



Information Technology

Elixir Inform. Tech. 101 (2016) 43978-43991

Elixir
ISSN: 2229-712X

Exploring Imperatives in Structuring Information Assurance Teams

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ARTICLE INFO

Article history:

Received: 7 November 2016;

Received in revised form:

6 December 2016;

Accepted: 16 December 2016;

Keywords

Information assurance (IA) project, Leadership, Moustakas' modified van Kaam analysis method.

ABSTRACT

Information assurance (IA) projects serve as critical elements of the information technology industry, yet enjoy limited success since these pursuits are often plagued by classical project management failures stemming from improperly managing budgets, cost overruns, and missing projected timelines, commonly attributed to performance of the project teams. The purpose of this phenomenological study was to explore the leadership and other strategies necessary to enhance IA project performance achievement and success. The Lewin (1939) situational leadership theory underpinned the study and served as a theoretical reference source for deeper interpretations of the study data, against these propositions. Interviews were conducted with 20 IA professionals located in the Washington, DC Metropolitan area of the United States. The data were transcribed, coded, and analyzed using a process of thematic analysis using the Moustakas' modified van Kaam analysis method. The major themes from the analysis of the interviews of IA professionals denoted the importance of leveraging the technical knowledge of these resources, with a balanced mix of technical and subject matter experts in make-up of project teams. Training in increasing the success of these teams indicated that this must commence at the leadership level. The study results may contribute to existing knowledge in improving project success and in the development and growth of the IA industry.

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Introduction

Research Study: Underlying Issues

The information assurance (IA) industry ensures the confidentiality, integrity, and availability of valuable data and information in systems and computer networks within organizations (Cuthrell, 2010). Information Technology (IT) security is a strategic component in providing an organization with protection and safeguard to private access to organizational members of proprietary information (Ghezal, 2011). The expectation of IT security professionals, within the information assurance industry, is to ensure that data access is restricted to authorized personnel only with the institution of appropriate safeguards.

As in any field of organizational endeavor, a fair share of proponents and antagonists to the workings of the IA industry is evident, which is fine, provided such debates does not compromise the functioning and efficiency of the IA purpose in ensuring data quality and integrity (McFadzean, Ezingear, & Birchall, 2011). Typically, IT security teams work in collaboration in teams, and in synergy with information systems, depicting efforts to safeguard information systems, operations, and assets of private, government and organizations of all dispositions (Hong, 2013). Current trends have indicated that project manager lead the stewardship and management of an IT security team from project commencement, to specified timelines (Darrell, Baccharini, & Love, 2010).

The purpose of this phenomenological study was to evaluate the optimal structure of the IT security team, by studying constraints and barriers in contemporary practices which may inhibit success in assigned IA projects. The study entailed gaining insights into the lived experiences of project managers (PM), and subject matter experts (SME) from

various IT consulting organizations within the Washington, DC geographic area in respect of the composition of project teams, and the challenges in executing IA projects. The findings and discoveries from the study lead to a finer understanding of the challenges and opportunities faced by project management leaders and SME's in undertaking IT security team based projects.

Background of the Problem

There is greater importance placed on current, 2015 practices in IT security from the 9/11/2001 attacks versus the impact, than in the pre-9/11 period (Gordon, Loeb, & Zhou, 2011). The issue of safeguarding sensitive information is more critical where organizational and personal data security is held of utmost important (Ivonen, 2013; Roesnre, Tadayoshi, & Molnar, 2014). As a critical functional area, information technology security played a strategic role by providing all organizational entities with a safe, reliable, and efficient access to information (Ghezal, 2011; Haig, 2013). The implementation of security measures must begin prior to the design stage, continue throughout the monitoring phase, thereby preventing the leakage of sensitive information, insuring that only authorized network traffic are attainable for all organizational systems (Hong, 2013; Steinbart, Raschke, Gal, & Dilla, 2013). Steinbart et al. (2013) opined that information assurance professionals have strived to align the actions of the end users, with the desired security posture of management, and of the firm through persuasive communication. This has included educating end users with recommendations to enact specific individual computer security awareness towards the prevention of threats, notably through consistent organizational communication (Coward, 2014).

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Information security designs serve to protect against unauthorized access to company servers, prevent businesses cyber and other attacks and ensure operations against malicious attacks (Steinbart et al., 2013). The organizational system has consequently changed from a mission driven information system, to a secure mission driven operational system (Hackney, 2011; McFadzean et al., 2011). Although organizations have tried to avoid any breach of information security by utilizing various technology mechanisms, leadership in this domain have not been able to make information 100% secure. The management of risk associated with potential breaches proved to be an integral part of resource allocation decisions by information security professionals (Roesnre et al., 2014).

Organizations have protected against the loss associated with the destruction of valuable assets by applying IT security assessment models. In achieving this goal, organizations have relied on the skills and expertise of practitioners from within the information assurance sector (Cuthrell, 2010). Though the IA industry arguably started as a result of the 9/11/2001 attacks (Gordon et al., 2011), it is apparent that there is a need for IA since almost 15 years later, organizations are still creating ways to improve IT governance, and update the processes, and procedures that may contribute to the long term goals of the industry (Vintila & Gherghina, 2012). To achieve continuous improvement in the IA process, appropriate steps, and measures should be undertaken by the IA industry leadership, because meeting the long-term goals of the information assurance industry is critical. There is an increasing level of complexity in security management that necessitates better planning, and stems from the customized infrastructure, and the growing set of deliverable guidelines to the customer (Haig, 2013). The professionals who work in the IT security industry may be both: the greatest source of weakness, and strength in an organization (Cuthrell, 2010). As such, placing importance on streamlining business processes, as well as the structure in which the teams work, is crucial (Kim, 2010).

IT security team typically comprise of individuals such as a project manager, technical lead, subject matter expert, technical writer, and a senior security analyst, and junior security analyst. The designated project manager leads the execution of project from inception to final completion (Denning & Frailey, 2011). A drawback to the efficient execution may manifest when the project manager does not have the technical background in IT security and relies on project management skills alones (Darrell et al., 2010). As noted by Miller (2013), project managers lacking technical expertise enhance the risk of failure or incorrect solutions emerging. Ideally, a collaborative union at the leadership level with an SME co-sharing project leadership may endow the appropriate business scope and knowledge integration and other technical guidance to enhance successful IA projects. The lack of technical and subject matters experts has been voiced on reasons that IA projects fail successful completion within time, budget, and quality specs conformance (Narayanaswamy, Grover, & Henry, 2013).

The discussion on project failures is replete with cases, and the examples of IT failures may indicate emphasis on project management principles, however suffering from technical competence, which may strengthen the argument for a blend of project management leadership of management techniques with technological adeptness (Susser, 2012). The imbalance in IA project teams seems a significant cause for

limited successful achievement in the IA project sphere (Bateman & Barry, 2012). The insistence on formal project management team compositions, particularly restricted to project management leadership of IT security teams, seems very prevalent in the industry. Darrell et al. (2010) emphasized the imperatives of project stewardship managers to oversee business operations in the realm of IA.

