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Initiating Factors Affecting Information Systems Project Success

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This is to certify that the doctoral dissertation by

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Abstract

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BTech (Hons), Abubakar Tafawa Balewa University, 1992

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Information systems (IS) projects are complex and costly, but only a 3rd of IS projects are successful; the Standish Group reported that 32% of IS projects were successful in 2012. Although investments in research have led to improvements in practice, there is a general perception that management failures are responsible for the low rate of IS project success. The effects of initiating factors on project outcome had not been sufficiently explored; few IS researchers have explored the initiation phase. The purpose of this grounded theory study was to explore project initiation factors, including relational, as well as decision-making aspects, and how they might be addressed to enhance the possibility of success. The research questions were oriented at identifying key initiation factors, how they might be managed to promote project success, and how decision-making factors at initiation might facilitate project success. A conceptual framework consisting of chaos theory and Ashby's law of requisite variety was used. Purposive and snowballing sampling techniques were used, and 24 IS managers and project managers were interviewed. A 3-stage data analysis approach was used and included open coding, focused coding, and theoretical coding. Key themes identified included project governance and management, as well as stakeholder engagement. The emergent theory of IS project initiation indicated that the factors represented by the themes must be identified during initiation but implemented throughout the project lifecycle to ensure project success. Positive social change may be realized as IS managers, and project managers apply the findings and recommendations to achieve project success and avoid costly failures thus benefiting both companies and customers.

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Dedication

I dedicate this dissertation to God, who is the beginning and end of all things. I also dedicate this dissertation to my wife, Oluwabunmi; my son, Daniel; and my daughter, Anjola. I could not have completed this journey without your love and support; thank you.

Acknowledgments

Special thanks to my dissertation committee, Dr. Anthony Lolas, chair and faculty mentor; Dr. David Gould, committee member; and Dr. Judith Forbes, university research reviewer. Thank you for the encouragement, support, feedback, and advice that helped me along the way to become a better writer and scholar. Many thanks to all my research participants; thank you for sharing your experiences. To all friends and former colleagues, too numerous to name, who have encouraged and prayed for me along the way, thank you!

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Chapter 1: Introduction to the Study

The Project Management Institute (PMI) defined a project as a series of activities with a beginning and an end (Project Management Institute, 2017). In line with the journey metaphor, a project starts with a step and an end goal. However, a historical comparison of information technology (IT) performance rates by Stoica and Brouse (2013) showed that few information systems (IS) projects are delivered on time, and on budget. Prior research indicated that approximately 32% of IS projects were successful when measured by adherence to plan; about 44% were delivered late or exceeded budgeted costs (Marnewick, 2012; Stoica & Brouse, 2013). Approximately 24% of IS projects failed; these were canceled or abandoned before planned completion (Marnewick, 2012; Stoica & Brouse, 2013). To put the statistics in perspective, U.S. investments in IS in 2014 amounted to $600 billion (U.S. Department of Commerce, 2014; Von Wurtemberg, Franke, Lagerstrom, Ericsson, & Lillieskold, 2011). As an average, a 30% failure or cancellation rate implies a loss of $180 billion. With such financial implications, it was not surprising that researchers had explored IS success for years. However, the problem was that those efforts had not significantly improved the success rate of IS projects; IS project success appeared to be a moving target. While the efforts of scholars and practitioners have helped to address several problems, IS continue to grow in complexity and applications. With increasing complexity and the use of IS in a variety of innovative ways, a fresh perspective on IS project management was necessary to improve the success rate.

The objective of this study was to explore factors that exist at project initiation and understand how management practitioners may manipulate them to deliver successful IS projects. This chapter includes the background of the study, the problem statement, the purpose of the study, and the research questions, as well as a discussion of the conceptual framework for the study. Additional sections include the nature of the study, definition of terms, a statement of assumptions, as well as discussions on the scope of the study, delimitations, and limitations.

Background of the Study

Researchers have investigated success factors related to the execution, monitoring, and controlling, as well as the closing phases of IS projects while paying little or no attention to the project initiation phase. There appears to have been little or no research interest in understanding how events or decisions made at initiation could affect project outcome. However, as the review of the troubled Healthcare.gov project suggested, some project challenges are traceable to factors that should have been addressed at project initiation (U.S. Government Accountability Office, 2014). The U.S. Government Accountability Office (2014) found that the overages and quality issues experienced in the Healthcare.gov project were attributable to ineffective planning and oversight practices. Although political factors may have contributed to the lack of planning (U.S. Government Accountability Office, 2014), the experience highlighted the importance of the principal actors working together to develop the initial plan and implementation process. Planning and oversight structures are factors that should be addressed at the beginning of the project (Hewagamage & Hewagamage, 2011; Project Management Institute, 2017).

While researchers in the field of IS management have explored the topic of IS implementation success for years, *success* remains a subjective term that is open to diverse interpretations. Researchers have explored IS success models as they tried to identify IS success criteria, and one such model is the DeLone and McLean model of IS success, which defined a set of criteria for measuring IS success (Lawrence, Elenkov, & Badgett, 2012; Petter, DeLone, & McLean, 2013). In a follow-up study that extended the original model, Petter et al. (2013) noted that project management factors had not been sufficiently explored as potential determinants of IS success.

As subsystems within an organizational system, IS projects might affect organizational performance (Bednar & Green, 2011). The projects may consist of multiple stages and components, with complex interactions (Singh & Lano, 2014). Kapsali (2011) found weaknesses in conventional project management methodologies and advocated the use of systems thinking constructs in the management of complex systems projects. Kapsali indicated that innovative projects are complex and involve uncertainties; hence, a systemic approach and some flexibility in management are essential for success. In alignment with Petter et al.'s (2013) call for further examination of project management factors as possible agents of IS success, Feeney and Sult (2011) inferred that the improper definition of scope at initiation could lead to project delays and inhibit success. Through this study, I extended IS project success research by exploring factors, at project initiation, that could positively affect IS project outcomes.

Problem Statement

Despite investments in research to improve the outcome of IS projects, there remains the perception that management failures are responsible for the low rate of IS project success; this general research problem was the focus of this study. Researchers have argued that IS projects are complex and multidimensional (Braglia & Frosolini, 2014; Mazur & Pisarski, 2015; Petter et al., 2013). However, while many researchers focused on managing project execution, few had sufficiently explored the project initiation and planning stages (LeRouge, Tulu, Tuma, Arango, & Forducey, 2013).

Research findings, such as the need for improvisation in managing project uncertainty, and strategic alignment indicated the need for some preliminary work during project initiation (Martinsuo, Korhonen, & Laine, 2014; Wu, Straub, & Liang, 2015). That prompted the general research question that was focused on exploring how the due diligence at project initiation might improve the outcome of IS projects. The specific research problem was that there was a lack of research on how elements of project initiation could be addressed to improve the outcome of IS projects.

