Critical Skills for Supervisors of Information Technology Project Managers in Government: An Interpretative Phenomenological Analysis Case Study

by

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BS, Park University

Submitted to the Graduate Faculty of the

School of Communications and Information Systems

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in Information Systems and Communications

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Abstract

A company or government is only as good as its most qualified employees. This qualitative interpretative phenomenological study sought to understand what skills are needed to supervise government information technology (IT) project managers through their lived experience. Fifteen participants in the field of government IT were interviewed. They included five senior managers, five supervisors, and five project managers who worked as IT government contractors or employees were interviewed. The participants' responses revealed that different groups disagreed as to what skill sets were essential in supervising government IT project managers. The findings of the research highlighted that the senior managers and supervisors valued skills from a macro-level perspective, while project managers valued skills from a micro-level perspective. The results of the study indicated that the different groups of IT employees—senior management, project managers, and supervisors—deemed different skill sets as essential. There was a consensus regarding the importance of communication skills as all groups included aspects of communication in the top-five essential skills. However, the rating number allocated to these skills and the definition of the terms differed between the participants and across the groups. The results of the study brings to light the importance of developing appropriate position training for government IT supervisory positions.

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Chapter 1: Introduction

Introduction

Over the past 14 years, the United States federal government information technology (IT) spending has increased from $40 billion in 2001 to $86 billion in 2015, as shown in the IT spending graph in Figure 1 (U.S. Office of Management and Budget, 2015). This increase in spending is a result of the government agency's need to update current technology and an initiative to integrate modern technology solutions to enhance its mission and service. As government officials concede, "The federal government spent billions annually on information technology projects that 'too frequently fail while contributing little to the mission" (U.S. Office of Management and Budget, 2015, p. 282).

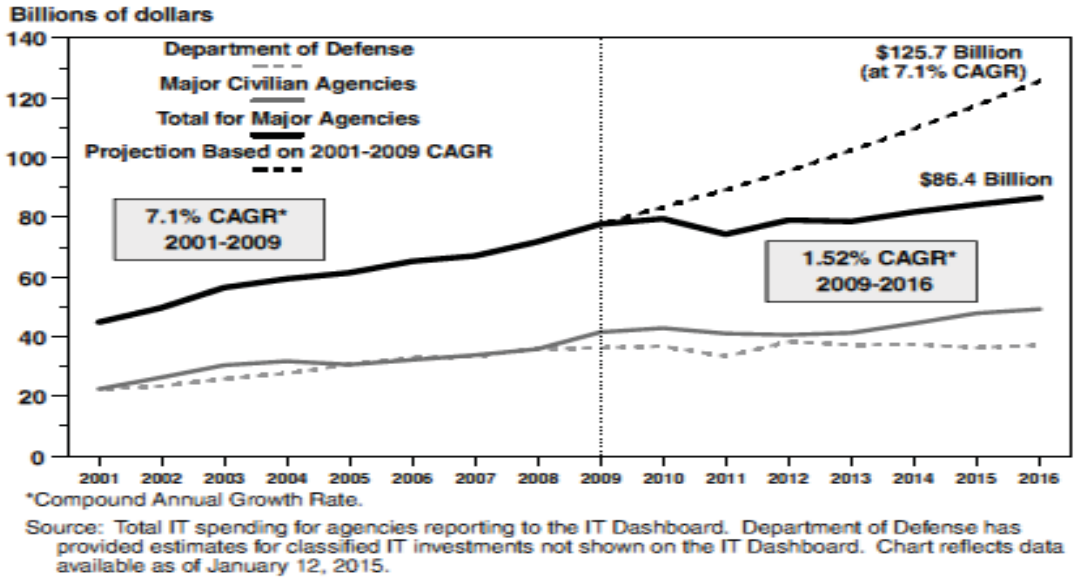

Figure 1. Trends in federal IT spending.

The U.S. Government Accountability Office (GAO) stated in its 2015 High-Risk report that two of the nine reasons for information technology (IT) project failure are program staff not having the necessary knowledge and skills, and senior department and agency executives not supporting the program. To meet the changing needs of the

government, the government may need to shift to a more efficient computing technology such as cloud services, big data analytics, and cyber security. Government IT will benefit from the acquisition of new technologies, such as new computer systems, faster servers, innovative software, and programs that will help daily operations run more effectively and efficiently. To accomplish the transformation, government IT projects will need to be redesigned to handle the scope of the new technological implementations. One way the government is transforming its IT projects is by migrating from the traditional waterfall project management with fixed duration to produce a system to an agile development with frequent sprints, which are based on user needs (Roales, 2013).The increased use of modern, agile development practices have increased the completion of projects 11 percent faster since May 2013 (U.S. Government Accountability Office, 2015b). In 2015, the GAO stated:

> We have previously testified that the federal government has spent billions of dollars on failed IT investments, such as . . . The Department of Veterans Affairs (VA) Financial and Logistics Integrated Technology Enterprise program. . . at a total estimated cost of $609 million, but was terminated in October 2011 due to challenges in managing the program; the VA scheduling replacement project, which was terminated in September 2009. . . . failed IT projects often suffered from a lack of disciplined and effective management, such as project planning, requirements definition, and program oversight and governance. (p. 37)

Government IT projects require the presence of an IT project manager supervisor to ensure projects remain on track, time constraints are met, and the entire project stays within the allotted budget. As an example, Kloppenborg and Laning's (2012) research

regarded the project manager as being the "primary responsibility [point] for managing the project, but the project manager's supervisor has a responsibility to oversee the project manager as the results of the project reflect on his/her part of the organization" (p. 90).

The role of the IT project manager supervisor can vary, depending on the type of project and under what circumstances it is being carried out. The supervisor of the government project manager may be classified as a program manager, or functional manager, depending on the presence of similar projects within that scope, or the manager may be a senior government manager who is responsible for the implementation and management of the government computer and information technologies (Salem & Mohanty, 2008). Kaplan and Harris-Salamone (2009) identified inadequate management as accounting for 65% of the causes of project failure. The remaining 35% of failed projects were classified as technical failures. Technical failures included "inadequate or inappropriate requirements, design, development tools, user documentation, test planning, technical support, and all arguably management issues as well" (Kaplan & Harris-Salamone, 2009, p. 292).

On the other hand, three major reasons for project successes were "user involvement, executive management support, and a clear requirements statement, while the lack of these constituted the main reasons for project challenges, impairments, and cancellations" (Kaplan & Harris-Salamone, 2009, p. 292). Regardless of the title, the supervisor of the government IT project manager must have attributes that define his or her ability to oversee the project manager on both small- and large-scale projects. This

research will focus on the critical skills for the supervisor above the project manager, and the manager of the supervisor, as shown in Figure 2.

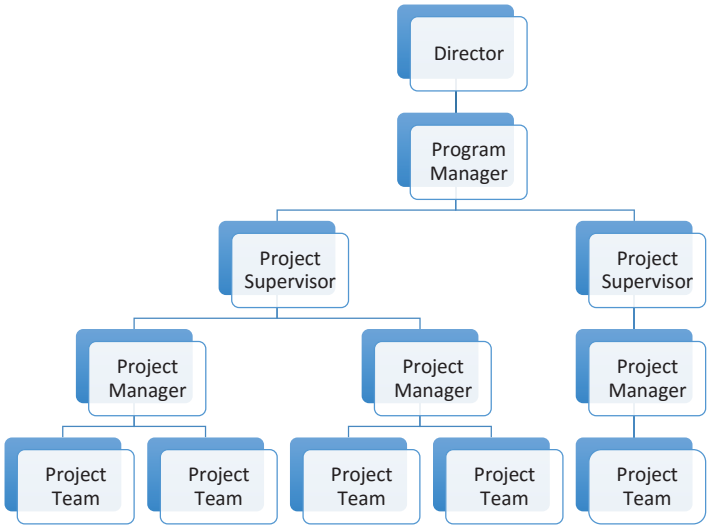

Figure 2. Government organization structure.

Background

A government IT project manager is an individual who serves the purpose of managing the timeline and functions of a given information technology project (Li & Philip, 2009). IT project managers have little control over the operation in the government environment, so there may be some debate as to what qualities are necessary to manage these IT project managers (Kwak, Liu, Patanakul, & Zwikael, 2014). When government senior management are looking to hire supervisors for IT project, it is not clear what skills are needed to supervise the IT project manager to effectively carry out that position. Beyond the project manager, projects in the government are generally directed by a government program manager, supervisor, or technology executive, because a government executive is required to "submit intermediate deliverables during the project development" (Project Management Institute, 2006, p. 13). Within their list of government objectives, senior leadership, and program managers are always seeking to

develop and launch new projects in order to assist them in meeting their managerial goals. In order for senior management to accomplish their goals, this often requires the implementation of a new IT project, which requires the hiring of skilled and highly qualified IT supervisors. James Rispoli, the Former Assistant Secretary of the U.S. Department of Energy, stated, "Our job as a federal agency is management and oversight, to be responsible stewards of the public's trust and resources. Therefore, we must have a highly qualified and technically proficient management team and staff" (Weinstein & Jaques, 2003, p. 67). Attracting and maintaining skilled IT supervisors can help facilitate the shift in how the government approaches managing IT projects.

The government accountability office (GAO) claimed, "Such projects have often used a 'big bang' approach – that is, projects are broadly scoped and aim to deliver functionality several years after initiation is too long, ineffective, and unaccommodating of the rapid evolution of IT" (GAO, 2015a, p. 9). Government projects require that an IT project manager supervisor with skills and expertise oversee the production and execution of the project. This position is necessary because many individuals depend on the success of the project, including stakeholders, such as senior government and congressional overseers. The role of the government senior manager or program manager is to select the best possible project manager for the job and then to supervise him or her throughout the process. Ofer Zwikael, a leading expert in technology management, has argued that active involvement of senior managers of the performing organization can help project managers to successfully complete the project on time and under budget (Zwikael, 2008).

Throughout the course of the project, the supervisor of the project manager should ensure that he or she is able to track certain activities, such as whether or not the project remains in alignment with key objectives, measures the performance of all technicians and external sources involved in the project, and continually asks the questions that will help the project team to overcome the obstacles that may get in the way for the duration of the project (Li & Philip, 2009). Additionally, supervisors should ensure that project managers exercise their expertise in ensuring that the project meets the triple constraints: it should be delivered on time, within budget, and within the scope of what the project was designed to accomplish.

Supervisors, such as government senior managers and program managers, know that from day to day the function and activities of a government IT project manager can vary greatly, depending on the current state of the IT project. When the project is first initiated, the role of the IT project manager is to meet with the primary stakeholders of the project to assist them in realizing what the main objectives for the project are (Salem & Mohanty, 2008). The stakeholders comprise anyone who is involved in the development of the project or affected by project activities. These include the customers who may be utilizing the new program as well as the sponsors who are paying for it. Stakeholders also include the IT project team as well as the government senior managers and program managers. These managers should commit to being present for all project-related concerns that the project manager proposes (Simonsen, 2007). Even though these managers should commit to being present for all project-related concerns, prior commitments, and positional requirements may prevent them from attending. To facilitate this void, a pseudo-manager, such as a supervisor, is assigned to the IT project.

Weinstein and Jaques (2013) indicate that, besides the project, one of the obstacles that an IT project manager faces is how to keep the team in check in regards to staying on task. The High-Risk report states that managers, such as government senior leaders and program managers, should be aware of how the project manager is managing his or her team (GAO, 2015b). For smaller government projects, the IT project manager may not face many challenges; however, for large projects that span across several months or even years, the government project manager is faced with overseeing many members of the team. This can become a problematic situation that good supervisors can help to control.

Effective supervisors of project managers can oversee them to make certain that the entire team is on task and is positioned to meet the objectives and deadlines that were initially agreed upon with the client (Li & Philip, 2009). Again, for smaller projects, the scope of this responsibility may be easier to contain; however, the difficulty in meeting deadlines increases with the size of the project due to the sheer number of employees and time duration that is allotted for each task. To assist with this key aspect of the IT project, the project manager often calls for weekly status meetings with the on-site team members to address any areas of concern and to get updates as to why the timeline is either being met or has been delayed. This information is then relayed to the overseeing senior management, sponsors, or program managers in the form of a monthly report (Simonsen, 2007). This cycle of check-ins and reporting is repeated until the project has been completed and has satisfied the requirements of the customers, sponsors, and other stakeholders.

Some IT projects, particularly the larger ones, experience a significant delay in the completion of the project. When this occurs, project managers may call a meeting, as they did in the initial part of the project, and address the concerns and possible solutions with the key stakeholders. This type of modification to the original plan may require that budgetary concerns for the project be addressed as well. This is where the supervision of project management is crucial in that financial decisions must be made by the government supervisor (Simonsen, 2007).

Project managers understand that delays caused by either poor time management or lack of oversight into the intricacies of the project are generally not considered to be a customer-related problem (Salem & Mohanty, 2008). This means that the project team has to perform additional work while still functioning within the same financial constraints as before. Successful IT project managers do anything and everything in their power to avoid circumstances such as scope creep (Wirick, 2009). In the event scope creep occurs, the project manager supervisor needs to make decisions in regards to what penalties, if any, may be instituted by the project manager.

Wirick (2009) and Weinstein and Jaques (2013) have published research on the skills that a project manager must possess to effectively get the IT project finished within the triple constraints; however, there is very little evidence of the skills that government supervisors and program managers must possess to ensure that the project manager is successful in meeting the triple constraints. The notion of success must be first be defined in the IT field. Success in the IT field is measured by how the projects are kept within scope, on time, and whether managers stay within the allotted budget (Li & Philip,

2009). Identifying the skills for senior management and program managers would be useful in determine how to effectivity supervise the project manager in government.

It is important for the government IT project manager to be efficient at multitasking and to be highly organized because the role requires the management of project managers who oversee multiple employees and various aspects of the project (Stenzle, 2011). Managers are required to multitask and track production related issues on a daily basis. Simonsen (2007) suggested that one of the main differences between whether a project fails or is successful is the degree to which the government project manager can exercise quality organizational skills. Managers should be vigilant in ensuring that the project manager is capable of organization on this type of scale (Simonsen, 2007).

Government senior management and program managers also acknowledge that government IT project managers need to be familiar and comfortable with taking the lead on their projects. Managing the project encompasses taking charge and leading vendors and stakeholders to a positive outcome. Effective managers may be able to direct the movement of the project forward while also pointing out the modifications that needed to be made (Kloppenborg & Laning, 2014). That is, they may be able to constructively criticize the team members while still motivating them to complete the tasks. This is accomplished by building credible relationships between the project manager and key stakeholders, so that everyone stays in alignment with the objectives of the project. CIOs and program managers understand that these relationships help to build confidence between all the project participants and so they supervise project managers to ensure that this objective is met (Salem & Mohanty, 2008).

Weinstein and Jaques (2009) state that the role of an IT project manager also requires that the individual be a good communicator. Managers must also possess strong communication skills, as they should be able to discuss pertinent issues regarding the production of the product. In this respect, the project manager needs to be clearly understood by all participants. An effective project manager should also encourage communication between the stakeholders as well (Stenzle, 2011). Some of the information that will be addressed during these communications is related to the progress or changes that are taking place across different departments. This information, both good and bad, assists the project manager and the stakeholders in making decisions based on well-informed information. Either the senior manager or the program manager will ultimately approve these decisions.

Negotiation skills are also crucial not only for a CIO or program manager, but also for an IT project manager because he or she is often dealing with consumers, sponsors, and outside companies with highly diverse interests (Li & Philip, 2009). Project managers juggle many different personalities and skill set during a project. The managers focus on externalities outside of the original project human resources core. Managers who are trained to concentrate on the end goal timeline, hire and contract sub-contractors or specialists to intermingle on projects with the core team, can be the catalyst for conflicts of personalities and scope. When dealing with attitudes and perceptions such as this, the IT project manager must be able to position the interests of the project in such a way as to meet the objectives, which may require significant negotiation tactics when faced with people who don't have the same vested interests in the project as the supervisors of the project manager (Simonsen, 2007). A good project manager should be

detailed oriented and able to shift focus between the small and big details as circumstances demands. Such a task requires the project manager to be meticulous about uncovering every nuance of the operation in an effort to promote the overall success of the project. Successful project managers understand the success or failure of an entire project may depend on small details. Hence, supervisors are tasked with the responsibility of hiring a person with negotiation skills, leadership skills, and supervisory experience.

Statement of the Problem

The most common factors affecting the performance of a government IT project was the lack of leadership and management skills. After reviewing the literature, a gap was identified. To understand the gap clearly, the researcher will focus on three primary or core pieces of literature. Patanakul and Omar's (2010) research found that common reasons government IT projects performed poorly was related to senior management, project management, and contract management. Patanakul and Omar's (2010) research discovered a direct correlation between government IT projects performance results and senior management, supervisor, and project management lacking the critical skills needed to accomplish his/her responsibilities. While the work of the project manager is invaluable, he or she must be managed by a leader whose skill set surpasses his or her own. Simonsen's (2007) research showed that these types of qualified individuals are hard to come by, even when they have already earned the title of chief information officer (CIO) or program manager. Additionally, Kwak, Liu, Patanakul and Zwikael (2014) also found in their research that one of the most common factors affecting the performance of a government IT project was the lack of leadership and management skills. By

identifying the skill set required of those managing IT project managers, the government can develop suitable training to promote the skills needed to oversee future projects.

Purpose of the Study

The purpose of the study was to identify the critical skills supervisors of IT project managers in government, particularly government senior managers, supervisors, and program managers, need in the oversight of any government project. This study is geared towards providing subjective research to the IT profession that may clarify which skills are necessary to manage IT project managers in government. The researcher's intent is to create a list of what key management skills improve the functionality of government senior and program managers. Finally, from this knowledge, the research may identify a new set of skills that can be incorporate into practice of future government projects.

Purpose of the Interpretative Phenomenological Analysis Case Study

The purpose of using an interpretative phenomenological analysis (IPA) single case study was to learn what skills are actually used to supervise government project managers through the experience and perception of the senior manager, supervisor, and project manager.

Research Questions

This study focuses on the scope of responsibilities of the government IT project managers' supervisors. Specifically, this study attempts to identify what skills are necessary for the supervisor to ensure that the government IT project manager is successfully fulfilling his/her job responsibilities. To determine what skills are required

of supervisors of government project managers, this research explores the following research questions (RQ):

RQ1: What skills do senior government managers view as critical for supervisors of IT project managers?

RQ2: What skills do supervisors of government IT project managers view as critical in order to manage IT project managers?

RQ3: What skills do IT project managers view as critical for their supervisors in government?