Statement of Problem

The failure of over 70% of information technology projects, often attributed to exceeding allocated costs, specified timelines and project outcomes with less than desired functionality, represents wasted efforts (Cecez-Kemanovic, Kautz, & Abrahall, 2014; Susser, 2012). The high failure rate may represent inadequate attention to technical specifications, application of appropriate knowledge, and outlining at the outset scoped and requirements analysis (Miller, 2014; Narayanaswamy et al., 2013). Porter, Gogus, and Yu (2011) cited ineffective leadership as reason to foster collaboration synergies between technical and project management team member expertise. The general business problem is that IT team structures reflect imbalance in a blend of technical and project management expertise, which constrains project success (Bardhan, Krishnan, & Lin, 2013; Niederman & Tan, 2011), corroborated by Williams and Williams (2011) who cited a failure rate of 72% attributed to inadequacies in technical, process, and project leadership as contributing factors. The specific business problem is that information technology leaders in the IA industry have limited strategies to improve information technology project team performance.

Research Purpose and Aims

The purpose of this qualitative, study was to explore the strategies that IA leaders need to improve information technology project success and outcomes. The research entailed in-depth interviews of IA professionals representing a sample comprised of 10 subject matter experts, and 10 project managers and drawn from a population of 30 IT consulting organizations within the Washington, DC Metropolitan geographic area. The sample size for a qualitative, phenomenological-based study can vary from five to twenty-five participants, ideally through interviewing qualified participants steeped in experiences associated with the phenomenon under study (Alford, 2011; Hynes, 2012; Tirgari, 2012).

In this qualitative phenomenological approach, the focus was on gaining detailed insights through one-on-one individual interviews as the prime data collection method. The rationale for this study was making a meaningful contribution to the existing knowledge on IA projects. Successful project outcomes lead to organizational success, and improved welfare and standing of the professionals involved in such undertakings (Lockett, Currie, Finn, Martin, & Waring, 2014).

Rationale for Research and Analysis of Literature

In evaluating the different research methodological options, qualitative research stood out as optimal for this study because the process is flexible, and presents a way to probe deeply into human experiences (Nourkova, 2011).

A phenomenological research design is also ideal to gain an understanding of the lived experiences of a group of individuals (Alford, 2011). The qualitative method with a phenomenological design facilitated deeper research into understanding the nuances and intricacies of project success in the IA industry as this related to team composition and structure. Phenomenology represents and evolving and

interpretive process and research design, possible with in-depth interviews of qualified participants who possess a strong affiliation with the subject of inquiry (Alford, 2011; Moustakas, 1994; Targari, 2012). Phenomenology served to gain further understanding into the information assurance industry, in assessing leadership practices, as advocated by authoritative experts in this form of inquiry (Targari, 2012).

The success of IT projects in the IA industry is a critical area of organizational focus considering the needs for data security and the potential losses in billions annually with lapses and breaches stemming from failure to enact adequate measures in data integrity and security (Tank & Zimmerman, 2013). The goal of the phenomenological approach was to rely on participants' views of the situation studied, within the discussions and interactions with the participants (Yu, 2010). For this study, the phenomenological design and the qualitative research method was conducive to exploring attitudes, behavior, and experiences through one-on-one interviews of project managers and SME's purposefully drawn from a pool of professionals in this arena. Using qualitative research, the researcher may gain in depth opinions from participants (Camfield & Palmer-Jones, 2013), and was true in this study as well. Within the IT security team structure, there are seven different job positions that form a cohesive working unit. Conducting the interview sessions with PMs and SMEs served to elicit the lived experiences of IA professionals that work within the IT security field.

The research effort included focusing on striving to obtain meaningful, deep, and worthy perceptions of how project managers and subject matter experts view the leadership strategy within the IA industry (Sinden et al., 2013). Seminal views prompted the choice in the rationale for qualitative research to glean deep insight into the complex, detailed understanding of an issue (Moustakas, 1994) and served in fulfilling the objectives of this research. The advantages and disadvantages of the leadership style solicited from the worldview of the project managers and subject matter experts who participated in this study, all from within the information assurance industry may add to knowledge in this area.

Research Question

The overarching research question for the study was: What strategies do information technology leaders need in order to improve information technology project team performance?

The interview questions were:

1. Taking into consideration your experiences in your present/post positions, how do you identify and explain which components contributes to the success of IT project teams?
2. Considering your experiences to date, what is your observation of the leadership strategies of IT project team performance?
3. What aspects of the leadership strategies within the information assurance industry do you feel are effective?
4. Which component(s) of the IT project team performance structure are successful?
5. Taking into consideration your experiences in your present/post positions, how would you identify and explain which component(s) of the IT project team performance structure may be improved?
6. What are the barriers or enablers to improving the IT project team performance and why?
7. How have project managers have contributed or failed to contribute to the achievement of IT project teams?

8. How have subject matter experts contributed or failed to contribute to the achievement of IT project teams?

9. How do you perceive the role of project managers in leading IT project teams?

10. What do you believe should be the role of subject matter experts in leading IT project teams and why?

Theoretical Underpinnings

Leadership theories offer valuable perspectives to study leadership behavior and the results obtained by these individuals (Parris & Peachey, 2013). The postulations espoused in these views on leadership, which underpinned this study, was the situational leadership theory of Lewin (1939). The situational leadership theorists have advocated leader adaptability and flexibility to the team, and proposed that in a situation where the leader is the most knowledgeable and experienced member of a group, the authoritarian style might be the most appropriate (Lewin, Lippit, & White, 1939).

Lewin, Lippit, and White (1939) recognized three situational leadership styles; authoritarian, democratic, and delegation. Bhatti, Maitlo, Shaikh, Hashmi, and Shaikh (2012) in respect of the three styles, contended that the democratic leadership approach was the most effective style when applied to the professional environment. As global businesses continually evolve, the concept of business strategy should grow to align IA team processes to fit the management model favored by theorists, and the evolution of project management in contemporary settings. Within the information assurance industry, decision making entails evaluating the field to ensure continued effectiveness. The role of project and all organizational leaders is to advance the fortunes of organizations in a globalized environment by proactively addressing challenges (Voegtlin, Patzer, & Scherer, 2011).

Adopting a strategy to ensure effective leadership within the information technology economy is logical, and critical for organizational survival (Ghezal, 2011). That strategy must reflect congruence to shortcoming is contemporary practices by paying heed to the findings of research. In keeping with recommendations of experts, executives in the information assurance field may see the importance to align management practices to suit business goals (McFadzean et al., 2011). Balmer (2012) contended that it is the duty of leaders to monitor the performance of tasks in terms of goal achievement and ensure the motivation of a cohesive team to perform such tasks. The situational leadership theory was relevant to this study because the leadership qualities of IT security teams needed assessment.