Purpose of the Study

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that may affect project outcome. The field of IS project management is evolving, but most studies in the field have focused on broad aspects mostly applicable to execution, monitoring, and controlling process groups. This study might fill a knowledge gap as it was focused on the initiation phase of IS projects, which had been insufficiently researched.

Research Questions

The general research question for the proposed qualitative study was:

What is the nature of project initiation, and how can adequate due diligence at that stage improve the success rate of IS projects?

The subresearch questions were as follows:

RQ1. What project initiation factors are capable of improving IS project outcome?

RQ2. How can practitioners manage those initiation factors to improve the possibility of project success?

RQ3. How can the decision-making process during the project initiation phase contribute to a successful project outcome?

Conceptual Framework

Qualitative research supports the use of theory as a conceptual lens; this involves supporting the study with a conceptual framework that consists of one or more theories (Koch, Niesz, & McCarthy, 2014). The qualitative researcher may use the conceptual framework as a guide to determine what to explore, how to explore the problem, and an appropriate method of inquiry (Cleary, Horsfall, & Hayter, 2014; Koch et al., 2014; Urquhart & Fernández, 2013). In a grounded theory study where the goal is to develop a substantive theory, the researcher may use the theoretical lens to support the logical evolution and presentation of the substantive theory (Cleary et al., 2014; Urquhart & Fernández, 2013).

A conceptual framework comprising of chaos theory and Ashby’s law of requisite variety was used to support this study (see Figure 1 in Chapter 2 for a graphical representation of the conceptual framework). Chaos theorists introduced the notion that a minor change in the initial conditions of one or more elements in a complex system might alter the behavior of that system (Karwowski, 2012; Radu, Liviu, & Cristian, 2014). While chaos theory is useful for studying and understanding uncertainty in complex systems, Ashby's law of requisite variety is helpful for controlling uncertainty in complex systems (Ashby & Goldstein, 2011; Flach, 2012; Radu et al., 2014). Through the law of requisite variety, Ashby (1968) prescribed variety as the antidote for uncertainty; in other words, one needs a contingency approach to regulating complex systems (as cited in Ashby & Goldstein, 2011; Flach, 2012).

Researchers described IS projects as complex adaptive systems; they involve complex interactions between people, processes, technology, data, and other elements (Karwowski, 2012; Von Wurtemberg et al., 2011). Karwowski (2012) identified a positive relationship between initial conditions and the behavior of work systems. Hence, initial conditions existing at the initiation stage of an IS project might affect the project's outcome. As complex systems, IS projects are dynamic and sensitive to uncertainties; hence, it is essential for stakeholders and project managers to anticipate and be ready to address risks related to uncertainties (Flach, 2012; Marnewick, 2012; Von Wurtemberg et al., 2011).

Ashby's law of requisite variety is complementary to chaos theory as it indicates that uncertainties (variety) may be controlled through actions that vary as much as those uncertainties (Ashby & Goldstein, 2011; Flach, 2012). With insight from Ashby's law, Flach (2012) suggested re-planning as an approach for responding to uncertainties and managing complexity. Further to Flach's (2012) suggestion, Klein, Biesenthal, and Dehlin (2015) encouraged project managers to develop competencies in various project management methods to enable them to improvise in dealing with uncertainties. Whereas re-planning and improvisation are strategies for controlling uncertainty, there appears to be an assumption in each case that certain factors were addressed at project initiation.

The need for re-planning implies the existence of a plan, which was likely developed at project initiation, and a deviation from that plan (Flach, 2012; Kapsali, 2011). Improvisation, as suggested by Klein et al. (2015), is an application of Ashby's law of requisite variety, which indicates that variety must be used to destroy variety. The authors found that project managers often improvised in the process of managing projects; they drew from a toolkit consisting of various project management tools and techniques as needed (Klein et al., 2015). Klein et al. further averred that the ability to improvise depends on the experiences and competencies that the project managers had developed over time; such skills and experiences prepare project managers and enable them to improvise effectively. To be versatile and resilient, project managers need to be competent in multiple project management theories and methodologies (Klein et al., 2015). Project managers are selected at project initiation; hence there appeared to be an underlying assumption by Klien et al. that the competencies required for improvisation are assessed at project initiation.

Ashby's law and chaos theory both have roots in mathematics; however, scholars have used them in various fields of study. Those fields include IS management, engineering, project management, and other management disciplines (Ashby &

Goldstein, 2011; Karwowski, 2012; Klein et al., 2015; Radu et al., 2014). In this study, the need to control or regulate complexity with variety was recognized; however, a system needs to exhibit complexity and uncertainty to necessitate the application of Ashby's law. Following the review of research by Ashby and other researchers, I surmised that an appropriate approach to addressing uncertainty in IS projects was to identify initiation factors and understand how they might affect project outcome. Chaos theorists suggested that one might make short-term predictions of system performance by understanding and addressing certain factors (Radu et al., 2014). Radu et al. (2014) argued that the deterministic nature of complex systems implies that chaotic behavior is not random; although it is difficult to predict, it is possible to manipulate initial conditions (control variables) to alter system behavior. One may, therefore, infer that the outcome of a project could be influenced through the manipulation of its initial conditions. An objective of this study was to identify project initiation factors that might influence project outcome from the perspectives of IS project managers. In practice, success factors, including the use of appropriate methodology and meeting customer expectations are functions of decisions made at project initiation (Von Wurtemberg et al., 2011; Wells, 2012). The conceptual framework in Figure 1 outlines the concepts considered in understanding and describing how initiation factors might influence project success; these are discussed in detail in Chapter 2. Through this study, I developed a set of theoretical statements (themes) to explain how project initiation factors affect IS project outcome.

Nature of the Study

The grounded theory approach was used for this study. Grounded theory design is an iterative process that includes interviewing as the primary data collection technique, multistage coding, and theoretical sampling (O'Reilly, Paper, & Marx, 2012). The objective of this study was to develop a theory that explains the nature of initiation factors and how they might influence project outcome, which made grounded theory design an appropriate approach to the study.

Another methodology that might have been suitable is the case study approach, which is the comprehensive study of phenomena through the investigation of one or multiple cases (Tsang, 2014). A researcher may investigate one or more IS projects to gain a deeper understanding of project initiation factors and how they may affect project outcome. However, the development of theory would have required grounded theory techniques such as thematic analysis and theoretical saturation in addition to the case study. Phenomenological research is another design that might have been suitable for this study; it involves the examination of participants' lived experiences (Yüksel & Yildirim, 2015). However, the focus of this study included project initiation factors and how they affected project outcome, not lived experiences. Hence, the grounded theory method was the most appropriate approach for this study.

