generated from the participants were becoming common in words, thus creating a sense of saturation (O'Reilly & Parker, 2012). The data was found to have common evidence similarities.

Evidence of Trustworthiness

During the implementation of the data collection and analysis, I made adjustments to detect saturation in the samplings. The distinct difference in the cross commonalities did not reflect bias during validation. I used a triangulation to narrow PM experience from a business to what was understood at a social level of PM. The results of the qualitative study provide a perspective based that addresses readiness, validity, and trustworthiness. Creditability was upheld when I identified the sample size, triangulated the data, and discussed the effects of nonresponses and frequent checks of the surveys. Although only 20 participants were selected, and 10 participants provided a descriptive analysis of observations, there was clear reliable evidence of what I had identified in my plan through the use of inductive statistical procedures.

Study Results and Conclusion

The study results model a data collection method used to collect and code the data into a visualization using model visualization features embedded in the NVivo 10 software application. Fusch and Ness (2015) stated data triangulation is a method used to achieve data saturation through an inductive analysis outcome. As referred to by Mason (2010), with the development and use of a qualitative software application, it is easier to present screenshots of coding frameworks and analytical models. Visual report tables

(Tables 14 – 18) are the results of bottom-up inductive content analysis of frequent words according to each research question. NVivo's query feature reported data sources with similarities. Walsh (2003) found this method to be a good start to analyzing the data. Smith (2007) used this method to validate each of the case studies to exposing evidence of inductive categories of what could be the development of new coding. The use of a content analysis tool provided the top 15 common words based on each research question, creating commonality of themes that narrowed the conclusion.

Research Question 1 Content Analysis

Research Question 1: What, if any, was there a relationship between information systems project failure and the PMP's certification tenure? Based on what is shown in Table 14, using a collective view of both the PMPs and noncertified PMs, omitting the common work of managers and projects, the next highest weighted percentage was failing. Participants continue to see projects failing although they were qualified or certified PMs.

Table 14

Research Question 1 Content Analysis

Word	Length	Count	Weighted Percentage (%)	Similar Words
managers	8	19	7.25	manager, managers, managing
projects	8	11	4.20	planned, projects
failing	7	8	3.05	fail, failed, failing, weak
certified	9	7	2.67	attest, certified
knowledge	9	7	2.67	knowledge
share	5	7	2.67	part, share, shared
failure	7	5	1.91	failure, failures
participants	12	5	1.91	participants
standards	9	5	1.91	standard, standards
successful	10	5	1.91	success, successful, successfully
appears	7	5	1.72	appear, appeared, appears, look
following	9	5	1.72	following, observed
organization	12	4	1.53	organization, organizations
pmbok	5	4	1.53	pmbok

Research Question 2 Content Analysis

Research Question 2: What, if any, was there awareness between information

systems project failure and PMs who are trained solely from the PMBOK? Table 15

displays the results of a collaborative word frequency by the combined participant's word

similarities. By omitting manager because it was inclusive as PM, the awareness of

project failure was good. However, what is effective practice, the right skills, and what is

needed to avoid the possibility of project failure needs to be good. Participants shared

that there might not be an awareness of how the PM should be practicing or using the

right standards. Some viewed projects continue to fail. This analysis was led me to

believe that PMs were not gaining the epistemic knowledge of soft skills, such as what

could be from competent interpersonal skills.

Table 15

Research Question 2 Content Analysis

Word	Length	Count	Weighted Percentage (%)	Similar Words
manager	7	20	6.17	manager, managers, managing
good	4	13	3.65	effectively, good, practicing, right, skills
projects	8	11	3.16	figure, planning, projects, see
worked	6	11	3.09	exercised, functional, process, processes, work, worked, working
organizations	13	10	2.88	establishing, organization, organizations
pmbok	5	8	2.47	pmbok
success	7	7	2.16	success, successful
experience	10	10	1.88	experience, experienced, feel, gets, know, see
people	6	6	1.85	people
want	4	7	1.85	lacking, need, required, want, wanted, wants
knowledge	9	7	1.54	know, knowledge
shared	6	5	1.54	shared
trained	7	6	1.54	developers, development, trained, training
seeking	7	5	1.39	seek, seeking, try
company	7	4	1.23	companies, company

Research Question 3 Content Analysis

Research Question 3: What, if any, was there contrasting success or failure trend

of projects of those who have studied other PM BOKs, other than the PMBOK? Based on

the collective coding and query results as shown in Table 16, the 10 participants viewed

the guide as a good means to understand the practice that is required for project success.

However, the participants expressed a need to extend the learning and practice outside of the domains of the PMI's PMBOK. The following emerged as a common theme: organizations they work for are not familiar with a specific PM standard or sole use of the PMBOK, organizations appear to have gained a fair understanding that technology projects continue to fail, technology PMs must be able to provide a better understanding of a broader PM methodology to the stakeholders, which could be outside of the domains of what they learned from the PMBOK.