Potential Significance of the Research

The findings and discoveries of this study may be of significance to subject matter experts, and project managers within the IA industry in the ongoing quest to develop optimal IT security team project structures. The IT security industry must continuously evolve so that sustainability and successful project undertaking is achievable (Harmon & Moolenkamp, 2012). The findings from this study may have positive bearing and contribution to knowledge on the IA industry. The importance and possible outcome of sustaining the IT security industry may include the positive growth and longevity of government contracts, increasing employee morale, and customer satisfaction. Perhaps evaluating the leadership trends will be the first step in achieving such a goal.

Leading Technical Teams

In the late 1990s, IA managers, and directors realized that the computing field had matured to the point where members were becoming interested in team support for professional

activities (Denning & Frailey, 2011; Seo, Boonstra, & Offenbeek, 2011). The growth experienced within the information assurance industry has reflected the number of products, and services offered, and the adoption of these technologies (Chaudhuri, Dayal, & Narasayya, 2011). The focus of IT security has shifted from the physical security of computer systems, to securing networks, and business information models (Sohem, 2013). This new mode of communication appears indicative that the security team dynamics have been inadequate to meet the threats, and challenges inherent in the new technology infrastructure (Tallon & Pinsonneault, 2011). Leading technical teams often require leaders to challenge team members, motivate and empower employees to solve problems independently, and contribute ideas, not otherwise developed, by the leaders of the technical teams (Litwin, 2011).

In examining several information technology professionals, including firewall administrators, security architects, security compliance analysts, and IT audit professionals, Hui, Hui, and Yue (2012) researched if the technologies assigned were performing the security tasks intended, and evaluated the survivability of the infrastructure network, and team assurance after an attack on the infrastructure. Voegtlin, Patzer, and Scherer (2011) proposed a new model of responsible leadership that detailed how an understanding of leadership can address the challenges of technical team composition. Han, Chang, and Hahn (2011) argued that two characteristics of a downstream industry included IT intensity, and competitiveness. In addressing the importance of the IA team composition, communication between chief executive officers (CEOs), and information technology (IT) professionals is necessary (Ayyagari, Grover, & Purvis 2011; Hall, Banchor, & Matos, 2014).

Litwin (2011) discovered that the link between the technical team involvement, and the organizational performance was not precise, and that the diffusion of information technology in the workplace complicated the relationship. Weiss and Adams (2011) contended that information technology professionals were aware of security concerns associated with projects, and strived to reduce threats to security. The organizational security policy and information security training should be sociotechnical (Sung & Su, 2013). Corporate leaders should consider training as a primary method of protecting information systems, and the teams that perform such task (Iivonen, 2013; Sung & Su, 2013; Teasley, Jordan, & Sangtani, 2012).

Project performance links to effective team composition, project plans, and budget in conformance to quality objectives, project cost, and schedule to achieve technical, and organizational success (Xue, Zhang, Ling, & Zhao, 2013). IA project teams have often been seen to be short term, involve cross functional experience, and frequently burdened with deliverable priorities (Teasley et al., 2012). Seo, Boonstra, and Offenbeek (2011) noted that as part of the technological strategies, stress should be placed on the importance of training, the quality of task significance, and work satisfaction, which may contribute to project effectiveness. The leadership of IT security teams should align staff on projects, judiciously utilizing a blend of talent to reduce the time spent on training under experienced staff, to ensure the success of the team (Martin, Bulkan, & Klempt, 2011). Basten, Joosten, and Mellis (2011) suggested that finding the best people to fit in a team dynamic consist of looking for employees who fit in with the existing company culture.

Project Management Spectrum

Project managers play an important role in contributing to the delivery of successful IT projects (Liu, Zhang, Keil, & Chen, 2010). The PM's leadership role is important in motivating team members, and creating an effective working environment to allow the project to meet challenges (Anantatmula, 2010; Neverauskas, Bakinaite, & Meiliene, 2013). Hahn, Bredillett, Gyeung-Min, and Taloc (2012) discovered that there was a relationship between a project manager's leadership competencies, and project success. The objective in some studies, was to identify characteristics common to the successful hire of project managers, from the perspectives of IT recruiters (Hernandez, Aderton, & Eidom, 2011; Starkweather & Stevenson, 2011). A key challenge for a project manager is to ensure that all team member goals align with the project objectives (Narayanaswamy et al., 2013). Basten et al. (2011) reasoned that for project managers to be successful in leading IT security based projects, technical specialties, technical management, business functional, interpersonal, and management skills should be strong.

Project managers selected on technical or managerial expertise have often lacked the required competencies to deliver a successful IT security based project (Darrell et al., 2010; Narayanaswamy et al., 2013). The soft competencies of the IT project managers were found vital during the initiation, planning, implementation, and closeout phases to ensure project success (Levin, 2011; Liu et al., 2010). The expectation of project managers is to be proactive in monitoring, distinguishing, and mitigating issues that can get out of control during the project, so that increases in costs are avoided (Narayanaswamy et al., 2013). Basten et al. (2011) identified that there should be continuous project based learning to further promote the development of necessary skills, and knowledge for successful project management, and one of the ways of doing so was in documenting risks. Liu et al. (2010) noted that even if project management documents the risks and there is an attempt to control them, external uncertainty such as competitive threats, regulatory changes, and market shifts add threats to the project, and may limit the unexpected benefits.

The Research Process

The research for this undertaking included gaining insight into the experiences of study participants. The analysis of the interviews followed a five-step approach and included bracketing, horizontalization, variation, synthesis, and textural and structural description (Moustakas, 1994). To collect data for this study, the research included the utilization of a list of 10 semistructured, open ended interview questions. Data collection entailed recording of the study participants' responses using an audio tape recorder and taking notes to document observations of participants' feelings and expressions. The interview guide outlined steps to ensure flexibility in fostering deeper discussions and facilitated recording of additional questions and discussion that arose from the responses generated, as these contributed to the depth of the insights. Qualitative research is a situated activity that can help locate the observer in the professional practice, which also consists of a set of material and interpretive practices that make the world visible (Richards, 2012).