The grounded theory approach to qualitative research involves an iterative process of data collection and continuous analysis. While interviewing is the primary data collection method, the grounded theory approach allows the use of diverse data collection methods including document observation and analysis; data analysis involves coding and the identification of themes (Urquhart & Fernández, 2013). The themes and theoretical patterns that evolve are used to develop theoretical statements, hypotheses, or a substantive theory (Urquhart & Fernández, 2013).

Definitions

Failed project. A failed project is one that is abandoned or canceled before it is completed (Marnewick, 2012).

Information systems (IS): Information systems have enabled commercial and social applications such as data processing, management reporting, decision making and strategic systems, as well as healthcare management systems (Petter, DeLone, & McLean, 2012). They are often referred to as management information systems (MIS) or decision support systems, but these are just examples of IS use. Computer-based IS are comprised of technology (software and hardware), business processes, governance structures, data, and people; these all have complex interactions (Karwowski, 2012; Aakhus, Agerfalk, Lyytinen, & Te'eni, 2014). Typically, IS receive data as input, and such data may be processed according to specified rules to produce information that may be used for a given purpose (Köylüoğlu, Duman, & Bedük, 2015). Thus, IS have been described as social systems; the information that they produce may serve as enablers for social interaction (Aakhus et al., 2014).

Project initiation: Project initiation phase is the first stage of the project that leads up to the authorization of the project (Project Management Institute, 2017).

Successful project: A successful project is one that was completed according to budget and schedule, and it delivered on the agreed requirements (Drury-Grogan, 2014; Marnewick, 2012).

Troubled project: A troubled or challenged project is one that does not meet the expectations of schedule, cost, or quality at the time of completion (Marnewick, 2012).

Unsuccessful project: An unsuccessful project is one that was challenged or one that was completed without adhering to its requirements (Chandler & Thomas, 2015; Marnewick, 2012). A failed project (an abandoned or canceled project) is also an unsuccessful project (Marnewick, 2012).

Assumptions

One of the key assumptions that drove this study was that every IS project could be successful if complexity was managed and uncertainties were controlled. The combination of chaos theory and Ashby's law of requisite variety supported that assumption (Karwowski, 2012; Klein et al., 2015; Radu et al., 2014). Another assumption was that the initiation phase of a project encompasses activities required to identify, authorize, and start the project. Such activities might include the initial definition of project scope, stakeholder identification, and project manager engagement. Other initiation activities include the selection of a project management methodology, the creation, and approval of a project charter, initial planning, and other activities necessary to start a project.

Scope and Delimitations

The scope of this study included project managers who had managed IS projects that completed successfully, completed with challenges, or failed. In this study, I focused on factors that exist in the initiation phase and captured the perceptions of managers who had managed IS projects. This study did not include the tracking of specific projects from initiation to completion. As IS projects vary in size and duration, it was not feasible to observe all projects that the participants had managed within the duration of this study.

The purposive and snowball sampling approaches were used to select participants. While the provisional target was to conduct 25 interviews, 24 participants were interviewed. As described in Chapter 4, data saturation was considered achieved after the 19th interview; however additional interviews that had already been scheduled were completed. While a target might be set before a study is started, the final sample size may vary as expected of grounded theory studies (O'Reilly et al., 2012; Robinson, 2014).

Limitations

A key limitation of the study was the type of projects that participants were willing to discuss. Additionally, the study was limited by the information that participants were willing to provide; this restricted the data collection method to interviewing. As organizations measured project success in different ways, the success of a project was measured by its adherence to plan during this study. Hence, a successful project was defined as one that was completed on time, on budget, according to requirements, or according to some previously defined success criteria (Cecez-Kecmanovic, Kautz, & Abrahall, 2014).

Significance of the Study

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that could affect project outcome. The Project Management Institute (2017) identified five phases in a project; these are initiating, planning, executing, monitoring and controlling, and closing. It was, therefore, intriguing that most researchers whose work I reviewed focused on three of the phases including planning, executing (or implementing), as well as monitoring and controlling. Such focus aligned with Ashby's law of requisite variety, which indicated the need for a contingency approach to managing uncertainties that might occur in the lifecycle of a system (Ashby & Goldstein, 2011; Flach, 2012).

However, chaos theorists suggested that the behavior of a system is a consequence of the minor changes in its initial conditions (Karwowski, 2012; Radu et al., 2014). It was necessary to identify the initial conditions or factors that affect the performance of IS projects and make possible the control of uncertainty. Hence, I explored project initiation factors. As outlined in Appendix A, the importance of the study is three-fold. It is significant to IS project success research, as well as project management practice, and it has implications for positive social change.

Significance to Practice

The results of the study might affect IS project management practice in a positive way. As previously stated, the focus of this study was to understand the nature of project initiation factors, and how they affect project outcome. With that understanding, IS project managers might address those factors before and during project execution; that could potentially lead to higher rates of project success.

Significance to Theory

The theory developed through this study is expected to add to the understanding of the potential impacts of initiation factors on project outcome, how to address them and achieve project success. The findings are expected to stimulate further studies on the significance of the project initiation phase and the factors that exist in that phase; this will add to the body of knowledge in IS management.

Significance to Social Change

IS projects can be expensive and associated with high levels of risk, and these can result in negative social influences (Thamhain, 2013; U.S. Government Accountability Office, 2014). The findings of this study might help IS project managers in achieving increased rates of project success; that could lead to greater end-user satisfaction. With increased potential for success, IS managers and executives can avoid or reduce financial losses associated with project failure. The application of the findings of the study might help governments avoid some of the issues found with the implementation of Healthcare.gov on future projects, which might help such parties retain public support for their IS projects.

Summary and Transition

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that might affect project outcome. A conceptual framework that included chaos theory and Ashby’s law of requisite variety was used to guide the study. Chaos theorists noted that complex systems are sensitive to minor changes in their initial conditions while Ashby's law indicates that variety can only be destroyed by variety (Ashby & Goldstein, 2011; Karwowski, 2012). With chaos theory as a lens, and IS projects considered complex systems, one might assume that initiation factors could influence the outcome of such projects. Most IS projects are complex in various ways; they are often started to fulfill business needs, and their products are often intangible (Chang, 2013; Dwivedi et al., 2015). These (IS) projects usually have different stakeholders who may have different expectations, and project managers might need to seek consensus to define project requirements (Mishra & Mishra, 2013). Apart from that, IS projects are considered temporary organizations; they comprise of various parts including processes, structures, technology, and people with complex interactions and relationships (Svejvig & Andersen, 2015). Subjective factors such as politics may affect people, processes, as well as governance structures, and all these may influence the outcome of the project (Chang, 2013). Hence, with the complex nature of IS projects and the social effects of IS, project management approaches need to address uncertainty management.