Table 16

Research Question 3 Content Analysis

Word	Length	Count	Weighted Percentage (%)	Similar Words
understand	10	11	4.44	realized, see, seeing, understand, understanding, understands
good	4	9	4.10	estimation, good, practices, practicing, skills
pmbok	5	7	3.59	pmbok
manager	7	7	3.21	manager, managers, realized
area	4	4	2.05	area, domain, domains
needs	5	4	2.05	needs, required, requires, requiring
organization	12	4	2.05	organization, organizations
standards	9	4	2.05	standard, standards
information	11	5	1.79	information, source, sources
knowledge	9	4	1.79	knowledge, learning
work	4	4	1.79	studied, work
agile	5	3	1.54	agile
answer	6	3	1.54	answer, answers, responses

Research Question 4 Content Analysis

Research Question 4: What, if any, was there any epistemological knowledge deficiency in PMs who have, or have not, studied from the PMBOK trending project

failure? The top weighted percentage for Research Question 4, as reported in Table 17, was skills. All participants agreed that if a person is deficient in a skills area, it could include both hard and/or soft skills. The lack of the skills could lead to technology project failure. It was also observed that having the right project knowledge and skills to be a successful PM, a person must be proficient and continue to improvement deficient skills.

Table 17

Research Question 4 Content Analysis

Word	Length	Count	Weighted Percentage (%)	Similar Words
skills	6	12	7.19	proficient, skill, skills
manager	7	8	4.79	manager, managers
area	4	7	4.19	area, areas
knowledge	9	8	3.89	know, knowledge, learn, learning
deficient	9	6	3.59	deficiencies, deficiency, deficient, lack
need	4	6	3.59	asked, need, needs
think	5	6	3.59	believes, supposed, think
stakeholder	11	4	2.40	stakeholder
found	5	3	1.80	found, institute
improvement	11	3	1.80	improve, improvement
really	6	3	1.80	actually, really
soft	4	3	1.80	soft
right	5	3	1.50	just, right
case	4	2	1.20	case
certified	9	2	1.20	certified

Research Question 5 Content Analysis

Research Question 5: What, if any, was there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning? The majority of the content analysis as reported in Table 18 showed that the participants who

studied for PMP examination, or were studying, responded that they believed the specific

edition of the guide was a good source to learn from or apply the necessary skills to pass

the examination.

Table 18

Research Question 5 Content Analysis

Word	Length	Count	Weighted Percentage (%)	Similar Words
studied	7	16	8.82	examination, learned, learning, reading, studied, study, studying, work
Edition	7	11	6.54	Edition, versioning, versions
good	4	10	5.88	good, just, right, skills, well
4th	3	5	3.27	4th
changed	7	5	3.27	change, changed, changing, switching
test	4	6	3.27	examination, test
pmbok	5	4	2.61	pmbok
believed	8	4	1.96	believed, think
hard	4	4	1.96	hard, just
know	4	4	1.96	know, knowledge, learned, learning
soft	4	3	1.96	easy, soft
think	5	4	1.96	remember, think, thought
3rd	3	2	1.31	3rd
5th	3	2	1.31	5th
certified	9	2	1.31	certified

Summary

According to the results of the research questions, there is a continued awareness

amongst the PM community that IT projects are continuing to fail despite tenure and

training to be IT PMs. Both the PMPs' and noncertified practitioners' knowledge

management of what is contained in the PMBOK could be contributing to project failure.

The results included experiences of a phenomenological and epistemic awareness about

the lack of validity or reliability of the PMBOK for IT PMs. A common theme among the

participants was the need for good PM standards, such as what was taught and practiced

from the PMBOK to the soft skills domain. What was understood and practiced inside the

organization was extended to best practices of PM that work for the culture of the

organization. The results align with Murray and Ross' (2006) findings who indicated that

epistemic awareness is about how individuals think and dialog about success and failure

of projects. However, there remains a cultural or societal disconnect of how PM is

practiced within organizations, despite what is believed to be what should be understood

as the best PM of a PM discipline.

Chapter 5 will discuss the findings that were analyzed from Chapter 4. There will

be an interpretation of findings for each research question and the limitations,

recommendations, social implications for change, and conclusions of this research study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

I investigated if there is a lack of the breadth and depth of epistemic reality, or not, provided to IT PM learners and practitioners based on when they have studied and/or applied standards from the PMI's PMBOK to projects. Research questions focused on IT PMs from a variety of demographic industries. I included certified professional PMs, PM candidates, and accidental PMs. These individuals used a qualifying survey process to narrow the sample to only IT PMs who have studied from the PMI's PMBOK. The intent was to ensure that they had worked on, or observed, and had successful or failed technology projects as a professional. Once they were successfully qualified, they were interviewed to share their professional, training, and/or learning experiences about technology project experiences and reflect on what was learned from, or used, from the PMI's PMBOK.

Chapter 5 provides a summary of the findings from Chapter 4. I highlight the interpretation of findings of each research question that was asked of the 10 participants who discussed common themes of IT project success and failures. In the interviews, I primarily focused on what was understood from the use of, and content, within the PMI's PMBOK and if it had been used as the source of PM knowledge. The remaining sections of this chapter will include any limitations of the study, recommendations from the researcher, social implications for change, and the conclusion of this study.

Interpretation of Findings

The following five sections discuss the findings and address the theoretical

concepts to confirm, disconfirm, or extend knowledge about epistemic knowledge

deficiencies in the PMI's PMBOK sourced from an evaluation of IT PMs.

Research Question 1 Interpretations

Research Question 1included subthemes identified from what was considered as

honest and authentic conversations with certified and noncertified IT PMs. The

participants discussed elements and factors of what their thoughts were of PM hard skills

knowledge and the lack of soft skills knowledge when projects were managed. The

participants indicated that there continues to be a lack of hard or soft skills competencies

of technology PMs who should be trained as a PMP.