IA Professionals as Participants

Purposive sampling is a smaller set of a larger population drawn from a specific cultural domain of which correlate to research objectives (Leahy, 2013). The total sample size was

10 project managers, and 10 subject matter experts, which helped in obtaining deep and meaningful insight related to the study objectives. Details on past leadership based information technology studies indicated sample size variations of five to twenty participants for a qualitatively based inquiry (Alford, 2011; Marshall, Cardon, Poddar, & Fontenot, 2013; Reiter, Stewart, & Bruce, 2011). In conformance with notable researcher views, this study ensured an adequate sample size. Targari (2012) recommended interviewing five to twenty-five professionals who had experienced the same phenomenon, while Von Hagel and Miller (2011) suggested interviewing up to 20 individuals to achieve data saturation. Essentially, the most important emphasis was on quality and using insight on the phenomenon for a small number of participants who have experienced it first-hand (Bartkowiak, 2012; Wang, Bickle, & Harril, 2010). The access to the participants for further study was not difficult. Personal presence in the IT security industry helped in selecting qualified and experience IA professionals who met all the specific eligibility criteria outlined. Instead of randomizing samples, it is more effective for qualitative researchers to deliberately select participants for a study (Marshall et al., 2013; Starke, 2013; Steelman, Hammer, & Limayem, 2014). Participants filled out consent forms authorizing to grant permission to use responses for the study. In keeping with ethical practices, efforts made helped to ensure anonymity by assigning codes and thus in protecting the identities of the participants. These steps may represent the conformance to maintaining high ethical research practice standards.

Research Method and Design

The qualitative method is an approach of exploring data for patterns, then analyzing it for possible emergence of themes (Fogle, 2011; Hynes, 2012). In using the phenomenological approach, the research included collecting the views from IA professionals who have worked extensively within the IT security industry. The data collected also reflected a composite description of participant experiences and in the course of analysis, led to further development into themes for deeper insights in meeting the objectives of the study (Yu, 2010).

The phenomenological design was most appropriate because the technique was useful to obtain information about the leadership matrix within the IT security industry, and gain an understanding if the leadership strategies need development. The lived experiences of the project managers and subject matter experts were of importance (Sinden et al., 2013). Phenomenology is an interpretive process in which the researcher can acquire insight into the lived experiences of participants and gain a deeper understanding of the phenomenon (Bansal & Corley, 2011; Yu, 2010). Dhar (2013) obtained insight into the areas affecting information technology certifier abilities to evaluate technical infrastructures by applying the method of phenomenology. Reiter et al. (2011) ascertained the utility of the qualitative phenomenological inquiry method to identify how the IT project manager's interpersonal communication with contractors affected intelligence organization performance efficiency.

In referencing the aforementioned studies, the importance was stressed on assessing the participants lived experiences. The focus in this study was in acquiring contextually comprehensive data. Marshall et al. (2013) noted that data saturation is applicable to all qualitative based studies involving interviews as the primary collection instrument.

Von Hagel and Miller (2011) suggested that data saturation occurs when the data is repetitive to the point of diminishing returns; which most often occurs at 12 participants for phenomenological based studies. Fourteen of the twenty interviews were approximately 60 minutes in length, while the other 6 participants' interviews spanned 75 minutes. Because the interview questions were open-ended, the length of each interview session was unique and dependent on the openness and personality trait of the participant. The stated reoccurring phenomenon was that most of the IA projects failed due to lack of: training, communication, technical knowledge, and/or leadership skills.

While analyzing the interview transcripts, the significant statements that provided an understanding of how the participants experienced the phenomenon was underlined, reduced, and then clusters were developed to create themes (Marais, 2012; Moustakas, 1994; Purucker, Landwehr, Sprott, & Herrmann, 2012; Targari, 2012). The total number of 20 participants helped fulfil the sample size and data saturation for this study. The participants chosen were from a population of 30 IT consulting organizations located within the Washington, DC Metropolitan area which included the states of District of Columbia, Maryland, and Virginia. In conducting a qualitative, phenomenological-based research, Sangganjanavanich, Lenz, & Cavazos (2011) contended that the sample size of an effective phenomenological-based study should be at least 8 subjects. The sample size of 5 to 20 participants is adequate enough to extract meaningful, rich data in a phenomenology based study (Alford, 2011; Steelman et al., 2014). The eligibility criteria for the project managers and subject matter experts chosen from the IA field included meeting the following requirements: (a) a minimum of 7 years of experience, (b) located within the Washington DC metropolitan area, (c) served in a management role for a minimum of 3 years, (d) worked for more than two IT consulting organizations within the Washington, DC metropolitan area, (e) worked on a minimum of three contracts/teams, and (f) managed a team of over seven people. In studying and observing the leadership matrix within the IT security field, it was imperative to gain a deeper understanding and insights from the IT security professionals exposed to different team scenarios and may have had diverse experiences in working with leaders. The participants gave the consent to have interview sessions recorded, and the face to face interviews took place at a public library within the Washington, DC Metropolitan area.

Data Analysis

Qualitative study is dependent on the interpretive analysis of the collected data and the goal of this research is to rely as much as possible on the participants' views of the situation studied (Davis, 2011; Hynes, 2012; Moustakas, 1994). The data analysis technique for this research included inspecting and developing thematic elements from interview data, and drawing conclusions (Bartkowiak, 2012; Purucker et al., 2012; Starke, 2013). This qualitative, phenomenology based study followed the modified van Kaam method, which is a systematic analysis to obtain the universal meaning from participants' feedback revealing the underlying thematic of experiences through semistructured interviews (David, 2011). The modified van Kaam method is a procedure by which the researcher further analyzes the output of interview questions collected from participants during the interview sessions (Phillips-Pula et al., 2011). The van Kaam is an analysis process that starts by obtaining comprehensive descriptions

from participants, and converting those descriptions into themes (Anderson & Eppard, 1998).

The prepared set of open ended interview questions formulated, helped to focus on the lived experiences of the participants included a unique mix of probing, theoretical and self-reflective questions from 20 IA professionals chosen from the population of 30 IT consulting organizations within the Washington, District of Columbia (DC) Metropolitan geographic area.

The data collection included recording of interview responses via an audio device while transcription of the interview helped to detect key words, common phrases and themes that repeated amongst participants. The gathered and completed notes uploaded into the NVivo analysis software helped to obtain additional themes potentially missed during interview sessions. Data analysis is the method of reviewing interview responses based on replies to open ended questions in order to measure the component of the message (Marais, 2012). An inductive analysis of the data collected included categorizing the data into thematic elements. The grouping of categories by assessing multiple comparisons between the data may be useful in providing insight into the phenomenon and to generate more knowledge (Purucker et al., 2012).

Reliability and Validity in a Qualitative Context

The assessment of reliability and validity within a research is important to ensure the outcome of such study (Boesch, Schwaninger, & Scholz, 2013). Lackmann, Ernstberger, and Stich (2012) contended that the consistency and stability of interview responses repeated amongst the sample population that produces similar results adequately defines reliability. Demonstrating reliability for this study included adequately documenting the steps to choose participants, the member checking process, and describing how the data collected from the participants are gathered and analyzed (Lackmann et al., 2012).