Significance of the Study

The study is significant because the skills that are required to supervise IT project managers are a part of a skill set not readily possessed by those in IT management (Li & Philip, 2009). Government IT senior managers and program managers are central to the planning of the IT projects, as well as policy and practice development, resourcing, budgeting, and training. Additionally, these managers are needed to calculate how to increase profits in certain IT project frameworks while limiting damage and possible disasters as they reduce the expenditure on projects. Weinstein and Jaques (2013) suggested that there is a significant shortage in these types of managers, especially individuals who can also incorporate the people skills that are necessary to oversee the IT project to completion.

Limitations

This research was limited to government agencies and contractors in Virginia; therefore, the findings may not be applicable to other government agencies in other regions. Another limitation is the transferability of the research due to the small sample

size, and the participants being limited to government IT project managers, supervisors, and senior managers. The purposive sample used for this study may not be representative of the entire government population, which lessens the ability to generalize the results to a wider population (Skulmoski, 2005). However, utilizing the purposive sampling structures creates advantages. One advantage of purposive sampling is the ability to collect different perspectives on the research topic from a specific skill set of government senior IT managers, supervisors, program managers, and contractors. Generalizing the findings across other government agencies may produce different results because of the cumulous sample in each group.

Delimitations

The research was delimitated to a small sample size of 15 government IT participants. The participants in this research were delimited to government IT supervisors, senior managers, and project managers. The research was delimited to the government and contracting agencies in the Virginia region.

Summary

In Chapter one, the researcher introduced the problem of the IT managers lacking skills according to the literature. The literature points out directly that IT managers are required a certain skill set for organizing and directing projects. The gap in the literature about what skills directly affect project completion or success in government was limited. Thus, the discovery enabled the researcher to generate research questions to answer this question. To answer the questions, the researcher utilized an interpretative phenomenological analysis in a single case study design. The design explored the phenomenon through semi-structured in-depth interviews. The in-depth interviews

consisted of the government senior managers, supervisors, and project managers. This concentration provided a rich and meaningful data collection concerning the skills needed to supervise IT project managers in government.

Chapter two includes a literature review that addresses the topic areas associated with government project managers and the unique issues supervisors in government are required to handle: federal project management, project failure, project success, resource management, regulations, and skills that research suggests project managers should have to be productive on government projects.

Chapter 2: Literature Review

Introduction

In the United States government, supervising project managers had historically been an informal process because of a lack of experienced personnel and poor understanding of what skills are needed to manage government projects (Kerzner, 2010). On the other hand, in the context of government research, the theme of Information Technology (IT) has largely been overlooked (Birken et al., 2015). Researching the literature to identify critical skills supervisors need to manage IT project managers in government produced limited results (Birken et al., 2015). The majority of the research focused on the necessary critical skills needed for the project managers, but not their supervisors. Blash (2011) claimed that the Project Management Body of Knowledge (PMBOK) puts little effort into identifying the characteristics of good supervisors of project managers, noting that:

> Given the expectations of the project results, what is the real role of the manager of the project manager? The main job of a manager is to get things done through others rather than do it him/herself. Since many supervisors of project managers were previously project managers themselves, it is hard to let go and "manage and lead" rather than "do." (Blash, 2011, p. 1)

Melbye (2012) described the inherent risks associated with government IT projects, observing that, due to these risks, the skill of resource planning is necessary for IT project leaders. Leaders should be able to estimate the scope of the project so that the time of completion and budgetary expenses may be established from the beginning (Melbye, 2012). Due to the probability of changes in organizational priority, Melbye

suggested that IT project leaders should be adaptable in addressing objectives that have become moot or in elevating previously discarded concerns.

This study focuses on successful IT performance and its direct relationship to positive IT leadership, communication, and cost management, examined within the pressure placed on IT departments and their lack of integration into the businesses they function in or alongside. Weinstein and Jaques (2010) stated that in order to achieve improvement in project management, there was a need for "a commitment by the organization and its leaders to provide both formal and informal opportunities to increase the skills and knowledge of project managers" (p. 78). Faced with a changing workforce, the Office of Management and Budget (OMB) and the Government Accountability Office (GAO) have conducted numerous surveys and assessments, finding that the skills associated with being successful in managing projects are critical to agencies achieving their missions (Weinstein & Jaques, 2010).

The most pressing question that has arisen from the literature review readings is "What skills are needed to supervise project managers in government IT projects?" The literature review suggests that the support of an informed and active leadership dramatically improves the probability of finishing a project on time and within budget. Weinstein and Jaques (2010) observed that a "growing number of agencies have recognized and begun to realize the benefits of a formal approach to building and maintaining project management competencies and skills as part of their goals to improve the success rate of projects in government" (p. 158).

This literature review provided a rigorous examination of significant components of the topic. The first section examines federal project management. Project failure

followed by project success is the focus of the second and third sections. The fourth section investigates team building. The fifth section focuses on roles and responsibilities, while the sixth section explores regulations. The seventh section studies communication. The eighth and ninth sections focus on emotional intelligence and time management. The tenth section concentrates on leadership. The chapter closes with a summary of the literature review.

Federal Project Management

Government contracting is a significant development within IT, as a rising number of U.S. governments' IT systems are maintained and developed by companies from the private sector (Margetts, 2012). Such a development has created the necessity for coordinated expertise and resulted in drawing together groups of technically skilled personnel towards the government (Davenport, 2013a). However, fifty percent of such personnel were later replaced by private IT companies, as the U.S. government began contracting out IT work (Davenport, 2013b). It has been estimated that such contracting work comprised 50% of all IT work during the 1990's (Margetts, 2012). The trend of contracting out IT services began in the 1970's among companies in the private sector and increased significantly during the 1980's and 1990's (Margetts, 2012).

This increased use of private-sector companies for government was a result of a new approach marked by regulations and reforms in the government administrative sphere (Eweje, Turner, & Müller, 2012). There are a number of reasons for this development, from the defense budget increases to a general hostility towards bureaucracy that has remained a dominant part of the political culture in the United States (Eweje et al., 2012). Budget on bureaucracy is seen less unfavorably when it is focused

towards increasing business in the private sector (Margetts, 2012). Furthermore, the trend of government contracting has been most visible in projects related to IT, and many of these projects were commercial services (Margetts, 2012). Consequently, the ratio of contracted-out IT work by the U.S. federal government was consistently and significantly higher when compared to companies in the private sector (Kerzner, 2013). Moreover, there is also a consistency regarding contracted work in a number of specific departments (Margetts, 2012).

In the light of this increased government IT activity, it is essential to identify the critical skills supervisors of IT project managers in government, particularly among senior managers, supervisors, and program managers. The identification of such skills may improve the training of government senior and program managers so that they can incorporate this understanding and practice of these skills in future projects.

The Project Management Institute (2014) explains how contract management and project management overlap in knowledge areas and processes. Particularly with respect to governmental project operations, contract management and project management share critical success factors to the organization (The Project Management Institute, 2014). Both of these components are considered high-risk areas if not properly managed by lead project managers due to the lack of successful results and outcomes of reported project analysis (The Project Management Institute, 2014). The reference positions its argument that opportunities for improving project and contractual management abound if lead managers ensure that both approaches are treated as a separate field (The Project Management Institute, 2014). For senior managers in a governmental project, this entails

overseeing each department and making sure that they are working on their respective goals and objectives (The Project Management Institute, 2014).

Lind and Culler (2011) analyzed different success stories of information technology projects, identifying the factors that increase the chances of success in projects. The authors concluded that such factors as harmony between departments and good budgeting play major roles in determining the success or failure of the projects (Lind & Culler, 2011).

Project Failure

Whittaker (1999) studied the problems that lead to the cancellation of incomplete information technology projects, focusing as well on hidden cost increases interfering with their completion. Whittaker investigated project problems in the United States and Canada in the late 1990's and noted that the three most common reasons for project failure included poor project planning, a weak business case, and lack of top management involvement and support.

The Standish Group (2010) CHAOS report showed a 63% failure rate for IT projects, which is quite unfortunate for the government IT industry. Moreover, the CHAOS report showed that as few as one in eight information technology projects are considered completely successful. The most considerable and compelling reason for such failure is that more than half of IT implementations overshoot budgets and still do not deliver a successful outcome (The Standish Group, 2013). The Standish Group who conducted the CHAOS poject observed that only 37% of IT projects were completed on time, on budget, and cohered to all other requirements, as about the other roughly two-

thirds had significant problems, including 19% that completely failed (Kaplan & Harris-Salamone, 2009).

This concept of project failure is ultimately can be frightening to government IT managers; however, it also gives them a boost in confidence knowing that, if their ideas and implementations fail, it is not because of their utter lack of professionalism, given the amount of failed government IT implementations in the past (The Standish Group, 2013). Of course, if they disregard budget constraints and do not commit to industry standards and requirements, this would technically be management's fault (The Standish Group, 2013). The Standish Group (2013) CHAOS report revealed that 18% projects end in failure, and 43% projects are challenged (i.e., late, over budget, or less than requested functions); hence, more than 60% of implementations are not successful. Kaplan and Harris-Salamone (2009) identified inadequate management as accounting for 65% of the causes of project failure. The remaining 35% of failed projects were classified as technical factors, "including poor or inappropriate requirements, design, development tools, user documentation, test planning, technical support, and all arguably management issues as well" (Kaplan & Harris-Salamone, 2009, p. 292).

In the context of project management, Schwalbe (2015) noted that the factors that lead to project failure include lack of predictable, methodology-focused, repeatable, and simple project management. Project failure is inevitable when a project manager is not capable of communicating with primary stakeholders (Schwalbe, 2015). Similarly, when there is an absence of resource assignment and progress tracking for important deliverables, it leads to a failure on the part of the project manager (Schwalbe, 2015). When the feedback of primary stakeholders is not included in the project, and they are

not provided information, there is a significnt possibilty of project failure (Schwalbe, 2015). The failure or success of a project is ultimately the responsibilty of the project manager (Schwalbe, 2015). Therefore, it is necessary to identify the critical skills supervisors of IT project managers in government, particularly government senior managers, supervisors, and program managers, need in the oversight of any government project.

Project Success

IT projects are notorious for their troubles and failure (Liikamaa, Vartiainen, Pirhonen, & Aramo-Immonen, 2015). The success of a project, as discussed by Feld and Stoddard (2004), is based on the project manager's performance and the relationship of that performance to positive IT leadership, communication, and cost management. Moreover, three major reasons for project successes are "user involvement, executive management support, and a clear requirements statement, while the lack of these constituted the main reasons for project challenges, impairments, and cancelations" (Kaplan & Harris-Salamone, 2009, p. 292). Given this background, this study examines the pressure placed on IT departments and their lack of integration into the businesses they function in or alongside. Leadership strategies are suggested in the conclusion as a way of increasing IT performance.

A number of factors are responsible for success in government IT projects, especially as applied to project managers. Firstly, a contract of the United States government is often a jumble of unconnected statements, procedures, policies, and requirements, a major part of which does not have a direct relation to the specific assignment but is aimed at the general encouragement of social goals (Naff, Riccucci, &

Freyss, 2013). Furthermore, government contracts are impatient with unknown risks, and are hard both to establish and to change (Naff et al., 2013). In the light of this, a responsibility of supervisors and managers is to provide clarity to create efficiency (Naff et al., 2013). Further, success in a government contract is a collaborative process, requiring cooperation, communication, and collaboration between technicians, engineers, and project managers (Naff et al., 2013). However, such collaborative factors often leads to failure if there is lack of coordination among project managers, as programs are often canceled if changes necessary for production are not made in time and are not communicated (Naff et al., 2013).

In the context of government project managers, Armstrong (2014) observed a strong tendency to dictate how a company should design and create a system. The root of this desire, Armstrong noted, was the experience of the government project manager. On the one hand, contractors agree to steer the project according to the need of their customers (Armstrong, 2014). However, in order to change their plans for the program, they require extra money and time (Armstrong, 2014). The success or failure of handling such alterations lies with project managers. If there is a systematic and organized relationship between the government and the contractor, it is possible to rapidly analyze the problem of time and money (Armstrong, 2014). However, when the involvement of the project manager is not satisfactory, it may lead to difficulty in the allocation of the responsibility to manage the cost and schedule, resulting in increased costs for the government (Armstrong, 2014). The successful management of managers is necessary in order to ensure that the project is finished on time and within the allocated budget.

It is also the responsibility of the managers to ensure that well-meaning operators and engineers are not causing a delay and increase in budget due to new developments (Davenport, 2013a). It is possible that optional goals in design may turn into non-negotiable necessities if strong supervision is not provided (Davenport, 2013a). The system of engineering builds upon the works of each other, which can result in additions at various levels in the process of design and engineering, ultimately increasing complexity (Davenport, 2013b). Managers should to keep an eye on such changes and see the project through production by establishing priorities (Davenport, 2013b). Here, too, it is important that managers are supervised to ensure that such processes are taking place, keeping the budget and schedule at intended length.

Team Building

The federal government is described as "the world's largest and most complex entity" by the U.S. Government Accountability Office (Weinstein & Jaques, 2014, p. 1). Baccarini (1999), in a discussion of how relationships are an important management skill for project managers in government, asserted that cooperation amongst team members, good working relationships with government contractors, obtaining the support and coordination from government program offices, and building collaboration with trust are all essential components to effective relationships in management which can be accomplished with the help of the manager's ability to facilitate teaming and communication between their project employees. Baccarini further claimed that the communication of relationships in a government project should occur on all levels; however, the flow of communication should happen up and down the chain of command.

Project managers should detail expectations regarding the communication prior to the commencement of the project.

Eisenhardt (1989) discussed agency theory and its contributions to organization theory. The components of the agency theory can be applied to the critical factors needed by governmental project lead management in that it highlights the need for accurate and fluid information systems with the organization. Such communication is a driving force behind successful operational plans in the government sector. Additionally, Eisenhardt reported that the risks to one's organizational structure should be properly addressed throughout the duration of the project. It is the responsibility of the lead manager to assess risk and to implement the appropriate modifications necessary to thwart potential obstacles in the project's completion. He surmised that the competency is often overlooked in the hiring process; however, governmental operations cannot afford this oversight.

Roles and Responsibilities

Charan, Drotter, and Noel (2011) argued that leadership is a critical skill in a project manager's implementation of a successfully executed governmental project plan. The authors suggested that leadership in this role requires quick decision-making, strong and empowered leadership support, people-oriented management, and clear lines of authority. They also emphasized that the leader should be able to oversee sub-ordinate managerial positions without micromanagement.

An additional management responsibility Baker, Murphy, and Fisher (2008) note is to establishing clear lines of goals and direction. Government projects develop an operational plan prior to commencement that provides for the implementation of various

goals. The leader has the responsibility for delegating tasks to project managers based on the expertise and accountability of that manager's role.

Pellerin (2009) analyzed competence and how to achieve it within organizations, teams, and on an individual basis. He explained how lead managers can recruit, hire, retain, reward, and encourage employees who can meet their roles and responsibilities within the organization. He also argued that managers, especially in governmental project roles, can damage the outcomes of the project if they do not uphold basic competency standards. Ways to ensure competency among staff include professional standards for project management and being able to measure specific skills and achievement. Frame stated that these measurements should be applied across the board to those participating in the project. Organizations are held to certain standards, and the role of the governmental project manager is to ensure that subordinates, including tasks managers, conform to the organization's competency standards.

A report from the Government Accountability Office (GAO) reveals that one of the project manager's necessary skills is being able to procure resources for the project, such as obtaining contract tracking tools, automated contract writing systems, equipment, facilities, logistical support, technical support, and travel funds. The report provides evidence that project managers who have these factors in place are more likely to see positive outcomes in project objectives (GAO, 2005).

Regulations

The guide from the National Contract Management Association (NCMA) dictates how policies form a critical skill for project management in the government sector. In order for project managers to successfully adhere to their respective governmental

policies, they need a clear, updated, and concise summation and understanding of policies (Remley & Ludvik, 2006). Clarity should originate from senior government managers and be further delineated by the supervisor of the project manager, who should also be able to disseminate accurate headquarters' policies and be able to enforce them through a strict interpretation of the government policies. The guide also highlighted the need to eliminate the overuse of unnecessary approvals and reviews, as these can significantly slow down the project and create more obstacles for lead project management (Remley & Ludvik, 2006).

Similarly, Armstrong (2014) examined the complexity of U.S. government contracts, describing them as a jumble of unconnected statements, procedures, policies, and requirements. A major part of a government contract does not correspond directly to the immediate task; rather, it is created in order to encourage the goals of society in general (Armstrong, 2014). Furthermore, contracts include suggestions to solve problems, failures, and mistakes which already have been legislated and regulated (Armstrong, 2014). However, a majority of them have internal conflicts (Armstrong, 2014). There is also a difficulty of establishing and changing government contracts, and they are not favorable towards unknown risks (Armstrong, 2014). The result of all these factors in a contract is often delays in production and lack of collaboration. Designing a system and its development requires a collaborative process involving cooperation, communication, and collaboration between managers, technicians, engineers, and suppliers (Flyvbjerg, 2013). Complexities in government contracts may create difficulties if collaboration is not sound (Flyvbjerg, 2013). Project managers must ensure this process is simplified and there are no loopholes that may result in delay or failure. Similarly, the

project managers have to verify that the contract is thorough and that it includes options for disposal, production, and sustainment (Flyvbjerg, 2013).

Communication

IT projects continue to be victims of high failure rates. Forty-four percent of all projects in IT were above budget, did not meet all the requirements, and had late delivery (Keil, Lee, & Deng, 2013). Further, 24% of all IT projects were either canceled or, despite delivery, were not used (Keil et al., 2013). Successful completion of IT projects needs solutions to a number of risks encountered during the path to completion (Keil et al., 2013). The lower levels of skills and knowledge in the personnel involved in the IT projects was described as one of the most significant risks influencing project completion (Keil et al., 2013). A number of skills are necessary for project managers in IT upon which organizations should focus for successful project completion including communication skills of managers (Keil et al., 2013).

Charan, Drotter, and Noel (2011) noted that organizations do well at defining operational requirements but do a poor job of defining leadership requirements and distinguishing them by the leadership level. Possessing the appropriate skills and work values is critical in order for the leadership to produce results in the performance of the job (Charan et al., 2011).

Alias, Zawawi, and Yusof (2014) identified a lack of effective lead management as one of the obstacles that cause projects to fail. These obstacles are shown to sideline and prolong the completion of some projects (Alias et al., 2014). Communication deficits emerge from non-conformity with the hierarchical chain of command necessary for governmental projects (Alias et al., 2014). The authors asserted that the supervisor is

responsible for conveying critical information to project management supervisors for the purpose of them delivering said information to their appropriate staff (Alias et al., 2014). They also suggested that contractual internal management issues often cause the demise of an otherwise well-run governmental project operation (Alias et al., 2014). The natural tendency for lead management is to step in and micromanage the operation to ensure that all levels of management are adhering to their roles and responsibilities (Alias et al., 2014).