In addition to being complex systems, IS projects (as temporary organizations) need to be adaptive; project managers may have to revise plans or strategies in response to unexpected events (Klein et al., 2015). The dynamic nature of IS projects and the need for adaptability qualifies them as complex adaptive systems (Vessey & Ward, 2013). While one may expect uncertainties in the lifecycle of an information system's project, Ashby's law prescribes improvisation as a tool for controlling such uncertainties (Ashby

& Goldstein, 2011; Klein et al., 2015). However, it might help to identify the necessary control structures at the initiation stage of the project.

Klein et al. (2015) appeared to assume that IS projects could be successful if certain factors were appropriately managed. However, available research by the Standish Group suggested that only about a third of IS projects are successful (as cited in Stoica & Brouse, 2013). With such projects often costly, it became necessary to understand the initiation factors that might affect project outcome; it was also necessary to understand how those factors might be addressed to achieve project success.

Chapter 2 includes a review of literature related to this study. The review of literature includes an examination of previous research related to IS success and project management. The literature review covered the conceptual framework and the research methodology. A discussion of the methodology is presented in Chapter 3.

Chapter 2: Literature Review

Researchers and practitioners have explored the topics of IS success and project management for years; however, most IS projects are considered unsuccessful. With most IS project success research effort focused on managing IS projects after initiation, there appeared to be little known on how the initiation phase affects project outcome (LeRouge et al., 2013; Matook, Rohde, & Krell, 2013; Mullaly, 2014). The Project Management Institute (2017) defined project initiation as the set of activities required to start a project or phase of a project; it is a necessary aspect of the project, but its effect on project outcome has not been fully explored. That exploration appears to be lacking, particularly with IS projects. The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that might affect project outcome.

The literature review is a systematic examination of literature related to a research topic or domain; the objective of the review is to identify what is known and unknown about the topic (Boell & Cecez-Kecmanovic, 2014; Macfarlane et al., 2015). By that definition, Chapter 2 includes a systematic review of existing literature related to IS and IS project management. The review included an examination of IS success literature and IS project management through the conceptual lens of chaos theory and Ashby's law of requisite variety. Additionally, the literature related to grounded theory and alternative qualitative methodologies were reviewed.

Literature Search Strategy

The literature review has been described as a systematic examination of literature associated with a research topic or domain; the goal is to identify what is known and unknown (gaps) about the topic (Boell & Cecez-Kecmanovic, 2014; Macfarlane et al., 2015). However, conducting a literature review involves the search for literature, the organization of literature, reading or examining the literature, and synthesizing the literature. The search for literature needs to begin with the identification of a preliminary research topic or question, which helps to determine search keywords. After identifying related research, one needs to logically organize articles found and identify sources that are relevant (Macfarlane et al., 2015; Riesenberg & Justice, 2014). The key terms used in the literature search for this review included *information systems management*, *project management*, *project success*, and *project initiation*. The search was iterative and included the following combinations of keywords: *information systems success*, and *project initiation*, as well as *information systems project success* and *project initiation*. The search terms and keywords were used to search research databases including ScienceDirect, ProQuest, EBSCOhost, and Google Scholar.

Conceptual Framework

The conceptual framework for this study consisted of chaos theory and Ashby's law of requisite variety. Researchers have used the two theories to explore complex systems in diverse fields. Chaos theory (also known as deterministic chaos theory) is critical to the understanding of patterns and uncertainty associated with complex systems (Radu et al., 2014). Ashby's law of requisite variety is a core theory in cybernetics, the science of regulatory and control systems (Ashby & Goldstein, 2011).

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that may affect project outcome. That included the development of theoretical explanations for the nature of project initiation and how initiation factors might influence an IS project outcome. The conceptual framework, consisting of concepts from chaos theory and Ashby's law or requisite variety, was used as a guide to explore project initiation factors and how they might influence IS project success. Ashby's law of requisite variety addressed the need for management control or regulation to achieve desired project or system objectives (Klein et al., 2015; Radu et al., 2014). However, chaos theory implied that the uncertainties associated with IS projects, and the ability of managers to apply diverse control tools are dependent on small changes in the project's initial conditions (Klein et al., 2015; Radu et al., 2014).

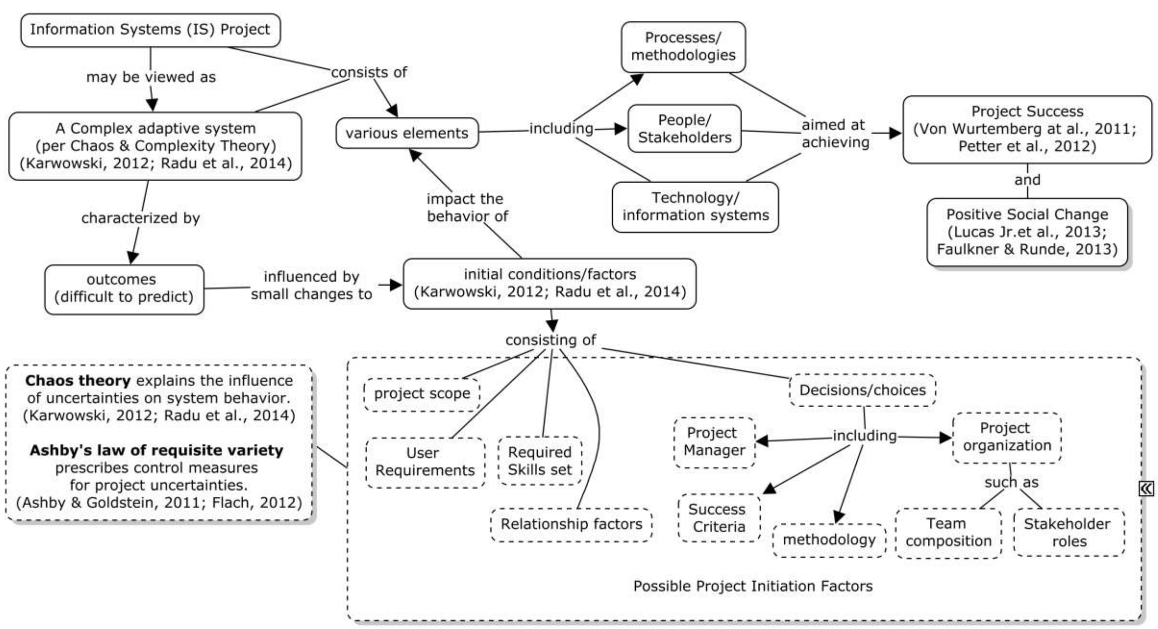

Figure 1. The conceptual framework based on chaos theory and Ashby's law of requisite variety (created by J. O. Afolabi).