There was an investigation to understand the PMBOK and the PMP certification

process. Starkweather and Stevenson (2011) investigated the relationship between the

PMP certification and the core project management competency in the IT industry and

they contended that PM competencies have faced problems with validity in that there are

assumed learning components, as opposed to innate qualities, with regards the

development of skills within the discipline. In the findings analyzed from this question, I

looked specifically at the PMPs who should have the competent epistemic knowledge of

training to reuse the knowledge acquired from the PMBOK. Maguire and Redman (2007)

noted that what is perceived as elements of PM training in areas such as the development

of PM soft skills remained underdeveloped knowledge that technology PMs need to be

successful with managing projects. According to Lincoln (2009), this validation method

transcends as a phenomenon when learning from the guides and attempting to apply the system of content and meaning to be objective. I validated what the aforementioned researchers discovered as a phenomenon based on the testimonies of trials and tribulations about technology project failure when the PMBOK was understood to be the source of learning and application.

Research Question 2 Interpretations

A PM's learning effort needed to be understood. Somani (2007) addressed that the willingness, effort to learn, and awareness of knowledge capacity is tied to the capacity to retain the knowledge. The PMs presented a willingness to learn and apply knowledge from the PMBOK within their perspective work environments as required; however, their organizations were not following the best practices from the PMBOK best practices.

The recognition that business leaders are not using the PM knowledge of trained and certified PMs to allow them to apply best practices from the PMBOK reconfirmed what was noted by Petter and Randolph (2009). Petter and Randolph shared that technology PMs are not reusing the knowledge associated with what they were trained to do and are being overlooked by many organizations. Reich and Yong (2006) reported that organizations that attempt to adopt a PM framework should also seek an examination of developmental practice awareness of how PM knowledge could be enacted and used within the organization. According to the results of this research question, there continues to be a problem when there is training from a sole source PM BOKs.

Research Question 3 Interpretations

The central theme of this research question focused on if there was a lack of epistemic knowledge and or depth in the PMBOK. The PM participants expressed a need to have trained and practical knowledge of the other PM BOKs. Other BOKs, such as the Australian Institute of Project Management (AIPM) a Reference Curriculum for Project Management, or the Austria version - the Projekt Management Austria Institute (PMA) and or the Norwegian Association of Project Management (NAPM) - the Fundamentals of Project Management were not mentioned by any of the PMs.

Several of the PMs, both certified and noncertified, mentioned a need to have some knowledge about Agile, Scrum, Prince2, and ITIL PM Methodology and content knowledge. These project methodologies were outside the scope of this study and were found to have some reference within the curriculum of the PMBOK. However, the participants suggested that the PMs learn to adopt and apply other best practices of PM.

Research Question 4 Interpretations

Early warning signs of IT project failure was a noted concerned mentioned in Chapter 2. If PMs are not properly trained on how to manage and lead projects, the project will most likely be a failure in areas of poor scope management, cost overruns, unmanaged resources, unrealistic requirements, and mislead stakeholder management. This relates to both hard and soft skills that should be acquired from training from the PMBOK and through the academics or training to become a certified PM. Each of the PMs who were interviewed acknowledged that if a PM has a deficiency in a PM skill; it would lead to a problem in the project.

It was suggested that PMs should always consider improving soft skills and project stakeholder management. As investigated in this study and validated through inductive interviews, both skills content lacked in positive acknowledgment in the PMBOK.

Research Question 5 Interpretations

The participants had familiarity with the PMBOK. Most had studied from the fourth edition to pass the PMP examination and also recognized a significant change from the third edition to the fourth edition. This supported and validated points made by Shepherd and Atkinson (2011) who recognized that current version(s) of the PMBOK were viewed as having gaps. This validation proved that the contents the PMBOK continues to be limited. Comments were made about gaps from version to version while interviewing the project managers. Only a few participants had studied from the fifth edition, and the majority had studied from the fourth edition to successfully pass the certification examination. However, most agreed that the content in the versions remain as a difficult read to learn and study for the certification examination. Most had to seek outside learning and content to study for the certification examination.

<div align="center">

Summary of Findings

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Ten IT PMs were interviewed as participants, and they expressed what they believed to be effective and noneffective PM best practices within their organizations. The participants expressed that project fail if the PMs are not using the learned or applied PM methodology. Given that they had all learned and applied their training from the PMI's PMBOK, the application was not consistent within their perspective organizations.

What else emerged from the interviews were suggestive themes about a lack of organizational support to maintain a PM framework that was specific to the PMI's PMBOK.

Limitations of the Study

I used a case study approach strategy to gather evidence through multiple qualitative case studies that shared inductive experiences. I interviewed PM professionals who were certified and uncertified and those who were classified as accidental PMs who had led successful and/or failed technology projects. The main qualified criteria used, and one that limited the study, was the PM had to be familiar with learning, or had been trained from the PMI's PMBOK. I did not limit the criterion to those in certain industry. PM exposure could be limitless within the industry and practice PM standards. However, to provide validity and trustworthiness, researchers should provide examples of PM fails in other industry. I focused specifically on IT and the PM within a combination of industries.

This research was done because of my familiarity with the IT industry and exposure to the all of the versions of the PMI's PMBOK. My exposure could have led to a bias that would not be acceptable in a research study of this nature. To minimize these limitations, I used an approved dissertation study and approach to qualifying the selected project managers as provided in Appendices A, B, and C to complete the inductive interview process and analysis.