Von Hagel (2009) described communication between the IT project leader and project managers as the skill that will decrease the rate of turnover in government IT projects. Abba (2001) argued that it is necessary for the lead project manager in governmental operations to adhere to the requirements set forth by the operational goals for the project. This consists of ensuring proper technical reviews, justifications and approvals, reports on the timely procurement of request packages, performance work statements, and statements of work. Abba also argued that governmental project managers and leaders need to integrate complete and accurate budgeting strategies within their project goals. Such strategies include seeing that the actual costs of operating the project do not exceed the initial projected financial analysis. If need be, the senior project manager should explore other options of funding that will allow the project to remain within budgetary constraints (Abba, 2001).

Medina (2014) discussed some of the controversies that relate to the importance of having IT project managers in government contracts and the necessary skills that they should possess. One such skill is that managers be able to exemplify their technical skills and experience in order to guide contract project managers into successfully executing

operations. The controversy regarding the skills of the IT project manager is in regards to effectively incorporating organizational change into their scope of abilities. According to Medina, this is one skill that appears to be lacking.

Leadership requires a number of skills among IT project management. It has been described as one of the most significant and critical constructs in the success of a project (Hill, 2013). In order to achieve consistent success, stronger leadership skills have been described as the most important necessity (Boulmetis & Dutwin, 2014). A number of factors affect leadership skills, such as communication, which is a necessity in the development programs for project managers as well as their supervisors (Boulmetis & Dutwin, 2014). While different practitioners emphasize different skills for leadership, communication has consistently been described as a necessary factor in successful leadership development (Hill, 2013). Thus, despite the differences between different organizations, communication has been a consistent critical factor affecting the chances of an IT project's success. Communication falls under a wider group of personal leadership skills (Hill, 2013).

Leadership is described as a quality that emerges from within an individual, consisting of a number of personal behaviors that together prepare an individual towards a better communication and awareness in project management (Hill, 2013). The interpersonal skills in communication consist of listening to others, stress management, management awareness, personality awareness, and emotional stability (Hill, 2013). It is possible to achieve these skills by use of effective training, along with feedback and practice (Koliba & Zia, 2015). It is important for a manager to provide support to others through listening to them and understanding their situations (Koliba & Zia, 2015). It is

important that managers are supervised regarding this issue due to its significant effect on the overall success of a project. Especially in government IT projects, where the ratio of failure is high, it is significantly more important that project managers demonstrate the highest level of this skill.

Listening has a direct correlation with the understanding and the identification of the risks and status of the project (Keil, Lee & Deng, 2013). It is also an important part of managing the expectations of stakeholders (Keil et al., 2013). If a project manager does not listen to the information reported to them by people, it is likely that the project manager will not be able to identify the problem, thus affecting how the solution to a problem is achieved (Keil et al., 2013). The skill of listening to another patiently and understanding their concerns and issues has often been overlooked (Keil et al., 2013). This skill is necessary in order to provide effective leadership (Klingner, Nalbandian, & Llorens, 2015). Therefore, listening skills should form a major part of how a project is managed (Klingner et al., 2015). In failing to listen to other members of the team, project managers often risk the possibility of overlooking the chances of finding successful solutions to critical problems (Klingner et al., 2015). While some researchers believe that listening skill is innate, others believe that it is possible to nurture this skill via extensive experience and training, such as through the documentation of everything that has been communicated and communicating it back to the individual who provided that information (Klingner et al., 2015). Moreover, role-playing and coaching have also been described as necessary methods that lead to improved listening skills (Keil et al., 2013). Thus, communication is an important part of a project manager's profile which is important to examine in the context of supervisors of managers.

Emotional Intelligence

Daniel Goleman defines emotional intelligence as, "the ability of the leader to maximize their own and their followers' emotions" (Goleman, 2015, p. 3). The job of a project manager is to finish the project assigned by using the assistance of other people (Mersino, 2014). Hence, it can be established that relating to and understanding other people is critical in the job of a project manager and supervisor (Edelenbos, Van Buuren, & Klijn, 2013). Further, projects are always temporary (Margetts & Dunleavy, 2013). Project managers do not have the chance to develop long-term relations with the teams they work with (Margetts & Dunleavy, 2013). They have to collaborate with new stakeholders and teams regularly (Mersino, 2014). With the initiation of each new projects, managers are faced with different people and it is important to turn new relations rapidly into productive ones (Marcusson & Lundqvist, 2015). The capacity of a manager to understand other people is crucial for their success (Mersino, 2014). Therefore, it is important that managers utilize all the human resources possible in order to achieve success (Mersino, 2014).

Emotional intelligence can help project managers achieve success in a government IT projects through a number of ways. For instance, it allows the managers to understand the non-verbal and verbal communications with various stakeholders (Marcusson & Lundqvist, 2015). It also helps the managers understand the different motivations that drive their team members towards higher productivity, and which can then be utilized in order to achieve optimum results for a project (Marcusson & Lundqvist, 2015). Emotional intelligence can also help project managers improve how they understand politics and stakeholders; how they provide criticism and feedback to the

members of their team; and how they identify and solve conflict, hostility, and negative activities (Mersino, 2014). Emotional intelligence assists project managers in their handling of a project by providing them information from different sources regarding the environment in which they work (Mersino, 2014). Emotion, for a project manager, is information (Mersino, 2014). The different emotions of team members as well as other parties involved in an IT project provides the managers with the information necessary in order to achieve successful results (Mersino, 2014). On the other hand, not everyone is capable of exploiting this possibility (Mersino, 2014). The higher failure rate of government IT projects requires the utilization of all possible suggestions. Emotional intelligence has been recognized as one of the most important of the qualities that project managers can use (Schnoll, 2015).

Empathy is an aspect of emotional intelligence that is one of the most critical parts of the job of project managers (Schnoll, 2015). Empathy is the capacity to relate to and understand the emotions of other people (Schnoll, 2015). The job of a project manager often requires nurturing the ability to see things from other people's point of view (Mersino, 2014). Empathy involves the capacity to perceive feelings and thoughts that have or have not been verbally expressed (Stanton, 2014). It also includes the capacity to appreciate the feelings and thoughts of other people along with the reasons why they possess these feelings and thoughts (Mersino, 2014). Empathy also involves the ability to value and respect people who come from cultures and backgrounds different than one's own (Stanton, 2014). Listening to others with empathy is one of the primary concepts of empathy (Stanton, 2014).

The crucial element that differentiates empathetic listening from ordinary listening is the lack of judgment in the former (Stanton, 2014). When a project manager is listening to a member of the team or a stakeholder, for instance, listening with empathy denotes the presence of complete focus on the behavior and words of the speaker without any judgment, along with summarizing what has been communicated at various points of time (Young, 2013). Often, people also consider listening as merely the opportunity to stop and gather one's own thoughts before continuing to speak (Young, 2013). In contrast, empathetic listening consists of giving oneself completely to what is being communicated by other people and listening with the intention of helping and having the best intentions for others in mind (Mersino, 2014). This skill is necessary for project managers as it makes the one who is communicating his/her ideas to the project manager feel more important and valued. Further, it improves the quality and depth of communication (Mersino, 2014). More critically, it leads to a feeling of trust between the speaker and the project manager, which is necessary for a successful collaboration (Mersino, 2014).

Time Management

Time management plays a critical role in the job of a project manager as it is important for monitoring, developing, and managing the schedule of a project (Marchewka, 2015). It consists of recognizing the various activities and phases of a project and assigning, sequencing, and estimating the resources required for the completion of each activity in order to lead a project towards successful completion (Marchewka, 2015). Lack of proper time management was noted as one of the primary reasons for the failure of the Trilogy IT project at the FBI (Schwalbe, 2015). The lack of

proper time management resulted in the project taking more than four years and costing the government exceedingly (Schwalbe, 2015). The purpose of the IT system was to provide FBI agents with integrated intelligence, combining information from different silos (Schwalbe, 2015). The mission had failed due to accelerating costs and lack of time management (Schwalbe, 2015). When congressional hearings were held, it was discovered that the project suffered from a number of issues, such as lack of clear requirements, changes in leadership, and lack of scheduled milestones or penalty provision for failure to achieve the deadlines (Schwalbe, 2015). When the system was finally completed, its cost was $537 million, significantly higher than its initial budget of $200 million (Schwalbe, 2015).

Time management has been described as the process that is necessary for the development of the schedule of the project (Wood, 2014). It consists of defining activities, recognizing those activities that need completion for delivering the project on time, sequencing the activities, understanding if it is possible to finish activities in sequence or in parallel, estimating the duration of activities, scheduling on the basis of resource availability, and controlling the schedule so that the procedures and processes are in order (Marchewka, 2015). While it is true that there are a number of competent software packages available for achieving successful time management, the success of a project is a process that involves thoughts that precede the utilization of tools. It is important that activities are clearly thought out which makes the estimations of software more efficient (Marchewka, 2015).

After defining the activities of the project, a project manager has to make sure the relatively exact duration of each activity (Shooshtarian, Ameli, & Aminilari, 2013). Here,

too, estimation depends on the project manager's thoughts (Shooshtarian et al., 2013). Estimating the time required for the completion of each activity in a project depends on a number of variables, such as how complex the activity is, the number of resources necessary to finish an activity, and the required tool and environment to assist members working on an activity (Shooshtarian et al., 2013). In addition, there will be lower level of confidence in the beginning as there is a lack of complete understanding of the project (Verbeke & Tung, 2012). On the other hand, as the learning related to a project increases, new patterns of information emerge that increase the understanding about the various aspects of a project (Shooshtarian et al., 2013). With such updates in estimations, the confidence in the new budget and schedule increases (Verbeke & Tung, 2012). While it is true that there is no single method that can ensure complete accuracy in estimation, it is important that project managers utilize a number of different methods such as three-point or parametric estimation, rather than relying on guessing (Verbeke & Tung, 2012).

One important aspect of time management is milestones (Shooshtarian et al., 2013). These refer to important and noteworthy events that give proof of completion regarding the deliverable to which each corresponds and ensures that a specific facet has been completed successfully (Shooshtarian et al., 2013). There is a close relationship between milestones and deliverables; however, they refer to different phenomena (Verbeke & Tung, 2012). Deliverables consist of reports, prototypes, final system for application, and plans (Marchewka, 2015). On the other hand, milestones tend toward achievement (Marchewka, 2015). For instance, if the milestone refers to the acceptance of a certain development by stakeholders, a deliverable refers to the prototype development of that development (Verbeke & Tung, 2012). It is only when a particular

development has been approved and accepted by a stakeholder that it is possible for a project manager and the team to move forward towards the next phase (Marchewka, 2015). Milestones ensure that the successful achievement of each milestone will result in the successful completion of the project on time (Marchewka, 2015). Milestones also ensure that the team working on a project remains focused (Verbeke & Tung, 2012). If deliverables are divided into smaller series, it is easier for individuals to remain focused on the task. Furthermore, milestones are also realistic (Shooshtarian et al., 2013). They help in encouraging the team working on a project (Verbeke & Tung, 2012). Moreover, if a milestone is a significant one, the project manager can use the opportunity to celebrate the occasion before the team moves forward towards the next phase (Shooshtarian et al., 2013).

One important advantage of a milestone as part of time management is its ability to decrease the risks associated with a project (Verbeke & Tung, 2012). The successful achievement of a specific milestone provides the chance to conduct a progress review of the whole project (Verbeke & Tung, 2012). If it is found that there is a need for more resources, they can be provided that this stage (Verbeke & Tung, 2012). They also decrease risk as they manifest the proof of the plan. In the context of government IT projects, a number of risks are caused by the team's dependence on new technology (Shooshtarian et al., 2013). Milestones provide an opportunity to test an idea that is crucial for the successful completion of a project (Marchewka, 2015). Thus, the significance of time management in the context of government IT projects can be established (Verbeke & Tung, 2012). Furthermore, as the responsibility of time

management falls upon project managers, it is critical to ensure that they are supervised in their ability for time management in a government IT project (Marchewka, 2015).

Leadership

As Weinstein and Jaques (2010) stated, "Leaders have to manage; successful management on the part of leaders is seen in their willingness and ability to participate in relevant project management activities" (p. 129). Successful IT performance and its direct link with positive IT leadership, communication, and cost management is the focus of this research, which examines the skills necessary for government IT management. Leadership strategies are suggested in the conclusion of this article as a way of increasing IT performance (Feld & Stoddard, 2004).

Greshes and Ebrary (2012) outlined nine easy steps to training well-motivated workers for new managers. Government IT managers can follow these steps to make better teams and give optimum results. The major issues discussed here include making the workers feel that they are autonomous. Greshes and Ebrary (2012) discussed how to get the workers to work with their brains to solve problems independently. This gives them better speed and confidence in their work. Another major issue discussed by Greshes and Ebrary is that making a team relevant and competent is beneficial for the team and the project. The authors detailed how seen and unseen factors are inter-related, and application of one leads to the growth of another.

Kassel (2010) presented an analysis of leadership in the IT industry in relation to its rapid growth and advancements. The definition of effective IT leadership in the book draws on successful leadership strategies displayed by those outside of the IT industry, thereby emphasizing the general and particular requirements of contemporary IT leaders.

Mcrobbie and Wheeler (2010) suggested three methods of successful IT leadership. These methods involve the integration of business and IT goals, widespread input into strategic plans, solid resources and, above all, collaborative leadership between business and IT executives.

Guibord (2012) took into account IT leadership and organizational challenges and outlined strategies for leaders in the IT industry to keep their skills and knowledge current, business-oriented, and attuned to future developments. Guibord's concept encompasses innovation, collaboration, and the roles of influencer and advisor. In this context, it is important to note that the support of top managers can affect the commitment of middle managers towards implementation of innovation (Birken et al., 2015). Leadership in the context of government IT projects is important while exploring management of project managers (Birken et al., 2015). The activity of top managers has a significant influence on how mid-level managers carry out their work (Birken et al., 2015). For instance, it was found that the primary area in which the support of top managers affect the work of mid-level managers includes commitment (Birken et al., 2015). The support of top managers affects how committed mid-level managers are to the implementation of innovations (Birken et al., 2015).

The leadership factor in the context of project managers and their supervisors in government IT projects is also influenced by the attitude of these members towards their jobs (Davenport, 2013a). Attitude consists of the individual preferences of people regarding what they like and dislike in terms of other people, activities, events, and objects (Moreno, Páez, Chauz, & Cáceres, 2014). The presence of strong attitude influences the behavior of an individual towards pay, promotion, benefits, supervision,

and other factors that result in negative or positive reactions (Moreno et al., 2014). In the context of this study, it is also important to be aware of important differences between how job attitudes affect managers in government as opposed to the private sector. Therefore, a study examining management of government IT project managers is necessary to understand how various constructs related to the successful completion of a government IT projects are interconnected.

In the context of managerial leadership, the best managers demonstrated a shared ability to deal with different performance dimensions (Naff, Riccucci, & Freyss, 2013). The success of different organizations is dependent on an ability for rapid learning (Naff et al., 2013). The quality possessed by good supervisors consists of using their skills in connecting different employees through coaching and training (Naff et al., 2013). Similarly, they also have the ability to create a trusting atmosphere during work while emphasizing the focus on development (Naff et al., 2013). They possess integrity along with humility, consistency, sensitivity, and honesty, characteristics which result in higher trust toward them (Reich, Gemino, & Sauer, 2012). These qualities have tremendous implications regarding how growth-oriented results are achieved by the leadership of the managers in an organization (Reich et al., 2012). In the light of this fact, it is important to note that the crucial role that leadership plays in the success of a project manager must be supported by their supervisors. Such leadership qualities as reported in this section should be nurtured and their presence noted by supervisors of managers in order to ensure that a government IT project is moving towards success. The absence of such supervision may result in delays and project failure (Trivellas, Gerogiannis, & Svarna, 2013).

Interpretative Phenomenological Analysis Case Study

Interpretative Phenomenological Analysis (IPA) is a qualitative methodology that rejects the behaviorist methodology of examining people and instead focuses on first-person accounts to determine the meaning of an individual's experience. Researchers employing IPA can examine an individual's view of the world and successfully learn how that person understands his or her experience. These insights have proven beneficial for policymaking (Smith, Flowers, & Larkin, 2009).

IPA research methodology is used to determine and explain how a given person, under particular conditions and circumstances, makes sense of the world. According to Fade (2004), this methodology was developed to understand the different meanings that two different individuals can attach to the very same experience, a result that can arise because two people can experience two different parts of reality. The origins of phenomenology, or the study of being, can be traced back to Edmund Husserl's non-empiricist worldview, which focused on understanding lived experience rather than empirical data. According to Larkin and Thompson (2012), the IPA methodology developed from the work of Husserl's successors, especially that of Martin Heidegger and Maurice Merleau-Ponty, who emphasized the worldly and embodied nature of human existence. According to Fade (2004), the modern-day IPA methodology, "seeks an insider perspective on the lived experiences of individuals" and "embraces the view that understanding requires interpretation" (p. 648). The IPA methodology is, therefore, both phenomenological, through its use of data collection via case studies, and interpretative, because researchers must interpret the data to understand the lived experience of an individual.

IPA case studies can be conducted in small groups or with individuals. Smith (2004) argued that single case studies—case studies that are completed with data from one individual—are preferable, but whether at the individual or group level, IPA case studies, due to their idiographic and interrogative nature, necessarily require a small sample size. The researcher begins a single case study by constructing broadly framed and open questions (Smith & Osborn, 2008, p. 56). The researcher then conducts the interview and attempts to collect data from that interview. According to Smith and Osborn (2008), semi-structured interviews, rather than fully structured interviews, are easiest to collect data from because the interviews guide the participant, rather than dictate (p. 57). "In this relationship, the respondents can be perceived as the experiential expert on the subject and should, therefore, be allowed maximum opportunity to tell their story" (Smith & Osborn, 2008, p. 59). Semi-structured interviews thereby allow for more flexibility and greater coverage.

The insights from IPA case studies have proven extremely beneficial, especially for the development of mental health policy. Fade (2004) found that IPA is "useful for carrying out research with healthcare professionals" (p. 648). Larkin and Thompson (2012) also found that IPA research may help us to "develop and evaluate services, therapeutic interventions, and so on…interpret the associated findings from conventional quantitative research…[and] situate and understand people in their socio-cultural contexts" (p. 114). These documented benefits prove that quantitative research alone has disadvantages, and that researchers often need qualitative IPA research to understand fully the lived experience of an individual or a process. This case study produced qualitative findings by adhering to the methodology of the IPA case study.