Chaos Theory

Radu, Liviu, and Cristian (2014) described chaos theory as a qualitative study of dynamical systems that are prone to change and aperiodic; although such systems are irregular in occurrence, they are deterministic but nonlinear. Chaos theory supports the notion that the behavior of a complex system is sensitive to its initial conditions; Lorenz (1963), one of the founding fathers of chaos theory, used the term *butterfly effect* to illustrate the phenomenon (as cited in Motter & Campbell, 2013). While presenting his work on chaos theory and predictability, Lorenz asked if it was possible for a butterfly flapping its wings in Brazil to initiate a tornado in Texas; that concept became known as the butterfly effect (as cited in Motter & Campbell, 2013). Lorenz (1963) first used the term chaos to describe the behavior of nondeterministic systems, but that discovery was an extension of Poincare's previous work (as cited in Cencini & Ginelli, 2013; Musielak & Quarles, 2014).

Poincare (1892) attempted to solve the gravitational three-body problem, which is a study of the interaction between three masses, through his work on celestial mechanics; that culminated in a series of papers published in the 1890s (as cited in Cencini & Ginelli, 2013; Musielak & Quarles, 2014). Though Poincare was unable to solve the three-body problem, he laid the foundation for further understanding of dynamical systems; the concepts later became known as chaos theory (as cited in Motter & Campbell, 2013; Musielak & Quarles, 2014). As Lorenz later established, Poincare found that small changes to initial conditions led to significant differences in the resulting phenomena (as cited in Cencini & Ginelli, 2013; Motter & Campbell, 2013). While the contributions of

Poincare and Lorenz to chaos theory were prominent, other scholars contributed to its development over several decades; these were primarily in the fields of physics and mathematics (Cencini & Ginelli, 2013). However, scholars have continued to use chaos theory in exploring complex phenomena in other fields of research.

With roots in mathematics and physics, researchers initially applied chaos theory in the natural sciences to explore complex systems such as weather patterns (Cencini & Ginelli, 2013; Radu et al., 2014). However, the application of chaos theory in research has spread to other fields, including biology, social sciences, engineering, and IS research (Karwowski, 2012; Goh, Pan, & Zuo, 2013; Radu et al., 2014). As Cencini and Ginelli (2013) noted, the discovery of chaos theory and relevant algorithms have facilitated the modeling of real-world chaotic systems; hence, chaos and complexity theory has been instrumental in studying complex adaptive systems. Researchers in IS management have used chaos theory to explore the interactions, uncertainties, and behaviors inherent in the management and implementation of IS (Goh et al., 2013; Karwowski, 2012). The IS field is one of continuous change, and it continues to evolve (Lee & Berente, 2013). However, technological change is not driven by a single factor, but multiple factors including business and social needs. In a study of work systems, Karwowski (2012) inferred the existence of complex human-system interactions that need to be explored in the context of complex adaptive systems, which makes the application of chaos theory imperative. While chaos theory is useful in understanding the nature of complex systems and possible causes of uncertainty in the behavior of dynamic systems, it does not prescribe control measures; this is where Ashby's law of requisite variety is beneficial.

Ashby's Law of Requisite Variety

Dynamical systems are self-governing and all elements of a system work together through complex interactions to achieve defined objectives, but complexity and uncertainty (or variety) can alter the course of the system (Radu et al., 2014). In Ashby's (1957) seminal work, he summarized the law of requisite variety as "variety can destroy variety" (p. 207). In other words, a regulator (R) should have at least as much variety as that of the disturbance (D) to effectively control the system and achieve a state of equilibrium (Ashby, 1957; Flach, 2012). Figure 2 is an illustration of Ashby's law of requisite variety: overcoming variety with variety. While managers may expect 100% project performance, as shown in Figure 2, the project might exhibit uncertain behavior due to a variety of disturbances that equally require a range of control measures to achieve stability (Flach, 2012; Klein et al., 2015). Ashby used mathematical concepts to illustrate the law of requisite variety; however, being also a physician, he drew insights from biology, and information theory (Ashby & Goldstein, 2011). Ashby's law of requisite variety is a model for adapting to change, which is a core characteristic of complex adaptive systems.

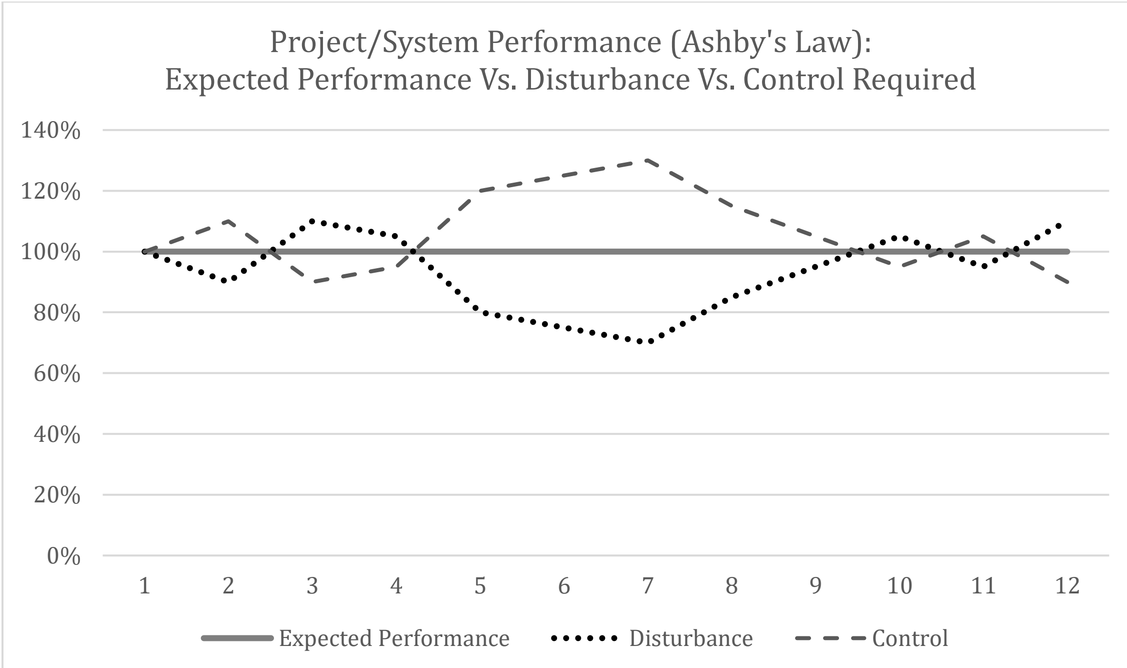

Figure 2. An illustration of Ashby's law of requisite variety: Overcoming variety with variety in project performance (created by J. O. Afolabi).