Social Implications for Change

The use of three social networking LinkedIn PM professional groups is the start to promoting a communication of positive social implications for change about IT project failure through this study. The groups were the Project Management Institutes San Diego Group, The Project Manager Network - #1 Group for Project Managers, and the Ph.D. Program and Project Management Group. Each group had a relationship to the success of this study. The objective of this study was to share evidence with the PM communities that there remains a problem in the validity and reliability of the PMBOK for IT professionals. Murray and Ross (2006) indicated that there is an epistemic awareness about how individuals think and dialog. IT PMs who understand how to manage PM knowledge gained, or not, from the PMBOK can avoid project failure if applied epistemic knowledge is used.

Social Change: Project Manager

The social focus of this study was on IT PMs within industries where organizational objectivity and focus is recognized as a problem. The PM who were selected for the study provided assurance that they were either a PMI certified PMP or training to become certified PM who accidently merged into the role of a PM. These PMs understand how PMs methodologies can be successful within organizations, but have problems with being able to use their skills properly.

The use of the social groups narrowed the sample to interested PMs who showed an interest in my investigation about the PMI's PMBOK and how it was conceived in the PM community as the primary source for learning about PM. The selection and

participation of the PM represented a good mix of IT PMs. As represented in Chapter 4, the industries the participants worked in were from the banking/finance, the health/medical, and other industries. This sample may lead to positive social implications by not limiting the demographic results of participation to promote a broader awareness to PMs within other industries who have the same problems.

Social Change: Boundary

The implication of exceeding the study boundaries remains within the trustworthiness of those who qualified for the study. PMs, and especially certified PMs, have an ethical validity and code of conduct that they must acknowledge and agree to when and how they practice PM. This study contained elements of trustworthiness from both the researcher and participants. The implication of reaching social change boundaries was not exceeded to extend outside the normality of this study.

Social Change: Theoretical Implication

As mentioned in Chapter 1 and stated by Shepherd and Atkinson (2012), there could be a significant implication when applying a combination of research about PM development. In a similar fashion to Shepherd and Atkinson (2012), I suggest further investigate changing PM BOKs. This study was based on an inductive need to promote positive change of what is currently in the PMI's PMBOK to the next editions. I recommend changing the content areas referred to as the KAs to suit a variety of epistemic learner types.

Social Change: Recommendation for Practice

Focus on the community is an important element to consider for the project management community. Martin et al. (2004) referenced possible goals for the community practice at large and suggested what could be a benefit for the social groups used in this study. Martin et al. asserted that PMs could come together through a common bond of working together and learning to understand how to become PMs. This recommendation could be a positive social practice for practitioners learning about the variety of project- related BOKs.

<h2 align="center">Recommendations for Future Research</h2>

Further recommendations for research about epistemic deficiencies and project failure in the PMI's PMBOK are needed analyze the next editions of the guide. The following are extended recommendations:

- Project Stakeholder Management – participants acknowledged that they are challenged with unengaged stakeholders during the planning phase of technology projects. This could pose extended research with regards to untrained PMs, company management, and continued lack of involvement from team stakeholders.

- The PMI's PMBOK lacks essential knowledge-based skills that could be the contributing to project failure. Based on the responses from the participants, there needs to be external training and practice knowledge content in order for technology projects to be successful.

- PMs are not able to use the Guide to the PMBOK skills due to the organizations' management lacking an understanding about a PM framework.

- PMs are losing what should have been, and what Koro-Ljungberg et al. (2009) discussed, as epistemological. This became evident based on what the PMs shared about the lack of PM awareness at the organizational level. The problem was also evident in the responses from the participants when they mentioned that they were not allowed to use what they were trained at doing-PM knowledge.

Reflections of the Researcher

The journey as a doctoral student and ending as a doctoral candidate has been a long and worthwhile journey. After starting my journey and stopping due to personal reasons, and ultimately starting again, this journey led to valued professional and academic experience(s) beyond my belief. The approach to a qualitative case study was reflective to when I decided to investigate about a lack of breadth and depth of epistemic reality provided to IT PM learners and practitioners who studied from the PMI's PMOK. This research has proved to me how valuable learning and knowledge must be as a continuous learning objective in a PM's professional life. Given that this study was specifically for IT PMs, its concept can be used for further research to determine when theories about epistemic reality, or the lack of knowledge about what should be known about a profession, becomes questionable.

I investigated the overall purpose, validity, and integrity in all editions of the PMI's PMBOK. The breadth and depth of the content as it was revised and versioned over the years was scrutinized by many researchers and was put to the test, by way of this study, to determine how well content structure remained with regards to hard and soft skills. I sought to study the content for learning and applying project methodology and application in the workplace. What was determined by way of interviews of qualified It PMs was that most versions, including the latest fifth edition, reflect weaker content in the area of soft skills training material and content.

The use of extended demographics to reach IT PM professionals for the interview provided me with good reflection that my original theory had validity and applicability. I was able to use a systematic process to categorize and create themes using a qualitative software application that was new to me. The interview process to gather and qualify participant was stressful. What became valuable reflections were the common themes that were coming from the PMs' interviews.

My final reflection is how knowledgeable I have become as a doctoral researcher and how I was able to use my new research skills to determine potential postdoctoral research projects. I have already started two potential research problems and will pursue them after I have successfully accomplished my Ph.D. in Management and Technology through Walden University.