After constructing questions that focus on the experience of the participant, conducting a tape-recorded interview and transcribing it, the researcher attempts to discover patterns, or themes, within the data and looks for connections between those themes in order to group them in a meaningful way (Fade, 2004, p. 649). According to Smith and Osborn (2008), researchers should read the transcript several times in detail and annotate line-by-line interesting or significant things that the participant has said (p. 67). These themes are then put together in a structure, such as an ordered table, so that an overview of the analysis is easily presentable. For a single case study, a narrative account of the structure is then produced with the goal of identifying what matters to participants and what those things mean to them, which requires a degree of interpretation (Larkin and Thompson, 2012, p. 105). In a group case study, the process is repeated, and more data is collected from other individuals before a narrative is produced.

The IPA approach is used to help researchers understand a person's experience of certain phenomena. This IPA qualitative approach uses a formulated process to produce case studies that have provided insight into the individual experience. The researcher examines an individual's experience through an interview, which is then reviewed and analyzed by a researcher to interpret the lived experience of the participant. The results of these studies have been instrumental in improving public policy, and researchers have gained useful perspective on how people perceive the world around them.

Summary

The review of the literature provides a clear understanding of the research and due diligence in the understanding of IT technical difficulties and problems associated with government project failure, leadership, communication, and advantages. According to

Mark Twain, history never repeats itself, and it can be argued that stakeholders holds merit in the world of IT. This research has given us a rudimentary platform for establishing and framing a research question. Now that we have identified the reasons why projects and implementations typically fail, we may generate circumstances in which correcting these problems may lead to a framework of needed skills for leaders of project managers in government.

Arguably, a company or a government is only as good as its top and most qualified professionals. Having established that, it is even more important to realize that management is likely the most important issue which needs improving. Kerzner (2009) noted that without senior management support, very few initiatives are ever successful. Management is where all the problems begin, the starting point. Of course, it would be naïve to assume that correcting management issues will inevitably fix all the other issues and problems causing government project failures, but it certainly is the first place to start.

Chapter three contains an explanation for using the Interpretative Phenomenological Analysis (IPA) case study methodology for the study of skills needed for supervisors of government IT project managers, and describes how the results were obtained. The IPA methodology and technique were chosen so that participants could articulate their expectations of what skills are perceived as needed to supervise government project managers. The primary goal of this research was to fill the research gap regarding the phenomenon of government senior management perceived required skills to supervise government project managers and compare those findings with the

supervisors' and project managers' own perceived required skills needed to supervise government managers.

Chapter 3: Methodology

Introduction

For this research, the researcher conducted an interpretative phenomenological analysis (IPA) case study to identify what skills are needed for supervisors of government IT project managers through the perception, experience, and views of the government senior managers, supervisors, and project managers. Sokolowski (2008) concedes that, "Phenomenology is the science that studies the truth. It stands back from our rational involvement with things and marvels at the fact that there is a disclosure; it is the art and science of evidencing evidence" (p. 185). Moustakas' (1994) research states the importance of understanding what skills are needed to supervise government projects. Moustakas (1994) also states, "The primary source of knowledge is the perception, the source cannot be doubted" (p. 53).

This IPA study focused on the supervisors of information technology in government. The focus of the research was a single case study represented by government agencies in northern Virginia. In this IPA study, the researcher interviewed 15 participants: five senior managers, five supervisors, and five project managers, all in the IT field as contractors or government employee. This design was chosen because it allowed the IT project managers, supervisors, and senior managers the opportunity to articulate their views and lived experiences to contribute to the list of skills required to supervise a government project manager.

The goal of this IPA case study was to evaluate the perceptions and experiences of government IT senior manager's, supervisor's, and project manager's skills. The study intended to explore the perceived skills needed to supervise project managers in

government. The 2013 government portfolio status report identified IT talent management as an area of opportunity for improvement. The report further delineated that IT improvement efforts should include the "sourcing of qualified hires to fill critical skill gaps" (VanRoekel, 2013, p. 298). The situation where supervisors of government project managers are inadequately prepared to manage is found throughout organizations (Sumner, 1999).

Purpose of the Study

The purpose of the research was to address and identify the critical skills supervisors of IT project managers in government, particularly government senior managers, supervisors, and program managers, need in the oversight of any government IT project manager. This study aimed to establish which skills are necessary to manage IT project managers in government. In identifying such skills, the training of government senior and program managers can be improved, to realize the understanding and practice of these skills in the implementation of future projects.

Problem Statement

One of the main reasons government IT projects performed poorly was related to senior management, supervisors, and project management lacking the critical skills needed to accomplish their responsibilities. Patanakul and Omar's (2010) research found that common reasons government IT projects performed poorly was related to senior management, project management, and contract management. However, the literature failed to address the reasons directly associated with the failure. The perceived problem in the literature generated the research questions presented.

Research Questions

To identify what skills are experienced as required to supervise government project managers, this research explores the following research questions:

RQ1: What skills do senior government managers view as critical for supervisors of IT project managers?

RQ2: What skills do supervisors of government IT project managers view as critical in order to manage IT project managers?

RQ3: What skills do IT project managers view as critical for their supervisors in government?

Research Methodology

The methodology chosen for this research was an interpretative phenomenological analysis (IPA) qualitative case study to reveal what skills are needed for supervisors of government project managers, through the experiences of government IT senior managers, supervisors, and project managers.

Research Design

An interpretative phenomenological analysis single case study design was used to understand the lived experience and perceptions of what skills are needed to supervise government IT project managers. Moustakas (1994) stated, "From the Individual Textural-Structural Descriptions, develop a Composite Description of the meanings and essences of the experience, representing the group as a whole" (p. 121). An understanding of the phenomenon of skills needed to manage project managers was gained through in-depth structured interviews. The questions were posed to identify what skills are needed to manage government IT project managers, through the lived experience of working in the profession.

Participants

The participants selected for this IPA research consisted of government employees and contractors in the information technology field. The participant sample comprised of five senior managers, five supervisors, and five project managers. Starks & Trinidad (2007) supports a diverse sample that might provide a broader frame from which to distil the essence of the phenomenon.

Instrumentation

Three semi-structured interview protocols were developed as the instruments for this IPA single case study. Five senior government managers who work in the information technology field, five IT supervisors, and five IT project managers were interviewed. The interview questions for the government senior managers can be found in Appendix A, for the IT supervisors in Appendix B, and for the IT project managers in Appendix C.

This researcher used interview questions from Gregory Skulmoski's Project Participant Competence, and Joseph Ancosky's *Defining the Role of Senior Manager: An Interpretative Phenomenological Analysis Case Study for Project Management Delivery*. The interview questions were modified to align to the IPA format. Table 1 lists the skills used for the in-depth interviews protocol.

Table 1

Skills List

Effective Questioning Skills	Technical Skills	Achievement / Results Skills
Listening Skills	Customer Service Skills	Written & Oral Communication Skills
Leadership Skills	Initiative Skills	Team Building & Conflict Resolution Skills
Motivation Skills	Analytical Skills	Project Management Skills
Problem Solving Skills	Organizational Skills	Interpersonal Skills

Data Collection

In this study, the researcher used two phases to collect the data. Phase one was utilized to collect data from the literature to identify current job skills for project managers in non-government organizations. Phase two of this study was the in-depth, semi-structured interviews that were scheduled via a phone call to the participants. Yin (1989) argued that the researcher must understand the theoretical issues as judgments that have to be made during the data collection phase. Strauss and Corbin (1990) stated having a working knowledge of the literature provides a researcher with the ability to gain "theoretical sensitivity." Simon (1994) actively supported a review of the literature as an integral component of the exploratory phase of data collection.

Phase One

Phase one consisted of three steps, as shown in Figure 3. Step one was the collection of the skills from Skulmoski's (2005) "Project Participant Competence," Dutta's (2000) "Assessing the Critical Behavioral Competencies of Information Technology (IT) Project Managers at Southern California Edison," and USAJOBs' official website for applying for federal jobs. Step two was to remove overlapping skills

and combine Skulmoski and Dutta's list. Step three was to combine the lists and remove any remaining duplications.

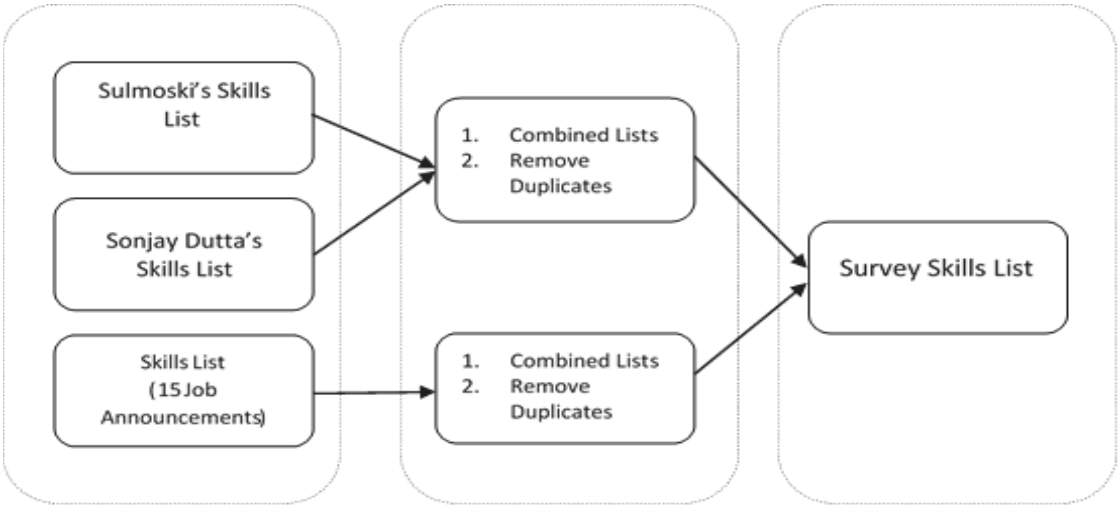

Figure 3. Procedure for skills selection.

Skulmoski

Skulmoski's research is a Delphi study on discovering the skills or competencies of "information systems project participants" and analyzing which skills or competencies required to lead successful projects (2005, p. 1). His research sample contained 21 participants with a total of 35 years of public sector experience. The majority of his sample was employed as information systems practitioners in either the technical, managerial, or mixed role. The researcher used the following criteria in selecting the skills from Skulmoski's research:

1. The skills in the generic role section were chosen to eliminate position bias.
2. The top two skills were selected from the following categories in the information systems column, and greater than or equal to 19% of the survey participants responded they were important:
    a. Communication

b. Leadership

c. Negotiation

d. Professional Conduct

e. Project Management Skills

f. Social Skills

Excluded from consideration was the "Person Attributes" category because none of the skills on that list received greater than or equal to 19% of the surveyed participants responding as important.

Dutta

Dutta's (2000) research focused on identifying competencies and skills that should be present among information technology (IT) project managers to promote effective performance. The author stated that one of the major challenges that IT management faces is to develop the "staff requisite skill and knowledge to be successful" (p. 4). Dutta's qualitative research was geared towards, "IT project managers required information about how they can remain successful in their environment and IT managers and directors need information about the characteristics of outstanding project managers for selection and succession planning" (Dutta, 2000, p. 5).

The following criteria were used in selecting the skills from Dutta's research:

1. The selected the skills / competencies from the IT Manager's response to the competency rating questionnaire (CRQ)
2. The top 10 ranking skills out of 20

Dutta's skills/competencies were sequentially ranked in order of importance to the surveyed participants; therefore, excluded from this research were competencies/skills ranking lower than the 10th ranking in response to the CRQ.

USAJOBS

Regulation 5 U.S. Code § 3330 requires the listing of government-wide vacancies to be listed in a single location: "Under 5 U.S.C. 3330, agencies are required to report job announcements to Office of Personnel Management (OPM) for vacancies for which an agency will accept applications from outside the agency's workforce. This requirement is implemented through part 330, subpart A" (Carnell, 2001, p. 1). USAJOBS website was created as the official website used to apply for federal government jobs. The skills listed in the job announcements are what the individual agencies consider important in their hiring considerations. The job announcement sample was gathered by searching the USAJOB site for the phrase, "Information Technology Supervisor." A selective sample was chosen using the following general criteria.

1. The job description was for a supervisor or manager for an IT position.
2. The job location was in the United States.
3. The series and grade were between GS-13 and SES.
4. The job duties description contained project management.
5. The position was for a full-time and permanent job.

Excluded from the selection criteria were job announcements for National Guard, Army, Air Force, or Air Core enlistment. A sample of 15 job announcements was selected which fit the above criteria with the distribution in Table 2.

Table 2

Job Announcement Selection Number

Grade	Number to be Selected
GS 13	5
GS 14	5
GS 15/SES	5

The USAJOBS skills list was selected and based on the skills listed in the "How you will be evaluated section." The job announcement lists the skills and qualification requirements for the job in this section (Archives, 1999). The skills list utilized during the in-depth interviews is in Appendix D.

Phase Two

The researcher used qualitative, in-depth, semi-structured interviews with a sample size of five government senior leaders, five government IT supervisors of project managers, and five project managers to determine if there are any underlying themes or subordinate themes that emerged about the skills needed to supervise government IT project managers.

The semi-structured interviews gave the researcher flexibility and allowed participants to elaborate on the perspectives of the project leader and supervisor in relation to their own. The interviews were scheduled via a phone call to the participants. There was a follow-up email sent to the participants to confirm the scheduled interview time and location. The interview location and time were at the discretion of the participants. There were eight interview questions for the senior managers; and the researcher asked 10 interview questions for the government IT supervisors and project managers. The interview was scheduled for up to 45 minutes. A participant consent

form was dated and signed before the start of the interview session. The consent form used appears in Appendix E.

According to Smith and Osborn (2008), the interviews should be a guided schedule, rather than a set list of questions. A guided schedule allows the participants the opportunity to introduce issues important to him or her. The interpersonal approach allowed the researcher to enter the psychological and social world of the participant (p. 58-9). The interview structure should thus be envisioned as a loose, malleable process that is open to adjustment. Smith and Osborn (2008) further explained that "[g]ood interview technique therefore often involves a gentle nudge from the interviewer rather than being too explicit" (p. 61). This technique is effective when the participant is hesitant and reluctant to speak about a certain topic. Smith and Osborn (2008) suggested a similar technique, known as funneling, which allows a researcher to elicit general, and then particular, views about a given issue (p. 62). These techniques, when adhered to, should elicit genuine responses from participants. As a result, when the in-depth interview protocol is followed, researchers gain insight into a participant's view of reality without muddling that reality.

The researcher conducted the interviews. The in-depth interviews were recorded and transcribed with the help of the Nvivo 10 application. Nvivo is a qualitative software application that facilitates qualitative analysis from different data sources. The transcription was completed by TranscribeMe transcription service. The verbatim transcription was validated by the researcher and authenticated by the participants. The primary objective of the semi-structured interviews was to discover new skills and competencies that were ignored or overlooked by previous research.

Participants

The research participants consisted of five supervisors of government IT project managers, five senior managers, and five government project managers. The researcher utilized purposive sampling for this IPA research. The sample was chosen from five different government agencies and three different contracting companies.

According to Skulmoski (2005), "The key limitation with purposive samples is that they may not represent the entire population, which lessens the ability to generalize the result to the wider population" (p. 244). However, the spirit of the IPA is not concerned with generalizations for the population as a whole and instead focused on driving the contextual descriptions and analysis from the limited group of participants (Forrester, 2010). This researcher selected the participants because they can articulate their understanding of the research problem and central phenomenon (Creswell, 2007).

Senior Leader

The senior leader sample consisted of five senior managers or contractors in the government who have supervised IT project managers, with 10 years or more of leadership experience. The senior leader participants are current government employees in the GS-15 through SES level or contractors working as an advisor to senior government management.

Supervisor

The government supervisors of IT project managers were current government or contract employees. The project manager's supervisor sample consisted of five government participants who have supervised IT project managers or five contract

participants who were under contractual obligation to supervise IT projects for the government.

Project Manager

The government project managers were current government or contract employees. The project manager sample consisted of five government participants who have managed or are currently managing government IT projects.

Validity

Lucy Yardley (2000) suggested four principles for "assessing the qualitative research validity" (p. 219). The first principle is context sensitivity. Smith, Flowers, and Larkin (2009) stated that "Because IPA tends to recruit purposive samples of participants who share a particular lived experience; hence the very choice of IPA methodology is centered upon the need for sensitivity to context through close engagement with the idiographic" (p.180). The researcher attempted to establish sensitivity through communication of the researcher's intentions. Ethical practices served to promote respect and sensitivity of both participants and researcher. The second principle is rigor and commitment. Smith, et al., (2009) argued that

> There is a degree of commitment shown in the attentiveness to the participant during data collection and the care with which the analysis of each case is carried out. Thus to conduct an in-depth IPA interview requires personal commitment and investment by the researcher. Rigor refers to the thoroughness of the study in terms of the appropriateness of the sample to the question at hand, the quality of the interview and the completeness of the analysis undertaken. (p. 181)

The third principle is the transparency of coherence of the research. Smith and Osborn (2008) stated that one can fulfill that requirement by, "carefully describing how participants were selected, how the interview schedule was constructed, and what steps were used in the analysis. Tables can be included to detail each of these features – the participant, the schedule, an element of analytic process" (p.182). To facilitate transparency selected participants reviewed and confirmed the accuracy of the transcripts to ensure that their account was a true representation of the interview conducted. The final principle is impact and importance. The true test of a study's real validity is "whether it tells the reader something interesting, important or useful" (Smith, et al., 2009, p. 183).

The validity of the research is the ability of the research to draw meaningful and accurate conclusions from the two phases of the research (Creswell, 2007). Onwuegbuzie and Johnson (2004) argued that accurate conclusions may be problematic in a triangulation design because of the merger of two diverse databases; however, meta-inferences can still be drawn from the analysis (Creswell, 2007. p. 146). Inference quality refers to the degree to which a research reflects accurately the specific concept or construct the researcher is attempting to measure (Tashakkori & Teddlie, 2003).

Due to the interpretative nature of IPA qualitative research, the researcher may introduce bias into the analysis (Ivankova, 2002). To counter this and increase the validity of the research, the researcher adhered to the four principles for assessing research validity (Yardley, 2000). According to Smith, et al., (2009), the four validity measures include:

> (1) context sensitivity which was addressed by utilizing the IPA methodology that is centered upon the need for sensitivity to context; (2) rigor and commitment which was achieved through the requirements of the chosen methodology; (3) transparency of coherence of the research, which was fulfilled by careful description of research process and the use of tables, and (4) impact and importance—the true test of a study's real validity is whether it tells the reader something interesting, important or useful (p. 183).

Confidentiality

The confidentially of the participants was protected by coding each interview response as confidential. Fictional names were assigned to the in-depth interview responses. The transcription service received the fictional names to ensure the confidentiality of the participants. The research data was kept in an encrypted electronic file, and the soft copies of the responses are kept in a secure file cabinet.