In the context of managing complex systems, some researchers in complex systems and project management have likened the requirement for variety in regulatory controls to the need for versatility in capacity and competence (Flach, 2012; Klein et al., 2015). In a study of organization and IS encumbered with frequent change, Martinsuo, Korhonen, and Laine (2014) explored ways to identify, classify, and manage uncertainty; they proposed re-planning as one of the management strategies. Similarly, Klein et al. (2015) proposed improvisation as a regulatory approach to managing uncertainty associated with project management. Thus, these researchers agreed that to mitigate the effects of uncertainty in complex organizational and technological systems; the control model requires a variety of tools (Flach, 2012; Klein et al., 2015). That implies that project managers and organizations need a repertoire of competencies that are as diverse as the disturbances that may affect their projects or systems (Klein et al., 2015). However, a key component of the law of requisite variety is the regulator's ability to recognize and classify each variety of disturbance in the system (Ashby, 1957; Martinsuo et al., 2014). It is essential to apply a variety of control methods to stabilize a system; but it is, perhaps, more important to distinguish one variant of the disturbance from the other so that the appropriate control measures are applied.

Ashby's law indicates the need to apply a variety of measures to address the variety of disturbances that a system may face (Klein et al, 2015). Exploring the applicability of Ashby’s law in management, various scholars have proposed managerial flexibility and improvisation as measures for adapting to unexpected change in the project lifecycle (Klein et al., 2015; Müller & Martinsuo, 2015; Stoica & Brouse, 2014). However, Klein et al. (2015) suggested that being able to regulate a system in line with Ashby's Law requires some level of preparation and flexibility. Managers can only prepare for what they anticipate; they cannot anticipate every uncertainty. However, an organization may review similar projects that had been completed to identify lessons learned and potential risk factors or disturbances. Ashby's law implies that disturbances may vary in type and character; hence, the need to address that variety with variety to regulate the system is prescribed (Ashby & Goldstein, 2011). However, being able to address variety with variety may require much preparation (Klein et al., 2015). Lorenz (1963) asserted that disturbances, though chaotic, are not random; they are deterministic but occur due to small changes in initial conditions. Whereas chaotic behavior can be random, some patterns may be identified after a system has been studied over time

(Karwowski, 2012; Motter & Campbell, 2013). Thus, project managers may need to monitor project performance on a continuous basis to identify potential disturbance or risk, and take appropriate measures to mitigate the effect of such issues on project performance (Klein et al., 2015; Martinsuo et al., 2014; Müller & Martinsuo, 2015). Klein et al. (2015) noted that experience and competencies are vital to the approach that a project manager uses in managing projects. Hence, being versatile and able to draw on a variety of skills to address a variety of problems may require a considerable breadth of competencies and experience that might take years to acquire before a practitioner is deemed ready to manage an IS project.

Relevance to the Current Study

As IS continue to evolve, they continue to increase in complexity and cost; and despite various research efforts to improve implementation outcomes, few IS projects are considered successful (Ali, Green, & Robb, 2015; Braglia & Frosolini, 2014). Viewing IS project management through the lens of chaos theory, one may suggest that uncertain events in IS projects are sensitive to small changes in their initial conditions (Goh et al., 2013; Radu et al., 2014). It is theoretically possible, but practically impossible, to find all the initial conditions of a complex system; subsequently, it is almost impossible to make long-term predictions about the behavior of complex systems (Karwowski, 2012; Motter & Campbell, 2013). Hence, in line with Ashby's law of requisite variety, the effective regulation of projects is necessary to achieve project objectives. However, an effective control system for IS projects would require capability and competencies in a variety of skills such as project management methods, decision-making techniques, and relational skills.

In a multiple case study, Martinsuo et al. (2014) suggested that the ability to affect an organization through project portfolio management might be bound to the selection phase of the project lifecycle, which is the initiation phase. Project selection takes place at the initiation phase; hence, effective regulation of the project’s performance may depend on the project selection or initiation phase. The project is a temporary organization and a complex system (Chang, 2013; Dwivedi et al., 2015). One may argue that the ability to control the project and manipulate it to achieve desired results is dependent on factors that exist at project initiation. For example, the mechanism to identify, classify, and respond to project uncertainty might be established at project initiation; otherwise, the project team might be incapable of distinguishing disturbances and applying appropriate control measures in the postinitiation phases. In this study, I used a conceptual framework comprising chaos theory and Ashby's law of requisite variety to explore project initiation factors and how one may manipulate them to achieve IS project success. Using the conceptual framework as a guide, theoretical statements were developed to explain how project initiation factors might affect IS project success.

Literature Review

An illustration of the various dimensions of IS project management to be explored, as part of the literature review, is shown in Figure 3. The dimensions include IS success, project success, methodologies, stakeholder management, risk management, organizational performance, project learning, and the social impact of IS project management.