Conclusions

IT professionals and/or PMs have long been scrutinized about the continuous and trending failure of technology projects. Researchers have published hundreds of papers

that reflect the possible cause of project failure. I extended the contribution to the possibilities that cause technology projects to fail. This study's qualitative approach, validation of the problem, detection of what was known as early warning signs of events, indications predicting caution, and alerts of what are possible impending problems emphasized what continues to cause technology PM failure.

This study analyzed and interpreted the facts about the training and learning content of what is known to be the PM standard based on what is published in PMI's PMBOK. The PMBOK has developed into a well-known standard for any industry. However, what was noted in this study was that it may be the individual IT PM's effort to approach, learn, and attempt to apply PM best practices or pass the PMP examination that lead to project success. However, the PMBOK should not be the exclusive source for learning PM for both the individuals and organizations attempting to frame a PM methodology.

The study used observation to investigate if the PMBOK contributed to project failure. I analyzed responses from experienced IT PMS. I determined that there is a problem with how organizations or using, or not using, the PMBOK. There should be a continuous PM knowledge development for the PMP and the organization at large. The findings of this study contributed to promoting awareness of weakened content in the PMBOK for communities, such as the PMP groups. This awareness promotes the learning of soft skills PM to ensure that organizations are using a PM methodology or framework.

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Appendix A: Survey Invitation Announcement

Dear Project Managers,

You are invited to take part in a research study that will investigate if the Project Management Institute's (PMI) a Guide to the Project Management Body of Knowledge (PMBOK) is the primary source for learning about project management, and how practitioners understand it as a primary or secondary learning standard of references to standardize best practices of project management. In this study, research will look if the Project Management Body of Knowledge is a major influence and contributing as a project management body of knowledge failure for Information Systems/Technology project managers.

This study is being conducted by a researcher named Alex Hosch, who is a doctoral student at Walden University.

I am inviting project managers that have successfully passed the PMI Project Management Professional (PMP) examination, professional project manager candidates, and accidental project managers to participate in the study. This invitation is part of a process called "informed consent" to allow you to learn more about the study to be able to understand before deciding whether to take part.

To learn more about the study, click the link to learn more about the Participant Consent and Survey form, background, and nature of the study, procedures, and privacy information before you decide to consent: https://www.surveymonkey.com/r/56WVG6G

Thank you for your consideration,

Alex Hosch, Ph.D. Candidate
Walden University

Appendix B: Participant Consent and Survey

Project Management Participant Consent and Survey

Background and Purpose Information

The background of the study was from constructed reasons why it is believed the Project Management Instiutue's a Guide to the Project Management Body of Knowledge lacks in suggestive guidelines required for learning, understanding, and applying the applicable "hard or soft skills" for project managers in the information technology industry. The purpose of this study will examine to what extent the Project Management Institute's a Guide to the Project Management Body of Knowledge lacks in epistemic awareness and contributes to information technology project failure. The results could inform the importance of enhancing social and organizational human skills in the project management academic and professional drawing attention to the importance of "soft skills" in information technology project management, knowledge awareness, and development in best practices.

Inclusion Criteria

The researcher is seeking those that work in the information technology industry, currently in the role of a project manager, passed the Project Management Professional (PMP) certification from the Project Management Institute, or currently a project manager that has not obtained a Project Management Professional (PMP) certification, or considered a trained project manager from academics or a professional organization.

The researcher is asking for name and email address to be able to contact the participant if inclusion criteria is met and to continue Part 2 of the interview process. Name and email address information will remain private.

Procedures

If you agree to be in this study, you will be asked to:

Part 1

1. Read and consent by acknowledging you are willing to participate in this survey.
2. Understand the survey may take up to 5-10 minutes to complete.
3. You will be asked 10 closed-end questions.
4. Upon completion, the your results will be collected by the researcher to determine inclusion criteria is met to move on to Part 2.

Part 2

5. The researcher is seeking up to 20 participants that meet the inclusion criteria.
6. The period of time the researcher may contact you to continue the participation may be up to 5-10 business days.
7. You may be contacted by the researcher and invited to participate in Part 2 of the survey for a 15-30 minute telephone conference call interview.
8. You will be asked 5 open-end questions.
9. A consent and acknowledgement to participate in Part 2 is required. Confidentiality and privacy during the study will be maintained at all times.

Here are samples of the closed-end questions:
- If you passed the PMP certification test, how many times did you take the test?
- Did you study project management in college or from a professional training organization?
- When you studied for the PMP, did you study exclusively from the Guide to the Project Management Body of Knowledge (PMBOK)?

Voluntary Nature of the Study:
This study is voluntary. The researcher will respect your decision whether or not you choose to be in the study. This will be an private, confidential and secure study, and it is your decision to be, or not, in the study. If you decide to join the study now, you can still change your mind at any time and stop at any time.

Risks of Being in the Study:
Being in this type of study may involve some risks of the minor discomfort that can be encountered, such as being asked if you were the cause of a project failure or have not passed the Project Management Professional examination after several attempts. This information will remain private. Being in this study would not pose risk to your safety or wellbeing.

Benefits of being in this study will
Helping to develop a social understanding and knowledge awareness of factors about causes of project success or failures when learning about project management.

Payment:
There is no payment for this study. However, summary results of the study will be provided to the participants as a form of the researcher's gratitude.