Data Analysis

Although common practices and principles have emerged, a standard process by which to analyze IPA qualitative data can be defined by two leading formats in the IPA field. Smith, et al., (2009) developed the first analysis method to be evaluated. The analysis model developed by Smith, et al., (2009) is a coalescence of six steps to analyze the data by exploration, scrutiny, consideration, and assessment on several different levels. The application of these steps is relevant to each individual case and must be carried out as indicated in order to be effective.

Smith, Flowers, and Larkin

Smith, et al., (2009) suggested a combination of six steps applied in sequential order which involves analyzing the data on several different levels. The application of these steps is relevant to each individual case and must be carried out as indicated in order to be valid.

Step One: Reading and re-reading. Full immersion into the collected data is critical prior to beginning the analysis. This will include: (a) listening to the audio recording; (b) reading the interview transcripts; (c) re-reading the transcripts with a focus on the participant's voice, actions and noted non-verbal cues; and (d) reviewing notations of key observations during the interview process. The purpose of this review is not to evaluate the information, but to process the conversation with the participant as the focal point. During the review, note-taking is encouraged, although not for review or comparison but for later assessment, as a means of setting aside any analysis until after the data immersion step is complete.

Step Two: Initial noting. The process of noting the initial level of analysis is exploratory in nature and focuses on the content and language utilized by the participant in response to the inquiry. The goal of this step is to strip away the superficial content and look closely at the text to identify the core of the conversation. This discovery will often reveal a phenomenological focus that can be utilized to further evaluate the information in context and comparison.

Step Three: Developing emergent themes. Although potentially counterintuitive, the deconstruction of the transcripts based on experiences is helpful in identifying themes throughout the data. The re-organization of data into manageable and relevant portions is a key component of the hermeneutic circle. This allows the

researcher to identify phrases, pieces of the whole conversation, in order to relate them to one another. Titling these themes, once identified, can assist in the further identification of supporting text and contextual significance.

Step Four: Connections across emergent themes. Once a set of themes has been established, it is important to understand that the order in which they presented themselves may be of some significance yet unknown. Once the themes are organized, charting all relevant concepts resembles solving a puzzle and attempting to fit the themes together. The themes must not be forced into relationships, and some themes may be irrelevant, but should not be discarded completely until all steps of the analysis are completed.

Step Five: Moving to the next case. When multiple participants are involved, it is necessary to restart the process each time, carefully treating each participant as a new analysis. It is inevitable that the findings of the first case lingers in mind. However, it is necessary to remain as neutral as possible in repeating the process. Allowing new themes and patterns to emerge, ones that have not been present in previous transcripts, is a critical part of effectively interpreting the participants' responses.

Step Six: Patterns across cases. Once all participant data is reviewed, it is necessary to compare each analysis for trends and patterns across all cases. This is best done visually as it is easier to identify trends when looking at all case information. The themes may not translate exactly, but could potentially be found to correlate with a higher level, with individual cases have their own unique details emerge under common theoretical models.

Clarke Moustakas

Moustakas (1994) developed the second analysis method, which consists of seven steps. The analysis model developed by Clarke Moustakas is a combination of seven steps applied in sequential order and involves analyzing the data by utilizing a modified version of van Kaam's (1959, 1966) method of analysis.

Step One: Listing and preliminary grouping. The initial step of the evaluation is to make a comprehensive list of all relevant verbal expressions in the context of the focus experience.

Step Two: Reduction and elimination. Focusing on the identification of the invariants, each verbal expression must meet two requirements: (a) the expression must contain a reflection of a relevant moment, and (b) have the potential for abstract labeling. Eliminating all other expressions completes this step.

Step Three: Clustering and thematizing. Combining all related expressions under common thematic elements to identify the core themes of the participant experience.

Step Four: Final identification of the invariant and themes for validation. This step involves a comparison of the identified themes, and the original participant transcript to ensure that the themes are consistent and relevant in the context of the entire participant experience.

Step Five: Individual textural description. Create an overall picture of the lived experience of the participant, as recorded by each co-researcher by using examples of verbal cues and text, verbatim, to represent the participant response.

Step Six: Individual structural description. The conversion of the textural descriptions into a structure encompassing the meaning, thematic trends, and variation, based on individual interpretation as recorded by each co-researcher.

Step Seven: Textural-structural description. The final focus of the participant creates individual textural-structural designs for each participant, highlighting the derived meaning, experience, and themes of each individual.

Similarities

Both methods incorporate similar techniques but also employ some unique evaluation methods and interpretative analysis, as shown in Table 3.

Table 3

IPA Data Analysis Comparison List

Steps	Smith, Flowers & Larkin	Moustakas
1	Reading & Re-reading	Listing & Preliminary Grouping
2	Initial Noting	Reduction & Eliminations
3	Developing Emergent Themes	Clustering & Thematizing
4	Connections Across Themes	Final Identification of the Variant by Validation
5	Next Case	Individual Textual Description
6	Patterns Across Cases	Individual Structural Description
7		Textual-Structural Description

The two models incorporate the identification of themes throughout the process, which is the foundation of IPA, and the elimination of themes that are not relevant to the larger picture of analysis. They also agree in the evaluation of each individual participant transcript prior to the cross-examination of all collected data. The creation of visual and charting aids in both models signifies the potential importance of visual evaluation of contextual events.

Differences

The major differences are within the initial steps of the models with Moustakas' (1994) theory jumping to the listing of expressions and evaluating relevancy, where Smith, Flowers, and Larkin's (2009) model focuses on immersion into the subject matter before the analysis begins. Moustakas' (1994) model, although longer, seems much less intuitive and almost quantitative in nature with the early elimination of themes and focus on the researcher rather than the participant. On the contrary, Smith, et al., (2009) focus on the experience of the participant immediately, going as far as to encourage the researcher to experience the interview again by re-reading the transcripts and listening to the verbal cues given by the participant before analysis begins.

The Smith, Flowers, and Larkin's (2009) method was the preferred model for this IPA case study qualitative research. This IPA single case research captured the lived experiences of government IT senior managers, supervisors, and project managers. The primary data collection consisted of in-depth interviews, whereby the sample size of 15 participants was chosen to ensure the representation of the government agencies. Smith (2004) in his analysis concentrated on "themes" and the available connections within the text (p. 411).

A comparative analysis method was utilized to evaluate the information from the in-depth interviews. The IPA method of analysis consists of five steps of the interpretive process (Smith, et al., 2009). The initial step was reading the transcribed responses several times which allowed the researcher to adhere to Jarman, Smith and Walsh's (1997) recommendation that "IPA researchers should take particular care in their

production of lists of themes to ensure that each theme is actually represented in the transcripts" (p. 138).

Reoccurring themes in the in-depth interviews responses were annotated as they emerged through the coding process. The related themes were regrouped as new patterns surfaced. Once the preliminary assessment of each group of participants was completed, the researcher began the comparison of content. Initially, the data was co-mingled with other like participants, allowing subordinate themes to be identified in each of the three groups. Once these themes were identified, the data was compiled together. This allowed for the completion of the evaluation. Smith, et al., (2009) wrote, "The identification of the emergent patterns (i.e. themes) within this experiential material, emphasizing both convergence and divergence, commonality and nuance, usually first for single cases and then subsequently across multiple cases" (p.79). This research utilized Smith, Flowers, and Larkin's (2009) sequence in Figure 4 to analyze the data collected.

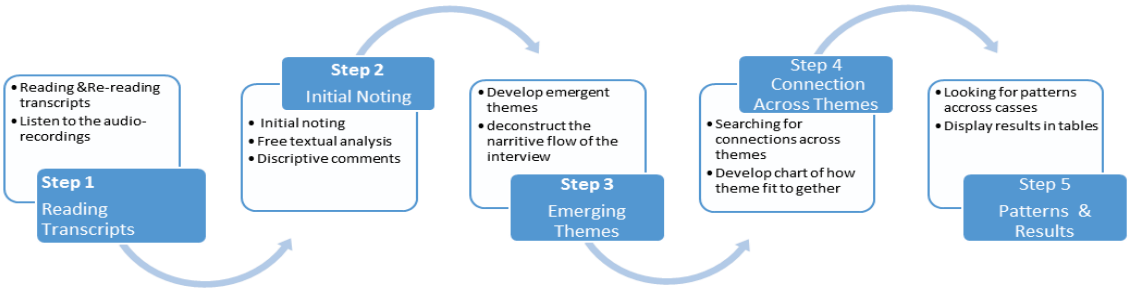

Figure 4. Smith, Flowers, & Larkin IPA analysis process.

The goal of this IPA research was to understand the lived experience of the participant. Throughout the process, the researcher is encouraged to live the expression of the participant's experience. Interrater reliability was not utilized during the analysis

phase of this research. The lived phenomenological experience aids the researcher in capturing richer details, meanings, and winks of interpretation.

Summary

The focus of this research study is to understand what skills an IT supervisor needs to be successful. Additionally, the researcher seeks to understand what competencies the government IT project managers need for managing government projects. Specifically, this study was aimed at finding the skills that are required to ensure that an IT project manager supervisor is successful in completing his/her job responsibilities. The significance of the study is that the skill set that is required to effectively supervise project managers is not naturally incumbent to those in government IT management. The objectives of this dissertation was to identify the skills that supervisors of IT program managers need for supporting government IT projects such as resourcing, budgeting, training, and policy and practice development.

IPA single case studies, which involve lengthy interviews between researcher and participant, were used to gather insightful data about the way people relate to the world and perceive the world. However, this data is only obtained when researchers adhere to in-depth interview protocol. This protocol includes suggestions and techniques that researchers can use to extract genuine, unadulterated information from participants. The data then becomes valuable when it is analyzed using the components of the Interpretative Phenomenological Analysis (IPA) framework. Once the data is analyzed and structured, IPA researchers achieve their goal by developing a narrative about the participant's lived experience on the basis of the data.

Chapter four presents a detailed description, analysis, and discussion of the results found in the qualitative phenomenological research study. The findings are organized by research questions, then by thematic themes uncovered during the analysis.

Chapter 4: Findings, Conclusions, and Recommendations

Introduction

The purpose of this qualitative interpretative phenomenological analysis (IPA) single case study was to understand the phenomenon of senior managers', supervisors', and project managers' expectations of skills required for supervisors of government project managers. The researcher identified the critical skills which supervisors of IT project managers in government, particularly government senior managers, supervisors, and program managers, need to oversee any government project. The aim of this study was to provide valuable knowledge to the IT profession in order to clarify the skills that are necessary to supervise IT project managers in government. The researcher's intent was to demonstrate that the identification of such skills would improve the training of government senior and program managers.

The researcher focused this IPA study on the supervisors of information technology in government, located throughout northern Virginia. In this IPA study, the researcher interviewed 15 participants: five senior managers, five supervisors, and five project managers, all in the IT field as contractors or government employees. The senior leader sample consisted of five senior managers or contractors in the government who had supervised IT project managers, with ten years or more of leadership experience, and who are current government employees in the GS-15 through SES grade level or contractors working as an advisor to senior government management. The demographics of the participants are displayed in Appendix F. The government supervisors of IT project managers were current government or contract employees who had supervised IT project managers or contract participants who were under contractual obligation to supervise IT

projects for the government. The government project managers were current government or contract employees who had managed or were managing government IT projects.

The data collection for the study proceeded in two phases. Phase one involved collecting data from the literature to identify job skills deemed essential for project managers in non-government organizations. Yin (1989) argued that the researcher must understand the theoretical issues as judgments that have to be made during the data collection phase. Simon (1994) actively supported a review of the literature as an integral component of the exploratory phase of data collection. The researcher developed three semi-structured interview protocols as instruments for this IPA single case study; the protocols were based on Gregory Skulmoski's *Project Participant Competence,* Sanjay Dutta's *Assessing the Critical Behavioral Competencies of Information Technology (IT) Project Managers at Southern California Edison,* and Joseph Ancosky's *Defining the Role of Senior Manager: An Interpretative Phenomenological Analysis Case Study for Project Management Delivery*. The interview questions were then modified to align with the IPA format. This design allowed the IT project managers, supervisors, and senior managers the opportunity to articulate their views and lived experiences and contribute to the list of skills required to supervise a government project manager.

Phase two comprised the in-depth semi-structured interviews. The interviews were scheduled via a phone call to the participants. Then the researcher sent a follow-up to the participants to confirm the scheduled interview time and location. The interview location and time were at the discretion of the participants. There were eight interview questions for the senior managers and ten interview questions for the government IT supervisors and project managers. The interviews were scheduled for up to 45 minutes.

Prior to the start of the interview, the participants signed and dated the consent form. The confidentiality of the participants was protected by coding each interview response as confidential. Fictional names were assigned to the interview participants. The transcription service received the fictional names to ensure the confidentiality of the participants. The research data was kept in an encrypted electronic file, and the soft copies of the responses were kept in a secure file cabinet.

The transcription was completed by TranscribeMe transcription service. The verbatim transcription was validated by the researcher and authenticated by the participants. The researcher performed data analysis by using NVivo Pro Software Program to systematize coding and tabulation of the themes, patterns, and relationships that emerged from the data. The researcher then annotated reoccurring themes from the in-depth interview responses as they emerged through the coding process. The related themes were regrouped as new patterns surfaced. Once the preliminary assessment of each group of participants was completed, the researcher began the comparison of content. Initially, the data was co-mingled with other like participants, allowing subordinate themes to be identified in each of the three groups. Once these themes were identified, the data was compiled together. The researcher addresses how these findings correspond to the topic, including the conceptual/theoretical framework, outliers or discrepancies that emerged during analysis.

Analysis findings for each question appear below.

Senior Management

Research Question 1. What skills does senior government management (SM) view as critical for supervisors of IT project managers?

Major theme 1: Leadership. The first major theme is leadership. Four out of five senior government management participants ranked leadership as a top-five critical skill for IT managers. Even the sole participant who failed to rank leadership as a top-five critical skill incorporated the concept of leadership into the long-form answer given. The participants noted that leadership skills could be defined in a variety of ways. Table 4 shows how senior government management ranked leadership skills on their top-five list of critical skills needed. A complete list of skills selected by the senior management is in Appendix G.

Table 4

Ranking of Leadership Skills in Top List by Senior Government Management

	SM1	SM2	SM3	SM4	SM5
Leadership Skills	#1	#1	NR	#4	#2

Note. NR = not ranked; SM=senior manager.

Two of five participants (40%) ranked leadership as the most important skill an IT supervisor in the government must have. One participant (20%) ranked leadership as the second most important managerial skill to have, and one participant (20%) ranked leadership as the fourth most important skill. However, one participant (20%) did not rank leadership among the top-five critical skills for IT managers in the government. SM2, the participant who ranked leadership as most important, noted that "you're really the point of failure. You're the point of success; you're the point of failure. You have to own it. Unless you understand what it is you're doing and why you're doing and who you're doing it for, you're not successful. You're a figurehead." SM1, who also ranked leadership as most important, noted this skill is "a must have to be successful…I would expect the leader to be able to lead at all levels." SM4 described leadership slightly

differently, saying that "the initiative is part of leadership to me. You know, if you describe all the different traits of a leader, I think you'd find the interpersonal skills we talked about, —initiative."

SM5 ranked leadership at number two, directly emphasizing its importance: "You have to have leadership skills." However, SM5 defined leadership against the idea of management:

> Because I locate it as leadership and management. I say that because people follow leaders and leaders have to set a precedent and be an example. But to manage is something totally different . . . I think the government on the whole is more into managing things. I'm not saying that that's a bad thing, but I think, if they teach more leadership, then a lot of things that we experience today could probably be resolved or mitigated. Because managing things is good, but that leads one to believe that everything is going to be inside that little box that we talked about as opposed to leaving people and—not that we face a crisis every day, but there's always something going on, and people look for guidance. And if you're just managing the day-to-day activities, then you're confining yourself, but if you're leading, then you're looking for ways to improve, ways to get ahead and to better those things. So, I think that leadership, in my estimation, is more important than management. And I think the government on the whole is lacking in that department. I will include the military in that, because that's where leadership is taught and practiced daily. But as far as government agencies and other entities, I think that we have a little bit of catching up to do.

The outlier was SM3, who did not rank leadership skills among the top-five skills. The participant contended that "you could have some bad leaders, but you could have some good people." However, despite that statement and the absence of leadership in this participant's top-five skill set list for SM3, the participant still noted that leadership is often combined with other critical skills: "to me, the number one should be listening as a leader." Moreover, despite not putting leadership on the top-five list, SM3 stated that "I have a key word: ownership. I think, to lead, you need to give your employees room to take ownership of projects." Therefore, while the participant did not specifically list leadership, the concept of leadership was still significantly integrated in SM3's answers.

These results indicate an agreement with the current literature on the importance of leadership in IT management. SM2's correlation of leadership with success coincides with Feld and Stoddard's (2004) contention that leadership strategies are an important way of increasing IT performance. Moreover, the ranking of leadership as the most critical skill for a government IT manager corresponds with the researcher's literature review, which supported the idea that an informed and active leadership dramatically improves the probability of finishing a project on time and within budget (Baker, Murphy, & Fisher, 1988; Weinstein & Jaques, 2010).

However, the results also imply that the definition of leadership skills is vague and subjective. While Baker, Murphy, and Fisher (2008) suggested that leadership requires the need for quick decision-making, strong and empowered leadership support, people-oriented management, and clear lines of authority, senior management respondents in this study had varying explanations of the demands of leadership. SM4 described leadership as initiative, the drive to take action, particularly as it relates to

interpersonal office relationships, while SM2 defined leadership through the lens of responsibility. SM4 concurred with the idea of responsibility, contending that leaders are accountable for both the successes and failures of their team. Interestingly, while SM3 did not rank leadership at all on the top-five list, the participant's full-length responses indicated that leadership as a quality is essential to many other essential managerial qualities, including ownership—a term that correlates with SM4's concept of responsibility. Finally, SM5 described leadership as a skill opposite to management, arguing that the former involved managers offering guidance and always looking to improve. The participants gave definitions of IT leadership which differed from the ones given by academics, who defined IT leadership as widespread input into strategic plans, solid resources, and collaborative leadership between business and IT executives (McRobbie & Wheeler, 2010); the ability to react to rapid growth and advancements in the industry (Kassel, 2010); and innovation, collaboration, and assuming the roles of influencer and advisor (Guibord, 2012). As SM3 noted, "the problem with this list is there's so much room for interpretation." The range of definitions of IT leadership skills, by both senior management and academics, points to a lack of a clear concept of such leadership. This suggests that a more concrete and consistent definition of leadership could be useful to the success of IT government managers.

Major theme 2: Communication. The second major theme is communication. Just as the participants diverged in their visions of leadership, they had varying definitions of communication, but four of the five participants ranked communication in their top-five list. Moreover, supplementing communication with the correlated skill of listening, all participants cited communication as a process that is an essential skill for

government IT managers. Table 5 demonstrates the ranking of communication skills and listening skills in senior management's top-five list of critical skills needed.