The data collection included conducting one on one interview sessions with participants and collect data through the use of video recording to ensure validity of responses (Tirgari, 2012). The eligibility criteria for the project managers and subject matter experts selected from the IA field were as follows: (a) a minimum of 7 years of experience, (b) located within the Washington DC metropolitan area, (c) served in a management role for a minimum of 3 years, (d) worked for more than two IT consulting organizations within the Washington, DC metropolitan area, (e) worked on a minimum of three contracts/teams, and (f) managed a team of over seven people. Likewise, selecting the participants via the specific eligibility criteria also ensured the validity of the interview questions because the participants had the extensive knowledge to confidently answer the questions credibly (Von Hagel & Miller, 2011).

The exploration of validity within this research study aided in removing any discrepancies not related to this study. In doing so, utilizing member checking further ensured validity. Member checking is a quality control process in which the credibility, accuracy, and validity of the recording during the interview are given to the participants to review the authenticity of work (Morse, Barret, Mayan, Olson, & Spiers, 2002; Rager, 2005). The member checking process, as a result, served to decrease the incorrect interpretation of data by having the participants analyze and comment on the findings at the beginning and end of the data collection step.

Presentation of Research Findings

The participants responded to five screening questions to

determine eligibility to participate in the study. Participants provided information to merit meeting the qualifying criteria of: (a) years of experience within the IA industry, (b) years served in management role, (c) the number of IT consulting organizations worked for within the Washington, DC Metropolitan area, (d) the number of contracts/teams worked on, and (e) the number of people managed. Of the 20 participants, the results indicated that average years of experience within the IT industry was 15 years, ranging from 7 years (PM-5 & SME-3) to 35 years (PM-6 & SME-9). Management experience ranged from 8 participants who had 3 years of leadership experience (PM-5, PM-10, SME-1, SME-2, SME-3, SME-4, SME-5, & SME-6) to two participants who had over 15 years of leadership experience (PM-3 & SME-9). Some participants (75% or 15) worked with over 8 IT consulting organizations, while the other participants (25% or 5) worked with over 12 different IT consulting agencies. In responding to the total number of IT security contracts/teams worked on, the average number was 10 contracts/teams, ranging from 3 contracts/teams (PM-7 & PM-9) to 20 contracts/teams (SME-9). Fifty-five percent of participants stated that they managed a team ranging from 7-10 people while the other 45% managed a team ranging from 12-22 people.

The central research question was: What strategies do information technology leaders need in order to improve information technology project team performance? After the interviews were transcribed, all participants received copies requesting verification to ensure accuracy. It was important to have study participants confirm the interview scripts as the process helps to ensure the credibility and dependability of the results (Morse et al., 2002).

While analyzing the findings of the phenomenological based interviews, common themes emerged during the analysis of interview transcription. The themes were further developed based on the frequency of commonly occurring terms, and recognizing subtle connections (Bartkowiak, 2012; Moustakas, 1994; Purucker et al., 2012), from the perspective of subject matter experts and project managers. The tables depicted at the bottom of each theme were then constructed based on a process of data reduction, from detected patterns, and commonly occurring phrases. The following sections present the summaries of the important themes.

Theme 1: Hire Skilled Resources

Theme 1 was developed from responses to the pertinent Interview Question in which the participants were asked to explain what the barriers were to improving the IA project team performance and why. The two main points that were common among the responses from the participants included: lack of skilled resources, and lack of funding. Participants notably mentioned lack of skilled resources as the main barrier in improving the IA project team performance. According to Miller (2013), the success or failure of IA projects involve the skill level of the people, their ability to focus on the project, openness to change, and the overall team dynamics. Of the 20 participants, 14 (70%) noticed that IA leadership needed to hire more experienced resources (see Table 4).

SME-1 stated, "I would definitely say that a barrier to improving the IA team structure include contract funding. IT security teams are often staffed via the professional's salary versus knowledge which could negatively affect the outcome of a project." SME-3 added to this statement by noting that in trying to maintain budget costs, management often resort to hiring junior and mid-level staff. In doing so, the expertise is

lacking which negatively affects the project delivery. PM-9 contended, "...the barriers to improving the IA team mainly falls on not having enough skilled resources. As one task is completed, another task is given which resembles being stuck on a wheel that is never ending. If we had enough skilled staff, then time can be spent adequately finishing tasks and learning the counterparts' work as well."

One participant (SME-8) cited a couple of reasons that contributed to the barrier of IA teams:

Most people that do IA are techies. We need people with business rational and business functionality to lead the team. IA teams need to adopt business functionality. Since IT systems support business functions, IT systems do not necessarily stand by itself. Somebody needs to provide adequate guidance to the customer such as the work flow of the IT system. An IA techie will not be able to tell the customer the details of data but will be limited to technical descriptions only. Typically, most customers just want to meet their goal and are not necessarily concerned about the specific descriptions of the technical tasks.

Four participants (20%) stated that lack of funding is adding to the barrier of improving the IA teams (PM-4, PM-7, SME-2, and SME-9). PM-7 noted "...when it comes to funding, they are focused on one or two areas. Leadership needs to realize that IA should be first on the list verses an ad hoc request. In retrospect, security should be #1 because it deals with securing the various systems, and applications that support the organization as a whole. Unfortunately, leadership does not see it that way." Information technology firms are having trouble hiring top-notch talent because government funding limits how many people the organization can hire due to overhead operational costs (Cecez-Kecmanovic et al., 2014; Jiang, Chang, Chen, Wang, & Klein, 2014; Tiwana, Konssynski, & Venkatraman, 2013). SME-2 contended:

You need to have the leadership at the top level to buy-in to the various tasks that you will be doing. This is because they are the ones giving out the money, if you do not have a good relationship with that top manager, you will not get the funding and they will not understand the necessity of training. Since top leaders do not know the intricate details of IA, it is easy for them to dismiss the importance of the needed training for IA staff. Top level management has a preconceived notion that it is the IA professional's job to streamline the tasks for its staff.

Table 1. Hire Skilled Resources.

Commonly occurring phrases	No. of participants who shared views	% of participants who shared views
Staffed via salary versus knowledge	2	10%
Trying to maintain budget cost	2	10%
Not having enough skilled professionals	5	25%
Lack of skilled resources	3	15%
Lack of funding	2	10%

Theme 2: Project Managers Need to Know the IA Field

Theme 2 was developed from responses to Interview Questions 7, and 9. The participants were asked to describe how project managers have contributed, or failed in leading IA teams. Sixteen participants (80%) stated that project managers have failed to contribute to the achievement of IA teams

because the knowledge about the information assurance field is lacking (see Table 5). PM-10 stated:

A good project manager understands the people, limited resources, limited tools, as well as the technology itself. Then there are PMs that do not understand the technology or tools; and because they don't understand, they over commit the tasks of the technical staff. The engineers are then lost because there is no direction as well as not knowing how to achieve what the PM has already overcommitted. An effective project manager should know the subject matter knowledge at hand to adequately assist their team members in various work duties. Perhaps if project managers learn to be receptive to new ideas and educate themselves about the IT field, their understanding will be enhanced and much of their efforts can be focused on proper project estimation and planning (Bohm, 2013; Jiang et al., 2014). PM-9 was very thorough in their assessment of project managers:

I do not think they are out to watch us fail. They try to do the best they can by trying to hire the right people/skill set for the job through asking the right questions during an interview. However, most of them do not necessarily do a good job. They are doing as much as they possibly can but they also need to know a little of the IA subject matter at hand so that they know the hoops we have to jump through in our daily tasks. If PMs understood some of the aspects of IA, then they can successfully hire professionals who have the necessary skill set.