Privacy:
Any information you provide will be kept private and secure. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else collected that could identify you in the study reports. Data will be kept secure on a private and password protected computer and encrypted hard drive. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions. Or if you have questions later, you may contact the researcher Alex Hosch, ⓢ 619-247-9325 or Alex.Hosch@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is ⓢ 612-312-1210 (for US based participants). Walden University's approval number for this study is IRB 11-05-15-0101041 and it expires on November 4, 2016.

Please print or save this consent form for your records.

* 1. **Statement of Consent: I have read the above information, and I understand the study well enough to make a decision about my involvement. By clicking <u>Yes</u> below, I understand I consent to participate in the study. Clicking <u>No</u>, you are under no obligation to continue and should exit the survey.**

◯ Yes, I consent to participate in the study.

◯ No, I do not consent to participate in the study.

Project Management Participant Consent and Survey

* 1. Private Contact Information

Name [   ]

Email Address [   ]

* 2. What is your Project Management job title?

[   ]

3. What industry do you work in?

◯ Banking/Finance

◯ Health/Medical

◯ Legal/Law

◯ Other (please specify)

[   ]

* 4. What level Project Manager are you?

◯ Project Management Professional (PMP)

◯ Accidental Project Manager

◯ Project Manager (non certified)

5. Did you study project management through college or from professional training organizations?

◯ Yes

◯ No

6. What is your highest level of education?

◯ Bachelors

◯ Masters

◯ In Progress

* 7. If you passed the PMP certification test, how many times did you take the test?

◯ 1

◯ 2

◯ 3+

8. When studying from the PMBOK, do you think it contains what you believe are the necessary _Hard Skills_ required for the project manager to be successful?

◯ Yes

◯ No

◯ Don't Know

9. When studying from the PMBOK, do you think it contains what you believe are the necessary _Soft Skills_ required for the project manager to be successful?

◯ Yes

◯ No

◯ Don't Know

Appendix C: Informed Consent Form - Interview

To: <Invited Interview Candidate>
From: Alex Hosch, Walden University Ph.D. Candidate
Subject: Informed Consent to Participate in Study
Date:

Dear: <Invited Interview Candidate>

You have been invited to continue participating in a research study that will investigate if the Project Management Institute's (PMI) a Guide to the Project Management Body of Knowledge (PMBOK) is the primary source for learning about project management, and how practitioners understand it as a primary or secondary learning standard of references to standardize best practices of project management. In this study, research will look if the Project Management Body of Knowledge is a major influence and contributing as a project management body of knowledge failure for Information Systems/Technology project managers. This study is to understand more about technology project failure and the use of knowledge and best practices when the PMI a Guide to the Project Management Body of Knowledge (PMBOK) is the sole source of training and knowledge base.

I am inviting you because based on your initial response to my survey; you are a project manager that has successfully passed the PMI Project Management Professional (PMP) examination, or consider yourself as a potential professional project management candidate or consider yourself as an accidental project manager.

This email is part of a process called "informed consent" to allow you to understand this study before deciding to continue with the interview.

Background Information:
The purpose of this study will examine to what extent the Project Management Institute's a Guide to the Project Management Body of Knowledge lacks in epistemic awareness and contributes to information systems/technology projects that fail.

The research questions will relate to if there is; 1) a relationship between project failure and the Project Management Professional's certification tenure; 2) if there is any knowledge awareness between project failure and project managers that have trained solely from the PMBOK; 3) is there a trend of project success, or failures, based on studying from the project management bodies of knowledge; 4) is there knowledge deficiency from those that studied from the PMBOK; 5) is there a relationship of why projects fail and the versions of the PMBOKs?

Procedures:
If you agree to continue in this study, you will be asked to:

1. Reply to this email and consent by acknowledging with an electronic signature with your name on the line provided below. This will show that you have read and agree to the contents.
2. Provide two convenient dates and times within the next 10 business days that I can schedule a Conference Call and send you an invitation.
3. With your permission, the interview will be audio recorded and I will also take notes. This will help with the data analysis and ensure accurate records. You do not have to agree with the recording and you can opt-out. I will use hand written notes instead. Your identity will never be disclosed and all information collected will remain confidential in a password protected computer. During the interview, if you feel uncomfortable with the recording, I can turn off the recorder at your request.
4. This is a volunteer research study and your participation will remain private during the entire study.

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. This will be a private and confidential study and it will be your decision not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as being asked if you were the cause of a project failure or have not passed the Project Management Professional examination after several attempts. Being in this study would not pose risk to your safety or wellbeing.

Benefits of this study will help develop a social understanding and knowledge awareness of factors about causes of project success or failures when learning about project management.

Payment:
There is no payment for this study. However, summary results of the study will be provided to the participants as a form of the researcher's gratitude.

Privacy:

Any information you provide will be kept private. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure on a private and password protected computer hard drive. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher Alex Hosch, ▓▓▓▓▓▓▓ or Alex.Hosch@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 (for US based participants). Walden University's approval number for this study is 11-05-15-0101041 and it expires on November 4, 2016.

Please print or save this consent email form for your records.

Statement of Consent: I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By replying to this email and consent and acknowledge by electronically signing your name on the line provided below to show that you have read and agree to the contents.

_____Type your name here_____

Type your name of the line above. It will be your electronic signature.

Conference Call availability dates and times:

First Date/Time:
- Date:
- Time:

Second Date/Time:
- Date:
- Time:

You will receive a conference call invitation from me within a few days from your reply. Thank you for your willingness to participate in the interview.