Table 5

Ranking of Communication and Listening Skills by Senior Management

	SM1	SM2	SM3	SM4	SM5
Communication Skills	#2	#5	#4	#3	NR
Listening Skills	NR	NR	#1	NR	#1

Note. NR = not ranked; SM=senior manager.

Four out of five participants (80%) listed communication skills in their top-five essential skills for government IT managers. None of the participants ranked communication first, but they did rank that skill in descending order – 2nd, 3rd, 4th, and 5th. SM4, who ranked communication as the third most essential skill, defined it as "a combination of written and oral communication skills," noting that "it's a must have when you're talking about managing." SM3, who ranked communication skills 4th, agreed with that assessment, saying that communication was key to discovering "what can we learn from this project . . .to make it better. Then communicate not only that down [the ranks] but also up." SM2 ranked communication skills at number five, but still described in detail the importance of communication for meeting deadlines and producing successful outcomes:

> But if you don't clearly express that to the user or the user community, what happens is people say "Well, we thought it was going to do 'A' and now it doesn't do 'A'" . . . When you say, "I don't think that's right," you have to be able to explain to people why it's right . . . talking about it in a way that breaks it up into bits and pieces and makes sure they're understandable . . . You can't count on somebody else to listen. You have to listen; you have to lead . . . The point is, I

> want to make sure that what I'm saying is understood. I don't want to throw out something and think everybody gets it. Written and oral communication becomes very critical, especially when you have deadlines to meet, and you need to make it clear early on: what it is we want to do, when we want to do it, and what does it take to get that done? There's lots of things that can take place as long as people understand what the boundaries are. If they don't understand what the boundaries are, then the next thing you know one team is going off and doing A, and the other team is going off and doing B. They thought, "Well, we thought the goal was to get back here on Friday and tell you." And the answer is no . . . It's just that you have to understand, what are the expectations? Again, going back to that external communication, are they clearly delineated? Does everybody understand, not what I said, but did they receive, not only what I said but what I meant to say?

Despite not listing communication skills as one of the top-five critical skills for government IT managers, SM5 nevertheless described the importance of communication, or, more specifically, the consequences that arise from miscommunication:

> The government is famous for this. They call it stovepipes, where one section is doing something and another section is doing something else, and they very closely resemble, and they really are trying to get to the same end goal, but they're not talking to each other, so they don't know. If you could market yourself and you could communicate that, then a lot of times you can cut down on the cost, the man-power, and you could also be effective in making a better product which is more usable for a broader audience.

The answers of both SM5 and SM3 are of particular significance, given their intersection with and correlation to another listed skill: listening. While only two of the five participants (40%) listed listening as a top-five essential skill, both respondents (SM3 and SM5) ranked listening at number one. As SM3 noted:

> Listening is more important, because, if you listen, you find out what your individual managers are doing . . . So I would rather listen first, then question . . . You've got to be able to listen to what they're saying. You've got to be able to effectively ask the questions necessary to get the information you need in order for you to do your job.

Both SM4 and SM5 specifically noted that listening should be understood as a type of communication. SM4 stated:

> Listening to me belongs in the subset of the written and oral communications, because I think communication is both ways. It's not just out. I think it's effectively taking information in, and understanding how to apply and to ask the right questions. To me, when we say written and oral communications, it encompasses bidirectional communications, both ways.

SM5 concurred:

> You have to have listening skills . . . You cannot be effective if you cannot communicate with people. And, in order to do that, it's a two-way street, so you have to be able to listen as well. So, a lot of times, as leaders, we come in with an agenda that we want to put into place. So we don't really listen to what other people say. But the most effective leaders, it has been shown that they listen to the people that they're leading. We don't always have the right ideas, but through

> banding together, a lot of times people come up with a little piece from here and a little from there. And then something that ties it all together that makes the idea that much better and more marketable.

While neither SM1, nor SM2, nor SM4 listed listening among their top-five critical skills, the participants' answers indicated an overlap between the categories of listening and communication.

These responses dovetail with much of the current literature on IT management, supporting assertions that effective project managers should encourage communication between all stakeholders, up and down the chain of command, as well as between team members **(**Baccarini, 1999; Stenzle, 2011). Moreover, the senior management respondents' answers reinforced the claim that communication is necessary for the lead project managers in governmental operations to meet operational goals for the project (Abba, 2001; Alias, Zawawi, & Yusof, 2014). However, none of the respondents ranked communication as the number one critical skill. Moreover, there was a wide range of rankings—from number two to not ranked (NR) at all. These rankings imply a lack of cohesion and unity when it comes to the importance of communication in management.

The element of listening could be a contributing factor to the lack of cohesion about communication. As previously noted, two respondents ranked listening as the most important skill, and a third identified listening as a necessary part of successful communication. The range of rankings for communication, combined with two respondents placing listening at number one, suggests that the definition of communication could be ambiguous. That is, those three respondents who did not list

listening in their top five may have assumed such a skill was already covered by communication.

However, these answers could also suggest a focus on employee satisfaction and understanding, rather than managerial communicative acumen. While the term communication skills would seem to imply an input- and output-based system, the giving and receiving of information in both written and oral form, the connotation of listening is much more one directional. Listening is an action done by the manager to ensure that employees both understand the mutual goals and expectations and are able to express their own concerns and ideas. This one-sided form of communication was ranked first by two respondents, one of whom also ranked communication skills in the top-five, implying that the reception and perception of information by employees is more important than the distribution of that information.

Major theme 3: Problem Solving. The third major theme is problem solving. Four of the five participants (80%) listed problem solving as a critical skill, although its ranking was overall lower than those of leadership and communication skills. SM1 ranked problem solving at number four; SM2 did not rank problem solving in the top five; SM3 ranked problem solving at number three; SM4 ranked problem solving at number two, and SM5 listed it at number four. Three of the five senior management respondents also described problem solving within the context of another listed skill.

Despite not listing problem solving as a top-five critical skill, SM2 still noted the skill's importance because of its link to communication:

> There's always going to be conflict, and there's the problem solving, and there's the conflict resolution. To me, you don't have conflict unless you're giving input

> to someone and they either misunderstand it, they don't like it, they don't agree with it. That can be written; that can be oral. Now there's conflict because something happened. That, to me, is part of interpersonal skills in oral and written communication. The point is, I want to make sure that what I'm saying is understood . . . it's very critical to be able to combine the oral and written skills and the interpersonal skills, so that you manage the dispute and conflict resolution.

Both SM3 and SM4 connected problem solving to team building. SM3 specifically noted that those two skills, along with motivation, make up the larger skill of leadership: "the motivation and the team building and the problem solving, they are more important skills, to me, for leadership . . . you got to be able to problem solve. You've got to be able to have the ability to problem solve, team build, motivate your people." SM4 concurred, noting that:

> I've been most successful when I've had government leaders who are very skilled at both problem solving and team building. I think those are the two that I would put at the top, because they [the leaders] understand how to gain consensus, and the team building is a way of problem solving. And I would have a hard time separating those two as the critical differentiator of when I've been really successful in a government partnership.

SM4 also coupled customer service skills with problem solving, arguing that they ultimately belong to the same skill set: "customer service skills, I think, are not different than problem solving, and having interpersonal communication . . . If you are a problem solver with interpersonal skills, you can communicate; that is customer service or what

you need for customer service, so I would eliminate that as a unique skill."

While a majority of the respondents acknowledged problem solving as an essential skill for government IT managers, its relatively low ranking, along with the respondents' nearly unanimous positioning of problem solving with other skills, implies that problem solving might be most effectively understood not as an independent autonomous skill to be taught and learned, but instead as a function of, and rooted in, other skills. This perception corresponds to much of the current literature on project failure, which contends that failure is frequently an outcome of budget and time constraints, as well as less than requested functions (Kaplan & Harris-Salamon, 2009; Whittaker, 1999). Each of those failures is linked not only to a need for problem solving (budget, time, design), but also to another skill: communication, leadership, listening. In this way, problem solving can be understood as a skill that should be used in conjunction with other skills. Alias, Zawawi, and Yusof (2014) contended that communication deficits are the primary reason that projects to fail; thus, a manager must use problem solving skills to fix the communication problem. Part of communication skills is problem solving when those skills are not effectively working. This point was implied by the comments of SM4, who noted that customer service skills are, in effect, the same skill as problem solving. In order to have customer service skills, SM4 indicated, problem solving is essential. The combination of problem solving with team building is another manifestation of the inextricability of these skills. As both SM3 and SM4 suggested, each skill depends on the other. In particular, SM3 stated, "the team building is a way of problem solving."

Major theme 4: Differentiation in Skills. The fourth major theme is the differentiation in ranked skills. While leadership skills, communication skills, and problem solving skills were all ranked by the 80% of the respondents, there was much less consensus on the remaining top-five critical skills for government IT managers. The distribution of these rankings by the respondent is represented in Table 6.

Table 6

Ranking of Remaining Top-Five Critical Skills by Senior Managers

	SM1	SM2	SM3	SM4	SM5
Team Building and Conflict Resolution	NR	NR	#5	#1	#3
Technical Skills	NR	#2	NR	#5	NR
Achievement Skills	#5	NR	NR	NR	#5
Effective Questioning Skills	NR	NR	#2	NR	NR
Motivation Skills	NR	#4	NR	NR	NR
Analytical Skills	NR	#3	NR	NR	NR
Customer Service Skills	NR	NR	NR	NR	NR
Interpersonal Skills	NR	NR	NR	NR	NR

Note. NR = not ranked; SM=senior manager.

While three out of five respondents (60%) ranked team building and conflict resolution as a top-five skill, only two of five (40%) ranked technical skills and achievement skills in their top five. Moreover, only one participant (20%) ranked effective questioning skills, motivation skills, and analytical skills in the top-five most critical skills. All five respondents (100%) did agree, however, that neither customer service skills nor interpersonal skills were important enough to be ranked among the most the top five.

SM2 explained that despite the rationality of all the listed skills, many of them overlap: “I think all these skills are valid. I think they're all applicable. Some of these skills are built onto other skills. For example, when I look at the analytical skills, to me that builds onto organization skills, technical skills, customer service skills,

communications, interpersonal. That's, if you—for the lack of a better term—a building block where you can actually increase your capabilities in other areas." SM4 emphasized the same concerns with the critical skills list:

> I might have some stylistic feelings about the list . . . I just feel like some of them are super sets of the others, and there's a lot of overlap. . . . [And] there are things on the list that I wouldn't categorize as skills. For instance, an achievement orientation. I think that's an interpersonal quality that would be hard to teach, so I think it's an important trait, absolutely a necessary trait, but I don't know that I would categorize it as a skill. I think similarly about how to achieve results, I think that's a combination of problem solving skills, team building, leadership, listening. I think that's an umbrella.

SM3 provided two explanations for the problems with the critical skills list. First, the participant argued that the terms were too ambiguous: "I disagree with, not necessarily with these skills on the page, but the[y] . . . leave too much room for interpretation. They're not broken down. They need more details." But SM3 also acknowledged that part of the problem with ranking these skills is that certain necessary skills vary depending on the government GS grade levels: "Once again, I think this list is different for every level. I know they're looking it all the same, but that's not how it works. So it's by organization too." SM5 concurred with that evaluation, explaining that "as a manager, I think all of them [skills] are here," but certain skills are "very important depending on your audience and what your job function is."

The variances of respondents' answers about critical skills for government IT managers, along with the discrepancies in rankings, can indicate a number of factors.

First, the differentiation could be a function of the individual respondent's management style, personality, job function, and personal/professional experience. Such an explanation would account not only for the fact that the eight remaining skills did not receive 80% agreement, but also for the deviation within ranked positioning—and, at times, the fact that a certain skill was not ranked (NR) at all—in the categories of leadership, communication, and problem solving skills. Secondly, the variation in answers can be understood as a result of indefinite and subjective terminology. As multiple respondents indicated, the listed skills are open to interpretation. As such, they are subject to the diverging definitions of each individual, which can result in inconsistency of understanding and a resulting overlap between skills or differing answers. Thirdly, as SM4 pointed out, definitions of what "skills" are also vary; the participant attempted to distinguish between a trait, a skill, and a competency. Implicit in those different words, as SM4 pointed out, is the ability to teach—and learn—such aptitudes. That is, a trait implies an inherent quality that is difficult to both teach and learn. A competency suggests a minimum level of ability, while a skill seems to imply expertise.

Major theme 5: Additional Skills. The final major theme for this research question comprises additional skills needed for management that are not already on the list. Four out of five respondents (80%) suggested adding skills to the essential list for government IT managers, including collaboration, strategic thinking, emotional intelligence, and adaptability.

SM1 suggested adding both collaboration—which includes both internal and external collaboration—and strategic thinking to the list. The participant said:

> I truly believe that strategic thinking is important. The ability for the supervisor to lead the team strategically is very important to the mission at hand. . . . The leader must be able to look past the week to week, the month to month. The leader must be able to look at the whole mission and understand the importance of how all the pieces fit together.

Alternatively, SM4 suggested emotional intelligence as a critical skill missing from the list:

> This is an area that I've been especially interested in of late. There's a growing field of research around emotional intelligence, which encompasses some subsets of these skills, but I think is a much larger umbrella skill set, and I don't see anywhere where it obviously jumps out at me from this list. And I think, when I've had experience with a manager who has all of the detailed skill requirements, but it's still just not working and coming together, I've generally found that it's an emotional intelligence gap. Not being able to be self-aware and to use that self-awareness constructively in their relationships. And so that's what I think is missing.

SM5 recommended adding adaptability to the list of critical skills:

> What may not be listed here or what I may not be able to think of right now might come to the forefront when faced with a particular situation. So you have to be able to adapt, especially as a leader, because not everybody is going to be a textbook. That's why they have different personalities, so as you're dealing with one person, what may work for them may not work for the next. So you have to be adaptable, and I don't see that in here. . . . Basically, what I find is that in a lot

> of cases we're giving a certain framework to work within and people like to stick to that. But what I found through my military experience is that the most effective things come from people who don't necessarily think just by being confined by that structure. The best ideas come from thoughts that, "what about beyond this box that I'm in; how will this affect us; will this make us more effective; will this be a better say product that we could put out?" And that a lot of the success stories especially come out in this organization have come from people that have done their thinking outside of the box.

Since the researcher used IPA as methodology in this study, focusing on first-person accounts to determine the meaning of an individual's experience and successfully learn how that person understands his or her experience, it is not surprising that each senior management participant had differing ideas as to what skills should be added to the list. Given the participants' unique and discrete experiences as well as differences in gender, age, race, duration of working in the government, number of employees, specific job title and duties, divergent skills are an expected outcome. To better gauge the universal applicability of these suggested skills, each respondent would need to give his or her feedback.

Moreover, as discussed in previous sections, these suggested skills can be viewed as being parts of already listed skills. For instance, strategic thinking could be a function of problem solving, while adaptability could be understood as a part of conflict resolution. Similarly, collaboration is a skill comparable to team building, and emotional intelligence is an essential part of both listening and communication. This suggests that the list of skills could be more fine-tuned to avoid generalizations and to focus on

specific aspects of generalized skills that are essential to government IT managers. Alternatively, these suggested skills could imply a need for a more nuanced and inclusive description of generalized skills.

IT Project Manager

Research Question 2. What skills do IT project managers (PM) view as critical for their supervisors in government?

Five major themes emerged from the respondents' answers: leadership, team building and conflict resolution, effective questioning, differentiation of rankings, and skills suggested by respondents, as shown in Appendix H.

Major theme 1: Leadership. One of the major themes revealed by answers to this research question was leadership skill. Three of the five respondents (60%) ranked leadership in the top-five critical skills, and all three who ranked leadership positioned it as number three in the top five.

PM4 noted that "without the ability to lead above and below it will be difficult to lead . . . being able to lead up and down is critical to the success of any supervisor and project manager." PM5 concurred with that statement: "lead by example. Lead effectively. Don't choose one person over the next because everybody's equal…[create] a positive working environment."

Despite not listing leadership in the top five, PM1 and PM2 still discussed the its importance, in addition to the problems with the definition of the term itself. PM1 stated:

> The things that I would look for in a manager for projects is, you need to give people clear direction on where they need to be working and what they need to be working on. That probably falls in here under leadership skills or what not. But

> without knowing exactly what leadership skills is defined as, it's hard to say whether the right things are being listed in this list. Another thing that works really well is being able to isolate your team so they get things done, acting as a firewall, as a manager. Where that would go in here, I'm not—it's probably covered under leadership, again. Leadership is pretty . . . broad.

PM2 explained another aspect of leadership: "initiative. Being able to take the lead if you see something wrong—taking the initiative, or if you see something right. Recommend that, take the initiative—being proactive."

Both the senior management participants and the project managers listed leadership as a top skill. However, four out of five senior management respondents (80%) listed leadership in their top-five skills, while only three out of five project manager participants (60%) listed leadership in their top five. Moreover, the mean ranking of leadership by senior management participants is two, but it is three for project managers. Senior management, then, seems to more strongly consider leadership an important skill to have. This could suggest that as one gains more experience in the field of government IT management, leadership becomes important. Or, it could also suggest that, as PM1 noted, leadership is a sufficiently nebulous term that it is difficult to define it accurately. This interpretation would also be in line with the answers of senior management participants, who noted that leadership is frequently an umbrella term that can encompass many other skills.

Major theme 2: Team Building. The second major theme that emerged from research question two is team building and conflict resolution. Three of the five (60%) project manager participants listed team building and conflict resolution in their top-five

critical skills, with an average ranking of two. Table 7 displays the rankings of all five participants.

Table 7

Ranking of Teambuilding and Conflict Resolution by Project Managers

	PM1	PM2	PM3	PM4	PM5
Teambuilding and Conflict Resolution Skills	#3	NR	#2	#1	NR

Note. NR = not ranked; PM = project manager.

With respect to teambuilding, PM1 noted that "A lot of this stuff can be delegated, but the manager absolutely has to be able to deal with the people problems, because he really can't delegate that." PM3 and PM5 correlated teambuilding and conflict resolution with communication skills, describing how one skill is required for the other. PM3 explained, "The communication skills are the team skills . . . So if I can communicate and I can organize a team, they should be able to supply the rest." PM5 concurred, stating, "As a leader you should be able to build your team, build them up in a cohesive manner and have them be able to communicate with each other effectively and to be able to resolve conflict as well as get work done." PM4 ranked team building and conflict resolution skills first, but perceived these skills more as a way of managing personalities: "Getting the right mix of people on your team is critical . . . you need to be able to know when to remove people who are not part of the team—in essence, I am saying those who are not working with you should be removed."