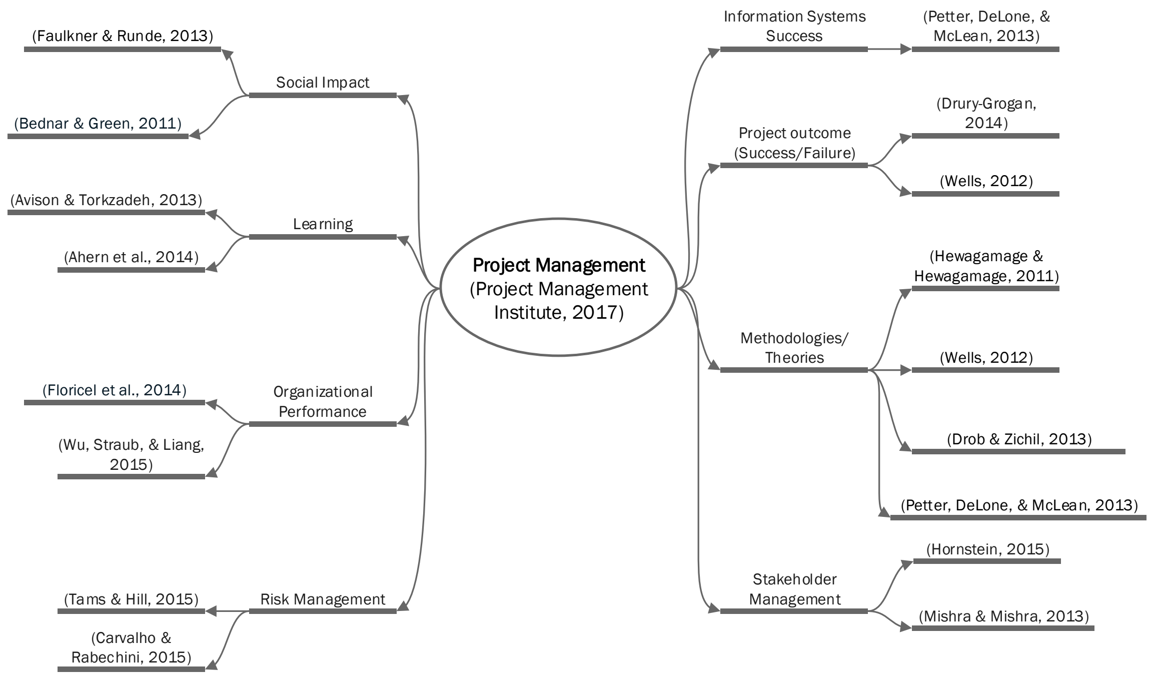

Figure 3. Dimensions of the literature review on information systems project management (created by J. O. Afolabi).

Information Systems Success

As organizations increasingly rely on computer-based IS to drive the implementation of their business strategies, the perceived value of those systems continues to rise. Gobble, Petrick, and Wright (2012) noted that organizations ought to innovate to be competitive; Drnevich and Croson (2013) further established a relationship between innovation, IS, and business strategy. Drnevich and Croson noted that competing organizations benefit from strategic flexibility, which enables them to adapt to change; however, they averred that IS are critical to adaptability. With the rising importance of IS to organizational performance, investment in information technology and systems have grown over the years, and they continue to grow (Cecez-Kecmanovic et al., 2014; Drnevich & Croson, 2013; Pang, Tafti, & Krishnan, 2014).

The rise in IS investment reflects the increasing complexity and cost of IS. As some researchers suggested, IS investment is the sum of all expenditures involved in implementing and maintaining IS including hardware, software, organizational, and personnel costs (Ali et al., 2015; Suh, Van Hillegersberg, Choi, & Chung, 2013). Recent projections indicated that global IS expenditure in 2015 was close to $3.8 trillion, which is significant (Ali et al., 2015). Management scholars have suggested that an increase in IS investment leads to efficiency, performance gains, and cost savings in the organization (Ali et al., 2015; Braglia & Frosolini, 2014; Pang et al., 2014). Despite the benefits of growth in investment, the failure rate of IS projects remains high and represents billions of dollars in losses (Cecez-Kecmanovic et al., 2014; Stoica & Brouse, 2014; Van Oorschot, Akkermans, Sengupta, & Van Wassenhove, 2013). With the increasing cost of implementing and maintaining IS, it is not surprising that much research effort has gone into IS success; it is, however, intriguing to note that IS success research has been active for decades (Petter et al., 2012). Decades of IS success research have led to greater understanding of success factors, the development of management models, and improvement in methodologies; however, there has been little improvement in the success rate of IS projects (Cecez-Kecmanovic et al., 2014; Petter et al., 2012).

Petter et al. (2012) examined the history of IS and identified five distinct periods indicating changes in focus on the use and categories of IS. The periods were (a) the data processing era, (b) management reporting, and decision support era, (c) strategic and personal computing era, (d) enterprise system and networking era, and (e) the customer-focused era (Petter et al., 2012). The first period was the data processing era (the 1950s to 1960s), which covered the early years of computing when organizations used computers for complex calculations and transaction processing (Petter et al., 2012). In those early days, there was little or no research on IS success; practitioners determined success by the speed and accuracy of the outcome (Petter et al., 2012). Petter et al. noted that researchers started exploring measures of IS success between the 1960s and the 1980s, the second era in which the focus was on the use of IS for management reporting and decision support. With the changing nature of IS, it was necessary to define *IS success*; hence, IS researchers proposed various models for measuring IS success. The DeLone and McLean (D&M) model is one of the most influential IS success models (Petter et al., 2012; Tate, Sedera, McLean, & Burton-Jones, 2014). DeLone and McLean (2003) identified seven dimensions of IS success, including system quality, information quality, service quality, intention to use, use, user satisfaction, and net benefits; these dimensions represent a set of criteria for measuring IS success. With the advent of the D&M model of IS success, other researchers set out to validate or expand the model (Armstrong & Guimaraes, 2013; Petter et al., 2013).

The D&M model of IS success has contributed immensely to research in IS success and IS management; however, the dimensions of IS success as represented by the D&M model are postimplementation measures of success. In other words, the D&M model is useful for evaluating an information system only after that system has been developed or installed. Petter, DeLone, and McLean (2013) implied that much by referring to the model as a comprehensive representation of the dependent variable, which is IS success. Armstrong and Guimaraes (2013) supported the postimplementation nature of the D&M model in a study to examine the characteristics of the quality dimension of the model; they pointed out that the results of their study applied to operational systems. In a 2013 study to identify potential independent variables or determinants of IS success, Petter et al. (2013) examined and integrated the results of 140 studies on IS success; they identified five broad categories as determinants of IS success. The categories include task, user, social, project, and organizational factors; despite the increasing importance of IS to organizational performance, few researchers have explored the effects of these factors on IS Success (Petter et al., 2013; Suh et al., 2013). Despite the popularity of the D&M model of IS success, Petter et al. (2013) asserted that the characteristics that constitute the independent variable for the dimensions of IS success are still not fully known; however, they proposed further research into the potentially influential role of project factors on IS success. In other words, while it is important to achieve IS success, which is measurable after implementation, project factors might affect the path to implementation (Cecez-Kecmanovic et al., 2014; Petter et al., 2013; Suh et al., 2013). Recent research findings indicated that project performance factors may influence business decisions related to new investment in IS (Drnevich & Croson, 2013; Suh et al., 2013). Thus, business leaders are aligning IS investment with business strategy through a focus on project performance to achieve IS success (Drnevich & Croson, 2013; Suh et al., 2013).

Petter et al. (2013) identified organizational, and project characteristics as some of the possible factors that may determine IS success. However, those characteristics including planning, project management competencies, domain knowledge, management processes, management support, governance, and motivation are elements of management (Guerci, Radaelli, Siletti, Cirella, & Rami Shani, 2015; Van Wart, 2013). Hence, Petter et al. (2013) inferred that the management factors at implementation are potential determinants of IS success. Other researchers have described the project as a temporary organization, which requires effective management to succeed (Svejvig & Andersen, 2015; Todorović, Petrović, Mihić, Obradović, & Bushuyev, 2015). The PMI identified ten key project management knowledge areas; these include project integration management, scope management, schedule management, cost management, quality management, resource management, communications management, risk management, procurement management, and stakeholder management (Project Management Institute, 2017). An IS project should be managed successfully for the system to meet the criteria for IS success as outlined by Petter et al. (2013); these include use, quality (information, systems, and service quality), net benefits, intention to use, and user satisfaction. With implementation and management characteristics as likely determinants of IS success, it is pertinent to examine project management (including management processes and organizational factors) as a possible determinant of IS project success and, ultimately, IS success. Petter et al. (2013) supported that notion with a suggestion for further exploration of the relationship between project management and IS success.