Eight participants (40%) stated that project managers are excellent at organizing meetings, setting priorities, and deadlines to meet a common goal; however, most PMs do not know the subject matter at hand which could cause them to set unrealistic timelines for tasks (PM-1, PM-3, PM-7, SME-1, SME-3, SME-4, SME-9, & SME-10). Methodical and technical skills are vital for the successful execution of projects (Dube, 2014; Wagner, Beimbom, & Weitzel, 2014). SME-2 noted:

PMs have seriously contributed to IA projects because as an SME, I do not have time to communicate with the customer; I am more concerned with getting my work done. Therefore, the PM has contributed in that regards. They are talented in communicating the overall needs of the project as appropriate. However, PMs need to have a little technical knowledge to be able to fully execute decisions that make sense.

When asked how the role of project managers is perceived in leading IA teams, most participants (14, or 70%) noted that PMs should lead IA teams because they are the bridge between the technical team and the customer for continuous reporting. SME-10 stated:

I think PMs should lead IA teams because it is a project that needs administrative attention. After all, the customer of whom you are working for expect you to know the schedules, and budgets. It is impossible to be doing your daily tasks and not be aware of the overall impact of the task at hand. For example, since new technologies are constantly emerging, you need to know when you can schedule a certain task, how much the new technology is going to cost, and how many people you can hire.

This is what PMs are responsible for, to understand the environment, see how they can integrate technologies, lay out the schedule, lay out the budget, and get the upper management's buy-in to implement such solutions. PM-2 noted, "They are the leader, manager, mentor, and communicator. They are the vehicle between the team and the

customer for the transmission of information. Essentially, if there is something the team needs, they could coordinate with the customer to get it and vice versa. The PMs are the ultimate intermediary for both sides." SME-6 contended that PMs should work "hand in hand with the SMEs so that they can understand what it takes to perform IA task" while PM-8 stated, "they add structure to the deliverable of work which is imperative for our customers." PM-9 further noted that "they are more of an outsider. When I think of project managers, I think of the Microsoft project application and maintaining a project plan. They make sure you stay on task."

Table 2. Project Managers Need to Know the IA Field.

Commonly occurring phrases	No. of participants who shared views	% of participants who shared views
PMs do not know the IA industry	1	5%
PMs do not understand the technology or tools	9	45%
PMs need to know a little of the IA subject matter	2	10%
Lack of knowledge causes PMs to set unrealistic timelines	4	20%

Theme 3: Subject Matter Experts Need People Skills

Theme 3 was developed from responses to Interview Questions 8, and 10 in which the participants were asked to share if subject matter experts have contributed or failed to contribute to the achievement of IA teams, and what their role should be in leading IA teams. Participants' responses varied markedly, from subject matter experts are difficult to work with (9, or 45%), are knowledgeable and have what it takes to get the job done (5, or 25%) to SMEs do not know the business aspect of technology (3, or 15%)(see Table 6). Though SMEs play a critical role in the success of teams by providing expertise and guidance, there may be difficulty when a professional who lacks expertise tries to offer opinions (Sohmen, 2013). Subject matter experts are not adversaries; rather, are instrumental partners in the organization's success (Warrick, 2014).

PM-6 stated that "subject matter experts failed to contribute to the achievement of IA teams because they think they know it all and it makes it hard to work with them." PM-7 supported this statement by contending that "often, SMEs do not have the communication skills that are often needed to integrate a team. SMEs tend to do things their way, without input from others because they know how to deal with various technologies specifically. Therefore, the need to accept input from other team members and understand how a team works overall is necessary." SME-2 noted, "SMEs tend not to listen to the ideas or viewpoints of others. Within the IA industry, SMEs need to learn to listen to other ideas. Trying to do everything your way is never going to work. Therefore, it is important to listen, work, and collaborate with the rest of the team to get the work done." Five participants observed that SMEs bring a plethora of experience and wear more than one hat; however, they do not communicate their strategies effectively (PM-2, PM-4, PM-9, SME-5, & SME-7).

SMEs play a key role in that their input is crucial to the development of quality deliverables; therefore, teamwork is a critical process effective for team functioning (Fisher, 2014).

Three participants noted that SMEs do not know how to manage schedules, and set priorities when it comes to setting team deadlines (PM-1, SME-8, & SME-9). SME-9 stated, "SME's are the most talented yet most difficult people to work

with due to them not really paying attention to budget limitation, but rather, completion of the work itself." PM-1 noted, "SMEs are very knowledgeable at what they do, and often lead specific tasks at hand in the right direction. However, they do not necessarily know how to set priorities, and deadlines which could be detrimental to the outcome of any IA based projects." Five participants mentioned that SMEs are knowledgeable, and have what it takes to get the job done (PM-8, PM-10, SME-3, SME-4, & SME-10). SME-4 opined that SMEs know the technical tasks deeply, and can solve the most complex of problems. PM-10 felt that "SMEs have the expertise, and background to make sure that a specific task is less of an obstacle, and that the project duration shorter because they know what they are doing versus someone who does not know what they are doing." SME-3 stated "SME's are successful because they are intimate with the specifics of each project and can manage them accurately. A basic challenge in the flawless functioning of information assurance teams is the need to incorporate individual contributions through the interaction of team members, which may lead to producing the desired outcome (Gallie, Zhou, Felstead, & Green, 2012; Pearce, Wassenaar, & Manz, 2014). When asked what should be the role of subject matter experts in leading IA teams, participants' responses included, SME's should be a team member versus a leader as their main focus is to technically guide each project (10, or 50%). SME-4 contended "...SMEs should just be part of the team, and when other team members have questions, they are to have the answers." PM-6 further agreed by stating that SMEs, though good in their specific specialty, are not necessarily good in leading people. PM-10 noted, "SMEs are innovators, they know the technologies that work, and they should assist in implementing technologies in a timely, efficient, and proper manner."

Subject matter experts should lead IA teams because they have the knowledge of what the needs are and the requirements it takes to make the project successful (5, or 25%). PM-9 explained, "They pay attention to the schedule but at the same time, they are both leaders, and could be a worker bee.