The same number of senior management participants and project manager participants—three—ranked team building and conflict resolution in the top-five list of critical skills. However, for senior management, leadership, communication, and problem solving skills were all ranked higher, with more participants listing them in their

top five (four out of five participants, or 80%). Furthermore, project managers had a mean rank of two for team building and conflict resolution while senior management's average ranking was three. Overall, project managers valued team building and conflict resolution more highly. The way in which project managers described the skill of team building and conflict resolution, particularly in regard to their intersection with communication and team relationships, reinforces Baccarini's (1999) arguments about this managerial skill. As Baccarini (1999) noted, cooperation amongst team members, good working relationships with government contractors, obtaining the support and coordination from government program offices, and building collaboration with trust are all essential components for effective relationships in management, which can be accomplished with the help of the manager's ability to facilitate teaming and communication between his or her project employees.

Major theme 3: Effective Questioning. The third major theme is effective questioning. Similar to leadership and team building and conflict resolution skills, effective questioning was ranked by three of the five project managers. The average ranking was 2.3, which puts it slightly below team building and conflict resolution and slightly higher than leadership skills. PM1, who ranked effective questioning first on the critical skills list, argued that "questioning skills is pretty important . . . I think being able to read people is pretty important. So, you can tell when someone's lying to you or BSing you, those sort of things." PM5, who also ranked effective questioning first, explained:

> You have to have the skills necessary to ask the right questions and ask for the right reasons, and to be able to make someone feel comfortable with giving you the information. Make them feel you have listened to everything that's passed to

> hand and try not to jump to conclusions . . . You have to have the ability to communicate information from your team, so you have to have effective skills in being able to get the information out of your team members and stakeholders. You have to be able to manage them in a basic manner, so that they can understand what you're asking for, so you can receive the information that you need in order to make your project progress smoothly and try to accomplish the stated mission.

While the other three respondents, one of whom ranked effective questioning at number five, did not specifically address effective questioning in their long-form answers, they did acknowledge the interconnected skills of listening and communication.

Effective questioning skills mark the most significant difference in critical skill responses between senior management and project managers. Only one senior manager ranked effective listening (SM3) at number two. Instead, four senior managers chose communication skills (with a mean rank of 3.5), while two (SM3 and SM5) ranked listening as their number one choice of skills for government IT managers. While the project managers' emphasis on effective questioning supports the claims of Li and Philip (2009), who argued it is essential to continually ask the questions that will help the project team to overcome the obstacles that may get in the way for the duration of the project, that perception is less aligned with the vision of the senior management respondents. This could be a result of the differing job functions between the two levels of participants. Senior management is frequently required to handle larger and more complex projects and schemas of employees and individuals, making their duties often more holistic and general. Such generality could be translated into the realm of

communications. That is, senior management sees the big picture (i.e. communication) as more important while the project managers, who are more often involved with individual projects and people, see the smaller picture (i.e. asking questions). While listening and asking questions are both undoubtedly a facet of communications, the divergent rankings by senior management and project managers point to a macro versus micro approach to communicaton.

Major theme 4: Differentiation of Skills. The fourth major theme is critical skill differentiation. While the top three skills listed by project managers—leadership, team building and conflict resolution, and effective questioning—were all ranked by 60% of the respondents, there was less consensus on the remaining top-five critical skills for government IT managers. The distribution of these rankings by the respondent is represented in Table 8.

Table 8

Ranking of Remaining Top-Five Critical Skills by Project Managers

	PM1	PM2	PM3	PM4	PM5
Communication Skills	NR	#5	#1	NR	NR
Technical Skills	NR	#1	NR	#5	NR
Problem Solving Skills	#5	NR	NR	NR	#5
Motivation Skills	NR	NR	NR	#2	#4
Interpersonal Skills	NR	#2	#4	NR	NR
Customer Service Skills	NR	#4	NR	#4	NR
Organizational Skills	#5	NR	NR	NR	NR

Note. NR = not ranked; PM = project manager.

Seven skill categories—listening, technical, problem solving, interpersonal, customer service, motivation, and communications—were ranked by two of the five respondents (40%) in their top five. Only one category, organizational skills, had just one vote. Change management and project management skills were not included in any of the project manager participants' top-five choices, which suggests a general consensus

via absence. PM2 noted, “It's a good list. It's an all-encompassing list. Unfortunately, it's just the way that they have some of this stuff worded;” in other words, PM2 pointed out the same problems with definitional ambiguity that senior management also reported. PM5 agreed, “I think all those skills are generalized as where it's very inclusive of pretty much everything that you're doing.” PM3 remarked that many of these skills and the need for them “are somewhat relative” and dependent on the personnel, their employees, and the job they have. PM4 agreed that the need for certain skills is relative, adding, “I agree with the list because nothing on the list is outside of the scope of effective attributes of critical elements required to be successful to manage government IT project managers.”

In general, there was less agreement about the top-five critical skills between the project managers, whose top three skills had a consensus of 60%, than there was between the senior management, whose top three skills had a consensus of 80%. Of the remaining skills, project managers had 40% agreement on listening, technical, problem solving, interpersonal, customer service, motivation, and communications, while senior management had 60% agreement on team building and conflict resolution and 40% agreement on technical skills and achievement skills. If we observe the conspicuous absence of critical skills, however, it indicates further agreement. One hundred percent of senior managers did not list interpersonal or customer service skills, compared to 40% of project managers who did put it in their top five. Moreover, while 40% of senior management listed achievement skills in their top five, 100% of project managers did not list them at all in their top five.

Major theme 5: Suggested Skills. The fifth major theme includes suggested skills. All five project manager respondents (100%) suggested additional skills that were essential for government IT management. Their suggested skills included delegation, budgeting, time management, legal skills, and managing above and below.

PM1 mentioned delegation as a skill that should be on the critical skills list:

> You want a balance, but I think you have to focus on actual management skills. A lot of times management means learning to delegate and deferring to your technical experts. You have to figure out who the people are that understand what they're talking about and go with it. . . . You can delegate problem-solving, customer service, change management. A lot of this stuff can be delegated, but the manager absolutely has to be able to deal with the people problems, because he really can't delegate that.

Both PM3 and PM5 independently suggested time management skills are essential for government IT managers. PM5 categorized time management skills as a personal, not a team-based skill. PM5 reinforced the importance of this suggested skill, remarking that "time management is definitely just as important as any of these."

PM2 offered budgeting as another principal skill:

> Because as a project manager, either you have a pot of money that you have to manage or somebody's coming down to you and saying, "What do you need?" That's dealing with—then they may say, "You got $15,000 to spend. What do you need?" So it's a budget. You need to be able to do that budgeting aspect of writing and getting the stuff for the initial CRs to go forward into the request process or actually, literally dividing. It's like, "Here's your training budget. Go

> get the people trained how you see fit." When I was over in Australia, I took over. My section never had a budget. I finally got somewhat of a budget for training and for some equipment. So it was like, "Hey, great. We can send people to this much training. If we can finagle it—get some deals or whatever—then we can stretch it out." So I was actually doing some of that on a very limited basis. But that is an important skill to have. . . .

PM4 argued that up and down management is also crucial to effective management:

> I believe that IT supervisors should be able to manage above and below; without the ability to lead above and below, it will be difficult to lead. The project managers below have specific things they need to have addressed; on that same note the senior manager above the supervisor has needs that also need to be addressed. The supervisor must be able to address the entire chessboard, have that board in the field of view. Therefore, the skill to manage up and down is very important. Supervisors need to be open and honest; supervisors also need to understand the value of the human element of their job. What I mean about that is they [supervisors] need to give their people [IT project managers] the ability to solve the problem by giving them the authority to do what is needed.

Finally, PM1 also had another suggestion. The respondent proposed that government IT managers need to have legal or contract skills:

> I almost think that having a good concept of the legal aspect is also something you might consider, especially when you're dealing with IT in general, maybe not, but when you're dealing with IT with big data things like the stuff that we do, obviously understanding what the privacy lawyers are going to be looking for and

things like that. You don't want to get far into a project to find out later on that you can't do that, and stuff like that.

There is a significant difference in the type of suggested critical skills proposed by the senior management and those by project managers. Senior management's four suggested skills—adaptability, strategic thinking, collaboration, and emotional intelligence— are all macro-oriented holistic approaches to management. On the other hand, the critical skills suggested by project managers—delegation, budgeting, time management, legal skills, and managing above and below—are micro-focused, concentrating on specific and precise individual skills. This finding correlates to the macro/micro function of their respective jobs; senior management often has more general job functions, overseeing a panoply of people and projects, while project managers often focus on more specific projects and personnel. In this way, the respondents' suggested skills intersect with their job functions.

Supervisors

Research Question 3. What skills do supervisors (SUP) of government IT project managers view as critical in order to manage IT project managers?

There are three major themes that emerged with respect to this research question: the process and functions of communication, differentiation of critical skills, and suggested skills, as shown in Appendix I.

Major theme 1: Communication. The first major theme is the process of communication, which combines three critical skills: listening, effective questioning, and communication. Five out of five respondents (100%) listed listening in their top-five skills, and four out of those five respondents (80%) listed listening skills as the number

one skill on their top-five list. Moreover, three out of five respondents (60%) ranked both effective questioning and communication skills in their top-five critical skills. The distribution of rankings is listed in Table 9.

Table 9

Ranking of Communication Skills by Supervisors

	SUP1	SUP2	SUP3	SUP4	SUP5
Listening Skills	#1	#1	#1	#3	#1
Effective Questioning Skills	#2	NR	NR	#2	#2
Communication Skills	#4	NR	#4	NR	#3

Note. NR = not ranked; SUP = supervisor.

SUP5 emphasized the significance of this skill: "Frankly, the one that pops out at me as being most crucial is communication skills. All of the variants here of communication, both written and oral, are absolutely key." SUP2 also saw the process of communications holistically, including listening, questioning, and understanding in the definition: "If you cannot relate to people, it is hard to help them achieve the main objective and the successful completion of the project. If you cannot empathize with the people, then it is hard understand the problems they might be dealing with. If you cannot understand people, it is hard to supervise them." SUP4 concurred, describing questioning and listening as a form of more effective communication: "I do like the effective questioning skills. Sometimes, when two people are thinking about two different things and asking questions, their answer is not really good. Asking a question, they are thinking of something else and giving you a different answer." SUP3 gave a similar response:

> This idea of listening and communication, I think, is very important—being willing and able to ask good questions. Technically, you've got to understand the question you are asking and understand the answers you're getting, and being

> able to do that, I think, is important to help people understand where they might see the problems. Telling somebody what the problem is one way of dealing with it, but being able to ask him or her the question, so that they understand to shine a light enough for themselves, I think, is a nice way. That's what, I think, this is leaning towards.

More than any other group of respondents, supervisor participants were unified in their ranking of the entire communications process. While 80% of senior management ranked communication skills in their top five, the average rank was 3.5, and only two out five respondents ranked listening, and one effective listening. Sixty percent of project managers listed effective questioning, with an average rank of 2.3, but only two out of five respondents ranked listening and communication skills. On the other hand, 100% of supervisors ranked listening skills (mean rank 1.4), 60% ranked effective questioning (mean rank 2), and 60%—communication skills (mean rank 3.6). Supervisors greatly valued the process of communication, as well as each individual component. These responses support Stenzle's (2011) assertion that the role of an IT project manager requires that the individual be a good communicator, who is able to discuss pertinent issues regarding the production of the project, and be clearly understood by all participants. As Feld and Stoddard (2004) argued, project success is based on the project manager's performance and the relationship of that performance to positive IT communication. While all groups of participants did rank some form of communication, supervisor respondents overwhelmingly and comprehensively ranked all aspects of the process of communication as critical skills for government IT managers.

Major theme 2: Differentiation. The second major theme is overall skill coverage. While the respondents still differed in the ranking of skills, supervisors were the only group in which at least one respondent ranked each of the 13 skills. Three out of five respondents (60%) ranked organizational skills; two out of five respondents (40%) ranked customer service skills and interpersonal skills; and one out of five respondents (20%) each ranked change management, analytical skills, technical skills, motivation skills, achievement skills, team building and conflict resolution skills, and leadership skills.

SUP3 explained that the list of these skills as an entire unit:

> Cover[s] a wide range of areas. So, if you look at the list, communication, obviously, negotiation and the professional skills, as well as some specific management acumen and skills, give you a cross-section blend of the kind of things you're probably going to run into dealing with. It's not a laundry list of very specific kinds of things you need to be able to execute on. More of a description of the type of person you're looking for and the kind of broader people skills you're going to be looking for, and how they need to be effective.

Other participants noted the value of some of the specific sets of skills. SUP5 stressed the value of interpersonal skills: "clearly you have to be able to get along with lots of different types of people. You have to be able to develop them. You have to be able to develop an effective team." SUP2 noted the need for customer service: "in this position, you are always helping someone or trying to get someone to do something for you." SUP4 explained the need for change management: "there are projects that are just not feasible, and they are not capable of succeeding. And being able to identify that and

know it and immediately change your plan is very important." Finally, SUP3 explored the value of organizational skills:

> I would caution anybody, from my own experience, you start to know things pretty quickly. You start to understand it, but over time you understand more depth to it. So, don't rush it. If you think you've known it after the first two weeks, take two more weeks and then see where you are. Because, I suspect, looking back on that, you'll understand, "Wait a minute, I really didn't understand everything about this." They only get that one chance to be the new guy.

These rankings by supervisor respondents can be interpreted in two different ways. First, the rankings could suggest that supervisors see the value in a wide variety of skills, and that range and depth of skills are essential to strong management. Alternatively, their rankings could point to even more deviation in what constitutes critical skills. While supervisors were consistent by ranking each of the skills listed, they were arguably inconsistent as they disagreed on which skills are most crucial. Senior management (100%) agreed that interpersonal skills and customer service skills were not essential, and 100% of project managers agreed that change management was not essential. In this way, the distribution of ranked skills can be understood as either a need for a wider and more inclusive list of skills or the futility of trying to compile a unified and mutually agreed upon list of skills.

Major theme 3: Suggested Skills. The final theme that emerged from research question three was suggested skills. Four out of the five respondents (80%) suggested new skills for the list, including empathy, time management, persistence, and performance management.

SUP1 proposed empathy as an essential skill:

> because you learn patience: empathy is so necessary because you have to be as patient and understanding, as they are (team members). Emotional intelligence is a skill that should be on the list—it is a must have to understand the dynamics of the individual team members and how to get the team to accomplish a single task.

SUP5 offered persistence as a vital skill set:

> I think that almost with any project, whether it's an IT project or anything, when you get a lot of folks in the room, there's bound to be differences of opinion and conflict. I think that a lot of times some of those challenges can seem very daunting to get through. You have to realize that, in some cases, it's going to take a dedicated effort—persistent, consistent effort—to get through the challenges of the project. I think if you're a person who gives up easily or is easily flummoxed by that sort of stuff, you're probably not going to make it too far.

While SUP2 also offered an inward-looking skill, time management, SUP4 focused on a more external one, suggesting performance management as a skill: "For projects or programs in IT, we need to see results, and we need to see documented results that you can see—you have to establish metrics along the way and be able to monitor them to make sure that you are moving forward, and you're not stalled or on a decline."

The suggested skills from the supervisors act as an amalgamation of the skills proposed by senior management and project managers. The supervisors combined the macro, generalized skills suggested by senior management with the micro-oriented skills suggested by project managers. The supervisor respondents offered empathy and persistence, two relatively universal skills in line with senior management, but they also

offered time management and performance management, which are detailed-oriented skills more in line with the project managers' suggestions. Such a permutation indicates an inclusive and comprehensive list, addressing the universal issues noted by senior management and the more specific-based issues noted by project managers.

Implications of the Findings

Leadership skills. Whereas both the senior management and the project managers listed leadership as a top skill, it was not listed by supervisors. The findings indicated that senior management strongly considered leadership skills as important. These perceptions coincide with existing literature as Feld and Stoddard (2004) asserted that leadership strategies are an important way of increasing IT performance. Participants noted that the term was vague and as a result a wide range of definitions were linked to it, some also remarked that it was hard to define the term "leadership skills". This suggested that a more concrete and consistent definition of leadership could be useful in the success of IT government managers, something academics should take note of and develop. HR managers who compile requirements for IT management posts could employ such definition to ensure clear communication of expectations.

Communication skills. The top-five ranking of all three groups of participants for communication skills, indicated that they all deemed it as an essential skill. The term was found fuzzy and different interpretations were allocated to communication, this might have been the reason for the differences in the ranking between the individuals and across groups. Given the emphasis placed on communication as an essential skill both in literature (Abba, 2001; Baccarini, 1999; Stenzle, 2011) and by the respondents, human resource (HR) managers should take cognizance of its importance and include this skill in

the skill set when advertising posts in IT management. Communication skills and its associated skills; for instance, listening, conflict resolution, and customer skills can be taught and learned. HR managers should therefore ensure that IT managers and leaders be included in such training. According to Eisenhardt (1989), the components of agency theory could be applied to critical factors needed by governmental project lead management as it addresses the need for accurate and fluid information systems in the organization. Eisenhardt (1989) explained that fluid information systems (communication) can be seen as the driving force behind successful operations in the government sector. Coupled with ongoing risk assessment, and implementation of appropriate measures to ensure that the project is completed successfully, this competency cannot be ignored and should be included in the hiring process.

Team building and problem solving. The combination of problem solving with team building is another demonstration of the inextricability of these skills. SM4 and SM3 rightly pointed out that the two skills were interdependent. Respondents placed problem solving with other skills like customer service for instance. This implies that problem solving might be better understood as rooted in other skills instead of an autonomous skill. Project failures could be linked with a need for problem solving (budget, time, design), but also another skill–communication, leadership, listening. This brought the realization that communication deficits were the primary reason that projects to fail, and that a manager must use problem solving skills to fix the communication problem (Alias, Zawawi, & Yusof, 2014). The findings extend the existing insights on the notion and further emphasized the intertwining of the different skills. This has implications for training practice where team building and leadership skills might be

taught separately to the expense of the whole. The same is true for customer service skills, which SM4 noted was in effect the same as problem solving skills as they are intertwined.

Summary

Senior government management viewed leadership, communication, and problem solving as the most critical skills for supervisors of IT project managers. In addition, these respondents had differing opinions on the rest of what skills were necessary, even suggesting a number of skills that were not on the list. Four out of the five senior government management participants ranked leadership as a top-five critical skill for IT managers, and even the one participant who failed to rank leadership as a top-five critical skill incorporated the concept of leadership into the long-form answers given. The participants noted that leadership skills encompassed a variety of definitions, which made it both a difficult skill and also a wide-ranging skill. Like leadership, the participants had varying definitions of communication, but four of the five participants ranked communication in their top-five list. Moreover, when supplemented with the correlated skill of listening, all participants cited communication as an essential skill for government IT managers. Four of the five participants (80%) listed problem solving as a critical skill, although its ranking was overall lower than that of leadership and communication skills, and three of the five senior management respondents described problem solving within the context of another listed skill. While leadership skills, communication skills, and problem solving skills were all ranked by the 80% of the respondents, there was much less consensus on remaining top-five critical skills for government IT managers. Moreover, four respondents (80%) suggested adding skills to the essential list for

government IT managers, including collaboration, strategic thinking, emotional intelligence, and adaptability.