Alex Hosch
Walden University Ph.D. Candidate

Appendix D: Research Questions

Research relates an epistemological deficiency in project management bodies of knowledge. Some have concluded such issues are not adequately addressed in the development of existing project management bodies of knowledge. This research will address potential issues of epistemic deficiencies that could be determined if learning from a project management standard or body of knowledge such as PMI's a Guide to the Project Management Body of Knowledge is contributing to causing project failure. The following questions will be used to answer gaps in research about epistemic knowledge about the PMI's a Guide to the Project Management Body of Knowledge.

The questions will be administered initially through a Survey Monkey Survey and a second follow-up interview for inclusion participants by invitation only, email, and via a conference call.

The Survey Monkey Survey questions will seek responses based on the following required criteria;

- o What is your currently job title?

- o What industry do you work in? (Construction, Finance, Medical)

- o What level Project Manager are you?

- o Did you study project management through college or from professional training organizations?

- o What is your highest level of education?

- o If you passed the PMP certification test, how many times did you take the test?

- o When studying from the PMBOK, do you think it contains what you believe are the necessary Hard Skills required for the project manager to be successful?

- o When studying form the PMBOK, do you think it contains what you believe are the necessary Soft Skills required for the project manager to be successful?

- Required descriptive response will be required for instrumentation, classification, and coding;

  - o Must have a project manager title.

  - o Must work in Information Technology.

  - o Must have managed at least 2-3 IT Projects.

  - o Familiar with the Project Management Professional (PMP) credential.

  - o Has either has a PMP or is consider taking the PMP Test.

  - o Has passed the PMP test or has taken the test at least once.

  - o Has studied from the PMBOK (a Project management Body of Knowledge).

  - o Has studied project management in college or from a professional training company.

  - o Has knowledge about project management Hard and Soft Skills.

Part two of the interview, the researcher will conduct a 15-30 minute telephone conference call interview and ask the following questions.

- RQ 1: What, if any, is there a relationship between Information Systems project failure and the Project Management Professional's certification tenure?

- RQ 2: What, if any, is there awareness between Information Systems project failure and project managers that are trained solely from the PMBOK?

- RQ 3: What, if any, is there contrasting success or failure trend of projects of those that have studied other project management bodies of knowledge, other than the PMBOK

- RQ 4: What, if any, is there any epistemological knowledge deficiency in project managers that have, or have not, studied from the PMBOK trending project failure?

- RQ 5: What, if any, is there a relationship between a narrowly written version(s) of the PMBOK and project success after content versioning?

Appendix E: Data Collection Protocol

- Step 1: The researcher will obtain written approval and consent from Walden University's Institutional Review Board (IRB) prior to data collection. Walden University's approval number for this study is 11-05-15-0101041 and it expires on November 4, 2016.

- Step 2: The researcher will post an invitation to the target social networking groups asking for volunteers to participate in the study using a snowballing technique. The request will state participation is voluntary and participation will be confidential (See Appendix A).

- Step 3: The invitation will instruct the potential participant to learn more about the study, click the Survey Monkey survey link to learn more about the Participant Consent and Survey form, background, and nature of the study, procedures, and privacy information before you decide to consent: https://www.surveymonkey.com/r/56WVG6G

- Step 5: The method to gather the initial data will be from the Survey Monkey Survey will require acknowledging the statement of consent to participate (See Appendix B - Participant Consent and Survey).

- Step 6: The Survey Monkey Survey questions will seek responses based on the following required criteria (See Appendix B -Participant Consent and Survey).
  - o Contact Name and Email Address*
  - o What is your currently job title? *
  - o What industry do you work in? (Construction, Finance, Medical)

o   What level Project Manager are you? *

o   Did you study project management through college or from professional training organizations?

o   What is your highest level of education?

o   If you passed the PMP certification test, how many times did you take the test? *

o   When studying from the PMBOK, do you think it contains what you believe are the necessary Hard Skills required for the project manager to be successful?

o   When studying from the PMBOK, do you think it contains what you believe are the necessary Soft Skills required for the project manager to be successful?

   * Required response.

- Step 7: The researcher will gather the required descriptive responses from the first 20 participants that meet the requirements. The participants will be contacted by email and asked to participate in a follow-up interview with the researcher. The email addresses will not be disclosed and will remain private throughout the study.

- Step 8 - Required descriptive response will include the following inclusive criteria

    o   Must have a project manager title.

    o   Must work in Information Technology.

    o   Has either has a PMP or is consider taking the PMP Test.

    o   Has passed the PMP test or has taken the test at least once.

- o Has studied project management in college or from a professional training company.

- o Has knowledge about project management Hard and Soft Skills.

- Step 9: The researcher will identify each participant as Participant 1 (P1), (P2), (P3) etc. etc.

- Step 10: The researcher will follow-up with the Participants for a follow-up interview by email and ask them to provide convenient dates and times for either a conference call or go to meeting.

- Step 11: The researcher will participate in the interview to only ask questions and refrain from becoming personally involved with the responses to avoid injecting any bias perspectives. The instrument to be used for collecting the information from each participant will include an audio recording.

- Step 12: The researcher will take the collected data and import it into QSR NVivo 10 for Windows software and code the data based on defined categories and themes (See Appendix G).

- Step 13: The data entry into QSR International's NVivo 10 will be by individual Participants and indexed based on participate number P1, P2, P3, etc. etc. There will be no identification of the participants in the software.