Table 3. Subject Matter Experts Need People Skills.

Commonly occurring phrases	No. of participants who shared views	% of participants who shared views
SMEs think they know it all	4	20%
SMEs tend to do things their way	2	10%
SMEs do not listen to the viewpoints of others	3	15%
SMEs do not communicate strategies effectively	5	25%
SMEs do not pay attention to budget limitations	3	15%

Not only are they managing the schedule, but they can also be hands-on in dealing with the tasks at hand; whereas a project manager is lost." SME-6 supported this statement, "To me, they would be a better manager because a real SME should have the knowledge of what the needs are and what the requirements are to make the project successful." SME-3 contended that SMEs should lead IA teams because the

knowledge of IT security tasks, how it should work, and how to get it to work is apparent.

Theme 4: Business Minded Professionals Should Lead IA Teams

Theme 4 was developed from responses to Interview Question 11 in which the participants were asked if there were any additional information they would like to discuss that were not part of the interview questions. It was quite a surprise to discover the last theme for this research study. All the participants gave their opinions as to who should be the ultimate authority in leading IA teams. The main theme detected among participant responses is, business minded professionals should lead IA teams. Of the 20 participants, 9 (45%) commented that project managers should lead IA teams, 9 (45%) noted that IA teams should be led by a professional who has a hybrid of both project management, and subject matter expert skills, while only 2 (10%) stated that subject matter experts should lead IA teams (see Table 7). A leader that promotes interaction amongst their team members understand the mechanism that unique contributions such as task knowledge, diverse team member talents, and personal dispositions translate into coordinated efforts (Warrick, 2014). A project manager is a better choice in allocating leadership for the IA team because when leading the IA mission, SMEs only have the knowledge in one specific area; PMs are typically better-rounded (PM-7, PM-8, SME-1, SME-4, & SME-7). Being a project manager is not only about managing objectives, it is about managing the professionals assigned to the team; however, chances of success will be limited if the SME assigned to the team do not understand the mission and vision of the organization (Bohm, 2013; Dube, 2014; Jiang et al., 2014). PM-2 commented:

The role of the IA team leader should essentially be a project manager. The people that lead those teams should be people that have more of a global look at what is going on in the IA sector. They may or may not be a true project manager, but it takes people that are organized, communicate, mentor, lead, possess good customer presence to represent the company, and can also report back to the organization any major issues going on in a professional manner. True SMEs are very focused on specific tasks, and generally do not want to step up to the leadership role.

SME-2 contended, "...I do not mind reporting to the PM, but I would prefer to lead my own task. Every SME wants to lead their own task and report on such tasks as well. There are too many aspects of IA for an SME to lead a team. However, if the SME reports to the PM, then the collaboration could work." PM-5 stated, "I think the PM should lead IT security teams and I feel that way because they understand the timeline. SMEs are great; however, they are wired to focus on their subject versus focusing on the whole picture of IA. PMs look at a project from start to finish, and know the process of getting each milestone completed."

In establishing an effective working relationship with the business side of IA, the security professional needs a combination of interpersonal skills, and technical knowledge (Redick, Reyna, Schaffer, & Toomey, 2014; Sohem, 2013; Tiwana et al., 2013). The best scenario in choosing leadership of IA teams should be a professional who has a hybrid of both project management, and subject matter experience (PM-4, PM-6, PM-10, & SME-8). PM-9 commented:

I think it should be someone who has both sets of skills because both sides have their own level of expertise. If you can find a hybrid person who has both the project management

skills, and a high level understanding of the subject matter at hand, they will make the IA team more effective, and they will understand the various challenges of the IA team.

SME-10 further supported this by stating "...if the SME has a project management background, then they can ultimately save the organization in regards to budget. An SME with a PM background will be ideal." PM-7 noted, "SMEs are typically the engineers of which are typically more hands-on. The leader of an IA team is not to be too hands-on to allow teams to run accordingly. In my opinion, if there is an SME out there who has strengths in administratively running a team; that should solve the problem."

Table 4. Business Minded Professionals Should Lead IA Teams.

Commonly occurring phrases	No. of participants who shared views	% of participants who shared views
Must be able to manage people and objectives	2	10%
SME and PM should collaborate	2	10%
A hybrid of both PM & SME	9	45%
SME with a PM Background	2	10%
PMs have more of a project's global view	3	15%
SME has the knowledge to lead teams	2	10%

Data Analysis in Light of Theory

The situational leadership theory underpinned this study. The situational leadership centers on two main types of leadership styles including the leader directive, in which a leader engages in encouragement, participates in two-way communication, and facilitates behaviors; and the relationship behavior, in which the leader defines various roles such as the who, where, what, and when of assignment specifics (Germain, 2012; Ramkissoon, 2013). In assessing the themes derived from participant interviews, it was evident that the focus on the style, efficacy, and qualifications of the leadership of IA teams needs further improvement. IA based projects are failing due to leadership qualifications and the organizations that governs these IA teams are suffering as well (Wagner et al., 2014). The results of this represent two different groups of IT professionals within the IA industry to include, subject matter experts, and project managers who experienced, and witnessed the success, and failure factors of IA projects. Ninety percent of the participants had strong opinions on how failed projects were preventable, while other participants recognized the components that contributed to successful projects. As with 85% of the participants, SME-5 in particular noted that ultimately, leadership needs to understand the roles, and responsibilities of the IA professional, and understand the type of work that goes into the product.

Ties to the Existing Literature on Business Practice

Assessing and recognizing different forms of leadership styles are very common in research.

There are various views expressed in literature that have documented the pros, and cons of a specific type of leadership strategy (Bhatti et al., 2012; Hanisch & Wald, 2012; Lewin et al., 1939; Parris & Peachy, 2013). The contingency leadership style represents the building of interpersonal relationships within the team, while fostering a team structure to meet strategic objectives (Cameron, 2011; Freeman & Auster,

2011), and the trait leadership style is about having innate industry knowledge (Bhatti et al., 2012; Germain, 2012). The themes derived from this study included: (a) communication and teamwork, (b) leadership need more technical knowledge, (c) continuous training, (d) hire skilled resources, (e) project managers need to know the IA field (f) subject matter experts need people skills, and (g) business minded professionals should lead IA teams, seem congruent with the major consensus views in existing literature, but could also add to the literature by suggesting an alternative to evaluating the leadership strategies, and styles of IA teams. Since the IA industry is fairly new (Gordon et al., 2011), all components including the leadership aspects are still being developed, tested, and perfected. The study findings may therefore, extend beyond the generic different types of leadership styles, and provide strategies for the leadership to consider in improving project team performance. Considering that the findings in this study are new, and not tested, it is the opinion that these will be effective since derived from the views of 20 IA professionals with variant skill levels who stated similar outcomes. The results offer more than insight, and present tangible examples that could be beneficial to the IA industry.