IT project managers had five major themes come through the second research question, which asked which skills they viewed as critical for their supervisors in government: leadership, team building and conflict resolution, effective questioning, differentiation of rankings, and suggested skills. Three of the five respondents (60%) ranked leadership in the top-five critical skills, and all three who ranked leadership positioned the skill as number three in the top five. Three of the five (60%) project manager participants listed team building and conflict resolution in their top-five critical skills, with an average ranking of two. Like leadership and team building and conflict resolution skills, effective questioning was ranked by three of the five project managers. The average ranking was 2.3, putting it slightly below team building and conflict resolution and slightly higher than leadership skills. While the top three skills listed by project managers – leadership, team building and conflict resolution, and effective questioning – were all ranked by the 60% of the respondents, there was less consensus on remaining top-five critical skills for government IT managers. However, all five project manager respondents (100%) suggested additional skills that were essential for government IT management. Their suggested skills included delegation, budgeting, time management, legal skills, and managing above and below.

There were three major themes that came from the skills that supervisors of government IT project managers viewed as critical in order to manage IT project managers: the process and functions of communication, differentiation of critical skills, and suggested skills. The process of communication bundles three critical skills:

listening, effective questioning, and communication. Five out of five respondents (100%) listed listening in their top-five skills, and four out of those five respondents (80%) listed listening skills as the number one skill on their top-five list. Moreover, three out of five respondents (60%) ranked both effective questioning and communication skills in their top-five critical skills. While there was still differentiation in the ranking of skills, supervisors were the only group in which at least one respondent ranked each of the 13 skills. Three out of five respondents (60%) ranked organizational skills; two out of five respondents (40%) ranked customer service skills and interpersonal skills; and one out of five respondents (20%) ranked change management, analytical skills, technical skills, motivation skills, achievement skills, team building and conflict resolution skills, and leadership skills. Four out of the five respondents (80%) suggested new skills for the list, including empathy, time management, persistence, and performance management. These suggestions represented a unification of the suggestions by project managers and senior management, combining the macro, universal skills with the micro, detailed skills.

Recommendations for Future Research

This research uncovered the perceptions of a group of government IT employees regarding the perceived skills needed by IT managers' supervisors. To this effect, a sample of 15 government IT employees was selected. The sample size limits the generalizability of the findings, and to address this, a larger mixed methods study could be undertaken. The outcomes of the current study could be used to draft questions for semi-structured interviews and to adjust the skills lists used in this study. The outcomes of a larger study could be utilized by policy makers to create job descriptions linked to

the supervisors of IT managers and also to draft a skill set to describe the skills needed for such an employee.

During the individual interviews, the participants remarked on the lack of specific definitions for the different skills. Their observation brought to light the need for uniform definitions of the different skill sets for IT employees, e.g. leadership and communication. Academics in this field could embark on such research, thereby establishing a uniform platform for research and discussion. The description of skills needed for supervisors of IT managers could then be clearly communicated and easily understood by all interested parties.

The research was undertaken with the aim of using the findings for purposive training of managers to ultimately improve the performance of IT employees in government. The training program created utilizing the unified definitions mentioned above could be provided to potential participants of a study similar to the current study to determine whether clarity regarding the terms had an influence on the outcomes of the study. The expectation is that clearer definitions of the different terms and greater understanding of the relationships between the skills would result in more unified replies and more meaningful results.

Kaplan and Harris-Salamone (2009) identified inadequate management as accounting for 65% of the causes of project failure. Companies provide training at great expense to enhance the skills of employees with hopes to improve projects and a higher success rate. The literature review indicated that it was not only government IT projects that failed—a high percentage of all IT projects fail. Research could be undertaken to determine which skills were deemed important for IT managers in sectors other than

government. The results of such a study, together with those of studies that focused on government employees, could be used to draft training that would benefit IT managers and supervisors in both private sector and government.

Conclusions

Over the past 14 years, the government information technology (IT) spending has increased from $40 billion in 2001 to $86 billion in 2015 (U.S. Office of Management and Budget, 2015). The increase in spending resulted from updating current technology and an initiative to integrate modern technology solutions to enhance its mission and service. The GAO in its 2015 High-Risk report stated that two of the nine reasons for information technology (IT) project failure were program staff lacking the necessary knowledge and skills, and senior department and agency executives not supporting the program. To meet the changing needs of the government, it must shift to more efficient computing technology such as cloud services, big data analytics, and cyber security, new computer systems, faster servers, software, and programs that will help their daily operations run more effectively and efficiently. To accomplish the transformation, government IT projects will need to be redesigned to handle the scope of the new technological implementations.

Government IT projects require the presence of an IT project manager supervisor to ensure that the project remains on track, that the time constraints are met, and that the entire project stays within the allotted budget: “The project manager has primary responsibility for managing the project, but the project manager’s supervisor has a responsibility to oversee the project manager as the results of the project reflect on his/her part of the organization” (Kloppenborg & Laning, 2012, p. 90).

The purpose of this qualitative IPA single case study was to understand the phenomenon of senior managers', supervisors', and project managers' expectations of required skills needed for supervisors of government project managers. The researcher identified the critical skills supervisors of IT project managers in government, particularly government senior managers, supervisors, and program managers, needed in the oversight of any government project. The researcher focused on providing valuable knowledge to the IT profession in order to clarify the skills that are necessary to manage IT project managers in government. The researcher's intent was to show that the identification of such skills would improve the training of government senior and program managers, so that they can incorporate the understanding and practice of these skills in the implementation of future projects.

The results of this study indicated that the different groups of IT employees—senior management, project managers, and supervisors—deemed different skill sets as essential. There was consensus regarding the importance of communication skills since all groups included aspects of communication in the top-five essential skills. However, the rating number allocated to these skills and the definition of the terms differed between the participants and across the groups. This finding suggested that the skills should be better defined to avoid different perceptions of the term used and to focus on specific aspects of skills that are essential to government IT managers.

The differences in the ranking of skills led to the conclusion that the participants' personalities, number of years in leadership roles and job function, together with the definition the individual ascribed to the term, all had an influence on the rating provided. Of the three groups, the supervisor group was the most unified in their ranking of

communication processes; their definition of this term seemed to be richer than that used by the other two groups. The inclusion of listening as an integral part of communication accounted for some of the differences encountered in ranking of this skill.

Differing job functions between the two levels, namely senior management participants and project manager participants, may account for differences in perception. Senior management is frequently required to handle large and more complex projects and schemas of employees and individuals, making their duties often more holistic and general.

The groups suggested different additional skills to be added to the list of essential skills. The supervisor group's suggestions reflected both the suggestions by project managers and senior management, combining the macro-level universal skills with the micro-level detailed skills. They also suggested the following new skills for the list: empathy, time management, persistence, and performance management.

Given the importance that the IT participants attached to the people-oriented skills as opposed to technical and knowledge based skills, their focus on the need for building personal relationships, effective management based on clear communication, and listening skills led to the realization that more computers and faster Internet connections are not sufficient in addressing non-compliance of projects. It is the interpersonal, human factor that makes the difference.

Weinstein and Jaques (2013) suggested that there was significant shortage in the types of managers who can incorporate the people skills that are necessary to oversee the IT project manager into project completion. This study highlights the skills that are important and can be used by government human resource practitioners to develop

training and assist with selecting the most appropriate candidates for government supervisor positions.

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Appendix A

Interview Questions – Supervisors of Government Project Managers

1. Are you a government contractor or government employee?
2. [Government] What is your government grade and series?
3. [Contractor] What is your official title as contractor for the government?
4. Do you currently, or in the past, supervise a government IT projects?
5. Do you have supervisor oversight for contractor, government or both?
6. How many years of experience do you have as a supervisor of IT teams in government?
7. The list of skills listed below was compiled from phase one and two of this research. Do you feel that the compiled list of skills is critical for supervisors of government project managers?

Effective Questioning Skills	Technical Skills	Achievement / Results Skills
Listening Skills	Customer Service Skills	Written & Oral Communication Skills
Leadership Skills	Initiative Skills	Team Building & Conflict Resolution Skills
Motivation Skills	Analytical Skills	Project Management Skills
Problem Solving Skills	Organizational Skills	Interpersonal Skills

   a. [No] Which skills do you disagree with and why?
   b. [Yes] Why do you agree with the list?
8. Do you feel that that there is a skill or competency a supervisor should have that is not on the list but you believe should be included?
   a. [No] –Move to Question 9
   b. [Yes] What are the skills and why do you feel they are important to have on this list?
9. Do you feel that there are skills or competencies on the list that you believe should not be there?
   a. [Yes] What are the skills and why do you believe they should be eliminated?
10. Do you feel that there are skills on the list that you believe is a must have in the government environment?

a. [Yes] What are the skills and rank them in order of importance?

Appendix B

Interview Questions – Government Project Managers

1. Are you a government contractor or government employee?
2. [Government] What is your government grade and series?
3. [Contractor] What is your official title as contractor for the government?
4. Do you currently, or in the past, manage government IT projects?
5. Do you have oversight for contractor, government or both?
6. How many years of experience do you have as a government IT project manager?
7. The list of skills listed below was compiled from phase one and two of this research. Do you feel that the compiled list of skills is critical for supervisors of government project managers?

Effective Questioning Skills	Technical Skills	Achievement / Results Skills
Listening Skills	Customer Service Skills	Written & Oral Communication Skills
Leadership Skills	Initiative Skills	Team Building & Conflict Resolution Skills
Motivation Skills	Analytical Skills	Project Management Skills
Problem Solving Skills	Organizational Skills	Interpersonal Skills

   a. [No] Which skills do you disagree with and why?
   b. [Yes] Why do you agree with the list?
8. Do you feel that that there is a skill or competency a supervisor should have that is not on the list but you believe should be included?
   a. [No] –Move to Question 9
   b. [Yes] What are the skills and why do you feel they are important to have on this list?
9. Do you feel that there are skills or competencies on the list that you believe should not be there?
   a. [Yes] What are the skills and why do you believe they should be eliminated?
10. Do you feel that there are skills on the list that you believe is a must have in the government environment?
   a. [Yes] What are the skills and rank them in order of importance?

Appendix C

Interview Questions – Senior Government Management

1. Are you a government contractor or employee?
2. [Government] What is your official government grade and series?
3. [Contractor] What is you official title?
4. How many years of government senior management experience do you have?
5. The list of skills listed below was compiled from phase one and two of this research. Do you feel that the compiled list of skills is critical for supervisors of government project managers?

Effective Questioning Skills	Technical Skills	Achievement / Results Skills
Listening Skills	Customer Service Skills	Written & Oral Communication Skills
Leadership Skills	Initiative Skills	Team Building & Conflict Resolution Skills
Motivation Skills	Analytical Skills	Project Management Skills
Problem Solving Skills	Organizational Skills	Interpersonal Skills

   a. [No] Which skills do you disagree with and why?
   b. [Yes] Why do you agree with the list?
6. Do you feel that that there is a skill or competency a supervisor should have that is not on the list but you believe should be included?
   a. [No] –Move to question 9
   b. [Yes] What are the skills and why do you feel they are important to have on this list?
7. Do you feel that there are skills or competencies on the list that you believe should not be there?
   a. [No] Move to question 6
   b. [Yes] What are the skills and why do you believe they should be eliminated?
8. Do you feel that there are skills on the list that you believe is a must have in the government environment?

[Yes] What are the skills and rank them in order of importance?

Appendix D

In-depth Interview Skills List

Effective Questioning Skills

Listening Skills

Leadership Skills

Motivation Skills

Team Building & Conflict Resolution Skills

Problem Solving Skills

Achievement / Results Skills

Technical Skills

Customer Service Skills

Initiative Skills

Analytical Skills

Organizational Skills

Project Management Skills

Written & Oral Communication Skills

Interpersonal Skills

Appendix E

Consent Form

Robert Morris University
Institutional Review Board
Approval Date: 06/04/2015
Renewal Date: 06/10/2018
IRB Number: #**20150601211**

CONSENT TO ACT AS A PARTICIPANT IN A RESEARCH STUDY

TITLE: Critical Skills for Supervisors of Information Technology Project Managers in Government

Principal Investigator: Jacqueline Burns
Robert Morris University
Moon Township, PA 15108

DESCRIPTION: This study is designed to identify the critical skill set that supervisors of IT project managers in government; particularly government senior managers and program managers need in the oversight of any government project.

RISK: There are no known risks to participants.

RIGHT TO WITHDRAW: Your participation in this research study is completely voluntary, and you have the option to withdraw from the study without penalty at any time. You do not have to participate in this study. If you decide to withdraw from the study, any responses to interview questions, audio recording, or notes taken will not be utilized in the study.

CONFIDENTIALITY/RIGHT TO PRIVACY: All information containing the identity of participants will remain confidential. The confidentially of the participants will be protected by assigning fictional names to the in-depth interview responses. Other than the researcher, Jacqueline Burns, no one will have access to your identifiable individual

responses. All data will be secured on an encrypted password-protected Iron-key, FIPS-200 compliant, media storage device and locked in a safe. Seven days after coding the recorded interviews, the audio files will be moved from active storage to archival media. The archival media will consist of writing the audio files to CD and storing the CD in a safe. The audio recorder will be degaussed after audio files are transferred to CD. The audio CDs will be destroyed 30 days after the acceptance of the dissertation for graduation.

COST AND PAYMENT: NONE

STUDY CONTACT INFORMATION: If you have general questions about this research, or if you have any complaints or concerns referencing this research, you may contact Jacqueline Burns at 412-262-8285. This study is being conducted under the direction of my advisor Dr. Donna Cellante.

PRINCIPAL INVESTIGATOR: Jacqueline Burns

STUDY SPONSOR: NONE

PURPOSE OF THE RESEARCH STUDY:

The purpose of the study is to identify the critical skill set that supervisors of IT project managers in government; particularly government senior managers and program managers need in the oversight of any government project. This study is geared towards providing valuable research to the IT profession in the hopes that the clarification of what skills are needed to manage IT project managers in government. It is the intent of this research to show that the identification of such skills will perpetuate the training of government senior and program managers so that they can incorporate the understanding and practice of these skills in the implementation of future projects.

AGREEMENT TO PARTICIPATE:

All of the above has been explained to me, and all of my current questions have been answered. I understand that I am encouraged to ask questions about any aspect of this research during the course of this study, and any future questions will be answered by the researchers listed on the front page of this form.

Any questions which I have about my rights as a research participant will be answered by the Human Subjects Protection Advocate of the IRB Office, Robert Morris University (412-262-8285).

By signing this form, I agree to participate in this research study. A copy of this consent form will be given to me.

_____ _____ _____

Participant's Signature Print Name Date

_____ _____

Investigator Signature Date

Appendix F

Demographics

Senior Manager Participants

Participant	Employer	Grade/Job Title	Years Managing IT
SM 1	Government	SES	15
SM 2	Government	GS-15	15
SM 3	Government	GS-15	12
SM 4	Contractor	Vice President	14
SM 5	Government	GS-15	16

Supervisor Participants

Participant	Employer	Grade/Job Title	Years Supervising IT
SUP 1	Government	SUP GS-14-2210	13
SUP 2	Government	SUP GS-14-2210	6
SUP 3	Contractor	Program Manager	15
SUP 4	Government	SUP GS-14-2210	19
SUP 5	Contractor	Director	15

Project Manager Participants

Participant	Employer	Grade/Job Title	Years Managing Government IT Projects
PM 1	Contractor	Senior Engineer	8
PM 2	Government	GS-14	12
PM 3	Contractor	Project Manager	30
PM 4	Contractor	Project SME (Advisor)	18
PM 5	Government	GS-14	15

Appendix G

Senior Manager's Top-Five Skills Selected

Participant	Skills
SM 1	1. Leadership Skills 2. Communication Skills 3. Collaboration 4. Problem Solving Skills 5. Achievement Skills
SM 2	1. Leadership Skills 2. Technical Skills 3. Analytical Skills 4. Motivation Skills 5. Communication Skills
SM 3	1. Listening Skills 2. Effective Questioning Skills 3. Problem-Solving Skills 4. Communication Skills 5. Team Building & Conflict Resolution skills
SM 4	1. Team Building & Conflict Resolution Skills 2. Problem-Solving Skills 3. Communication Skills 4. Leadership Skills 5. Technical Skills
SM 5	1. Listening Skills 2. Leadership Skills 3. Team Building & Conflict Resolution Skills 4. Problem-Solving Skills 5. Achievement Skills

Senior Manager's Suggested Skills

1. Collaboration (Internal and External)
2. Strategic Thinking
3. Emotional Intelligence
4. Adaptability

Appendix H

Project Manager's Top-Five Skills Selected

Participant	Skills
PM 1	1. Effective Questioning skills 2. Listening Skill 3. Team Building & Conflict Resolution 4. Organizational Skills 5. Problem-Solving Skills
PM 2	1. Technical Skills 2. Interpersonal Skills 3. Project Management Skills 4. Customer Service Skills 5. Communication Skills
PM 3	1. Communications skills 2. Team Building & Conflict Resolution Skills 3. Leadership Skills 4. Interpersonal Skills 5. Effective Questioning Skills
PM 4	1. Team Building & Conflict Resolution Skills 2. Motivation Skills 3. Leadership Skills 4. Customer Service Skills 5. Technical skills
PM 5	1. Effective Questioning Skills 2. Listening Skills 3. Leadership Skills 4. Motivations Skills 5. Problem-Solving Skills

Project Managers' Suggested Skills

1. Delegation Skills
2. Budgeting Skills
3. Time Management Skills
4. Legal (Government Contracts) Skills
5. Requirement Gathering Skills
6. Managing Above and Below Skills

Appendix I

Supervisors' Top-Five Skills Selected

Participant	Skills
SUP 1	1. Listening Skills 2. Effective Questioning Skills 3. Change Management Skills 4. Communication Skills 5. Organizational Skills
SUP 2	1. Listening Skills 2. Customer Service Skills 3. Organizational Skills 4. Interpersonal Skills 5. Analytical Skills
SUP 3	1. Organizational Skills 2. Technical Skills (Area you are working) 3. Listening Skills 4. Communication Skills 5. Customer Service Skills (critical)
SUP 4	1. Listening Skills 2. Effective Questioning Skills 3. Motivation Skills 4. Achievement Orientation Skills 5. Team Building & Conflict Resolution Skills
SUP 5	1. Listening Skills 2. Effective Questioning Skills 3. Communication Skills 4. Interpersonal Skills 5. Leadership Skills

Supervisors' Suggested Skills

1. Time Management
2. Empathy
3. Emotional Intelligence