- Step 14: The researcher will secure the original data collection on his password protected, and encrypted enabled, laptop. Backup of the data will be stored on a password protected external drive in his private and secure office.

- Step 15: The QSR International NVivo 10 software will allow the researcher to code and theme the data to be able to analyze it and create reports and graphs for the Chapter 4 and 5.

- Step 16: The researcher will send thank you emails to the Interview participants and provide them with a summary report of the study (See Appendix F: Participant Thank You Letter).

Appendix F: Participant Thank You Letter

Dear Participant,

I want to thank you again for giving me the opportunity to interview you for my dissertation research study about Information Technology project failure to knowledgebase elements found (or not) in the Project Management Institute's a Guide to the Project Management Body of Knowledge. I really appreciate the time you spent talking with me and sharing what others might want to consider about project management knowledge and skills.

This phase of my dissertation is my priority because it represents the final phase of my research study and with your private participation will help me compile additional comments that can contribute to the project management community at large.

If you need any additional information, please do not hesitate to contact me. Thank you for your time. I am looking forward to sharing a synopsis of my dissertation with you soon. .

Sincerely,
Alex Hosch
Walden University Ph.D. Candidate

Appendix G: Data QSR International NVivo 10 for Windows Themes and Categories

Nodes

Name

Early Warning Signs
- Communication breakdown among project stakeholders
- Did the non PMP have a level of awareness that related to project failure to what is not included in the PMBOK.
- Did the PMP have a level of awareness that related to project failure to what is not included in the PMBOK.
- Functional, performance, and reliability requirements and scope are not documented
- Key project stakeholders do not participate in major review meetings
- Lack of top management support or commitment to the project
- No change control
- Not documented milestone deliverables and due dates
- Predicated Caution
- Project managers cannot effectively lead the team and communicate with clients
- Project stakeholders have not been interviewed for project requirements
- The Non PMP did not refer to the PMBOK during project execution
- The Non PMP did refer to the PMBOK during project execution
- The Project Manager did not refer to the PMBOK during execution
- The Project Manager did refer to the PMBOK during execution
- Undefined project success criteria

Education
- Bachelors
- Masters
- Not Answered
- Still in School
- Study Project Management through college or professional training organization

Epistemic
- Assumption
- Awareness
- Deficiency
- Knowledge

Industry of work
- Biotechnology
- Construction
- Education
- Finance
- Heath or Medical
- Law
- Other

Knowledge Area
- How did the non-PMP rank their level of understanding about the PMBOK Knowledge Areas
- How did the PMP rank their level of understanding about the PMBOK Knowledge Areas
- Project Communications Management
- Project Cost Management
- Project Human Resource Management
- Project Integration Management
- Project Procurement Management
- Project Quality Management
- Project Risk Management
- Project Scope Management
- Project Stakeholder Management

Nodes

Name

- Project Time Management
- Process Groups
  - Closing
  - Executing
  - Initiating
  - Monitoring and Controlling
  - Planning
- Project Failure
  - Lack of Leadership Skills
  - Lack of Project Management Competency
  - Lack of Project Management Experience
  - Lack of Project Management Knowledge
  - Lack of Project Management Training or Education
- Project Management Body of Knowledge
  - A Guide to the Project Management Body of Knowledge - PMBOK
    - Contains the necessary hard skills content
    - Contains the necessary soft skills content
    - Knowledge Area where Project Managers Skills are Strong
    - Knowledge Area where the Project Manager skills are deficient
    - The PMBOK was not referred to during Project
  - For failed projects, did the non-PMP train from other bodies of knowledge sources.
  - For failed projects, did the PMP train from other bodies of knowledge sources.
  - For successful projects, did the non-PMP train from other bodies of knowledge sources.

Name

- For successful projects, did the PMP train from other bodies of knowledge sources.
- Project Management Association of Japan -The Guide for Project and Program Management for Enterprise Innovation
- The Association of Project Management (APM) Body of Knowledge 6th Edition
- The International Association of Project Management (IPMA Competence Baseline (ICB3.0)
- The Projekt Management Austria Institute (PMA), Project Management - Body of Knowledge
  - For successful projects, did the PMP train from other body of knowledge sources.
  - Project Management Association of Japan -The Guide for Project and Program Management for Enterprise Innovation
  - The Association of Project Management (APM) Body of Knowledge 6th Edition
  - The International Association of Project Management (IPMA Competence Baseline (ICB3.0)
  - The Projekt Management Austria Institute (PMA), Project Management - Body of Knowledge
- Project Manager Type
  - Accidental Project Manager
  - Non Certified Project Manager
  - Project Management Professional (PMP)
  - Q5 Passed PMP certification test after number of attempts
- project managers that were certified. is not yet a certified
- Project Stakeholders
  - Project team member have weak commitment to the project scope and schedule
- Project Success
  - Gained Leadership Skills
  - Gained Project Management Competency
  - Gained Project Management Experience
  - Gained Project Management Knowledge
  - Gained Project Management Training and Education

Nodes

	Name
	Skills Type
	Hard Skills
	Don't Know
	Included in PMBOK
	Missing in PMBOK
	Project Integration Management
	Project Scope Management
	Soft Skills
	Don't Know
	Included in PMBOK
	Missing in PMBOK
	Project Communications Management
	Project Human Resource Management
	Project Stakeholder Management