Potential IT Implications in IA Settings

The aim of this qualitative phenomenology study was to explore the strategies that information technology leaders need to improve information assurance project team performance. The research included a critical analysis of literature on topics from leading technical teams, conflicts between technology, and management, to success, and failure factors of IT projects, and variant leadership theories. The data collected from 20 IA professionals morphed into themes after analysis, and provided perspectives into the factors that contributed to failed IT projects, and suggestions that could contribute to successful IA leadership strategies in the Washington, DC Metropolitan area. Important emergent themes included a) the hire of skilled resources, b) project managers need to know the IA field (c) subject matter experts need people skills, and (d) business minded professionals should lead IA teams. The themes may be helpful to leadership as these highlight specific areas leadership need to implement for managing successful IA teams. The findings are relevant to the improved business practice because of the guidelines that emerge, which were perhaps not initially considered when the formation of IA teams took place.

In IA settings, it is normal for project managers to delegate teams' specific tasks and timelines to complete without discussions as to the strategy needed to deliver them adequately (Basten et al., 2011; Narayanaswamy et al., 2013). Subject matter experts have deep knowledge; however, often fail to take the time to collaborate with others (Bradshaw, Cragg, & Pulakanam, 2013; Sohmen, 2013). Hahn et al. (2012) noted often leadership gave tasks, walked away, and came back needing the results of such tasks without any form of collaboration. The key research findings indicate communication and teamwork, continuous training, and leadership need more technical knowledge were essential in strategic imperatives.

Communication and teamwork were skills not presented as important aspects of IA teams, but the participants of this study thought otherwise.

The leadership of IA teams are hired based on the administration of teams in setting priorities, and meeting deadlines, not necessarily on the knowledge of the subject matter at hand (Chaudhuri et al., 2011; Hui et al., 2012). The

themes that addressed this problem are leadership needs more technical knowledge and project managers need to know the IA field. Seventy percent of participants mentioned that some knowledge of the IA field is needed for the manager to effectively lead the team. Assumptions were communicated to the customer when leaders did not know the specific workload for tasks (Litwin, 2011; Voegtlin et al., 2011). This led to the late submissions of deliverables, did not meet stated objectives, and required material rework (Wagner et al., 2014). Respectively, if the leadership had some knowledge of the IA field, 80% of the participants noted that it may have been easier for them to navigate the workload.

Resources are hired based on cost versus skill level (Jiang et al., 2014; Teasley et al., 2012; Seo et al., 2011). Upon initial staff recruitment, the individual can work in the same position for more than three years without being pushed to pursue role based training. The strategies that addressed these problems include hiring skilled resources, and continuous training. IA is an industry in which the technology, and its standards are continuously changing (Mehra et al., 2014; Miller, 2013). It is imperative for leadership to hire the right person for the job based on skillset. Once hired, 45% of the participants spoke about the need for professionals to engage in continuous training. It is apparent that a professional hired based on skillset can lose prominent skills if the knowledge base is not continuously polished.

IA teams are often managed by PMs and seldom, SMEs (Floyd, Xu, Atkins, & Caldwell, 2013). It has been shown that PMs lack subject matter expertise, while SMEs lack management expertise (Basten et al., 2011; Iivonen, 2013). The strategy that addressed this problem is that business minded professionals should lead IA teams. With 8 participants noting that the leadership of IA teams should be a hybrid of project manager, and subject matter expertise, one may reasonably assume that the leadership of the IA industry should start shifting the thinking to a combination of both. Perhaps this new outcome could possibly be effective.

Recommendations for IA Projects

Leadership should understand the importance of communication, and teamwork when it comes to putting together deliverables within the IA team (Kliegl & Weaver, 2014; Warrick, 2014). With some literature existing on communication, and teamwork (Bartelt & Dennis, 2014; Miller, 2013; Sarker, Ahuja, Sarker, & Kirkeby, 2011), those components are needed to deliver project deliverables on time, within budget, and in line with applicable standards, according to the study results. Specialized team training may be a benefit that organizations could offer to teach IA professionals how to work together and avoid communication breakdowns. Forty-five percent of participants contended that SMEs are difficult to work with because the skill of effectively communicating the execution of tasks to other team members are lacking. Sixty percent of participants noted that training therefore, can teach the effectiveness of communication, and perhaps turn into the teams putting together quality work.

If an organization can provide training, this may address a component in IT professionals' careers, and thereby contribute to successful teams.

Leadership should understand that in order to be effective leaders, 80% of the participants mentioned that it is imperative to know the IA field. Organizations should send IA team management to various technical training courses that provide an overview of the IA field as a whole. According to the study results, 70% of the participants noted that project

managers are leading the team blindly without specific knowledge of information assurance. Leadership should hire skilled resources, and implement a rigorous continuous training program. Seventy percent of the study participants contended that hiring skilled resources and implementing a role-based continuous training program were important in contributing to successful IA teams. In addition to the initial screening of professionals performed by technical recruiters, subject matter experts should participate in the interviewing process to confirm qualifications before hiring of staff. Though some organizations offer reimbursement for training, companies should also implement a role based training program in which all IA professionals are responsible, and must report to management on an annual basis courses that the individual took in relation to the job role. Organizations should set the standards of how many courses an IA professional must take yearly.

Leadership should make sure that the individuals chosen to manage IA teams are business minded professionals who have a hybrid of project management, and subject matter expertise. According to study results, 45% of the participants mentioned that, it is easier if the SME, and PM work together to meet a common goal. A formal cross training program would allow the management of IA teams to be well rounded and thereby, being more effective. If organizations do not provide this type of training, then both PMs and SMEs should seek external training individually to cross-train themselves. This will not only contribute to individual personal growth, but such a strategy will contribute to the individual PM, and SME professional growth as well. It is also hoped that participants will give a copy of this study to the management of respective organizations, so that it can serve as a blueprint to understanding and improving leadership practices.

The recommendations for further research include using a different geographical region to determine if these strategies are similar to the study results. Since implementation of these strategies rely on the executive leadership that run these IT organizations, further research could study a group of IT organizations who implement these strategies, and the IA professionals that work for them to see how effective the strategies are.

Conclusions

The strategies identified from the lived experiences, and perceptions of 20 IA professionals from IT consulting organizations within the Washington, DC Metropolitan area suggested that, increasing the IA project success rate was possible. The research results may contribute to the body of knowledge because the findings may aid in the formulation of specific strategies IA leadership can incorporate to achieve project success. An increase in project success may foster employment stability, job security, satisfied IA employees, and organizational growth; which are important to the advancement of the IA industry and the economy.

This research should be distributed to IA leadership pursuing project success, as well as IT consulting organizations who wish to benefit from a sustainable IA industry.

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