Project Management and Information Systems Success

Petter et al. (2013) identified project factors as potential determinants of IS success; however, that relationship has not been adequately explored. The Project Management Institute (2017) defined a project as a set of activities designed to achieve the desired goal; those activities start and end at certain points in time. Petter et al. noted that a project provides the necessary structure through which an organization implements an information system; whereas IS success is the goal, the project embodies the processes or structures necessary to reach that goal. Project management researchers have described the project as a temporary organization established for a period to deliver a defined set of benefits (Müller et al., 2013; Svejvig & Andersen, 2015; Tyssen, Wald, & Spieth, 2013). A project comprises of different parts, including the team, technology, processes, governance structures, and other elements all working together through complex interactions to deliver a common objective. Hence, IS projects are complex systems that have a high risk of facing uncertainties that may benefit from effective management practices.

To address the complexities and uncertainties associated with IS projects, Stoica and Brouse (2014) developed an adaptive management theory for IS projects and programs. Stoica and Brouse explored the problem of unsuccessful IS projects from a causal point of view; they found that adaptable and preemptory management practices were key issues limiting success in the management of IS projects. Stoica and Brouse identified the lack of flexibility in the application of soft skills such as service attitude, mission focus, and collaborative competencies as impediments to IS project success. The adaptability model, proposed by Stoica and Brouse, aligned with the need for improvisation in managing IS projects as suggested by Klein et al. (2015). Both studies agreed on the need for project managers to assess situations as they occur; they also proposed continuous learning (Klein et al., 2015; Stoica & Brouse, 2014). While learning is essential to understanding multiple theories or methodologies for managing IS projects, the researchers stressed the need for managers to be aware of events as they occur on their projects (Klein et al., 2015; Stoica & Brouse, 2014). These researchers noted that the lack of flexibility in the management of IS projects remains an issue; flexibility might require changes to the chosen project framework or methodology (Klein et al., 2015; Stoica & Brouse, 2014). Many IS projects involve client-supplier contracts or project charters that might be restrictive; stakeholders may have to structure such contracts at project initiation to allow flexibility (Cristóba, 2014; Fulford, 2013). The underlying premise in the push for management flexibility and improvisation appears to be the perceived need to consider and manage IS projects as complex adaptive systems. Floricel, Bonneau, Aubry, and Sergi (2014) noted that project difficulties stemming from rational decisions and rigid management approaches had led researchers and practitioners to propose flexible approaches that consider the multidimensional nature of management practice. They observed that probability-based rationalization had not always been helpful, as projects consist of interrelated activities and processes; project activities involve human and nonhuman agents and may benefit from management creativity and flexibility (Floricel et al., 2014).

While Stoica and Brouse (2014), as well as Klein et al. (2015), proposed the management of IS projects as complex adaptive systems, they made some assumptions that might not always be valid. A contingency approach to management, which allows flexibility or improvisation, may require continuous learning and the ability to change project management frameworks or different aspects of such frameworks to address evolving situations. As Klein et al. (2015) noted, improvisation might require changes to project frameworks, structures, or methods defined in the initial plan. While plans and structures may change, such expectations need to be set at project initiation; they need to be included in the project charter, which is the document that the sponsor uses to authorize the project. Thus, as other researchers have inferred, management flexibility or adaptability depends on factors such as contractual agreements between the client and the vendor (Gandomani, Zulzalil, Abdul Ghani, Md. Sultan, & Sharif, 2014; Sundararajan, Bhasi, & Vijayaraghavan, 2014).

Methodologies and Project Outcome

There are successful and unsuccessful IS projects, but the path to project success varies. Conventionally, a project is deemed successful if it meets the objectives of cost, schedule, and quality; however, IS researchers have suggested that these measures of success might be unsuitable for IS projects (Drury-Grogan, 2014; Marnewick, 2012; Svejvig & Andersen, 2015). Drury-Grogan (2014) noted that the golden triangle (cost, schedule, and quality) as a measure of project success had been the standard measure of project success for decades. However, that measure of success implies that a project that is a day late or above budget by a dollar might be unsuccessful even if it meets quality expectations.

Cecez-Kecmanovic et al. (2014) found adherence to cost, schedule, and quality to be inadequate as measures of success for IS projects; they proposed the value or benefit delivered to the business as a better measure of IS project success. Business value, as a measure of IS success, aligns with an earlier study by Basten, Joosten, and Mellis (2011); these researchers proposed the use of customer satisfaction and the efficiency of the project management process as more suitable measures of success for IS projects. Drury-Grogan (2014) proposed a different approach that involves conventional and unconventional measures of project success. The author defined project management success as adherence to schedule, cost, and quality but defined project success as the meeting of business objectives. The unconventional measures of project success align with the requirements of customer satisfaction and net benefits as defined in the DeLone and McLean model of IS success (Petter et al., 2013). It appears, however, that the measures of IS project success are multidimensional; hence, it is important that organizations define their criteria for project success before implementation (Drury-Grogan, 2014; Hornstein, 2015; Svejvig & Andersen, 2015).

As temporary organizations, projects need to be managed in such a way that the goals for which they were established and authorized are accomplished. There are standard project management frameworks such as the project management body of knowledge (PMBoK), and Projects in Controlled Environments, version 2 (PRINCE2) (Ahsan, Ho, & Khan, 2013; Keil, Lee, & Deng, 2013; Wells, 2012). However, managers of IS projects also have to consider domain-specific methodologies such as the software development lifecycle, and the agile methodology (Ahsan et al., 2013; Keil et al., 2013; Wells, 2012). Ahsan et al. (2013) noted that to be effective, IS project managers might require some information technology (IT) skills in addition to leadership and other behavioral competencies. Joslin and Müller (2015) found a positive relationship between project management methodologies and project success; however, the authors noted that such methodologies had to be comprehensive, consisting of a variety of tools and techniques. While Joslin and Müller established the importance of project management methodologies to project success, they also emphasized the need for project managers who have substantial experience in those methods. Comprehensive methodologies alone do not guarantee project success; the project manager should be aware of the project's situation and apply the tools or techniques most suitable for that situation (Ahsan et al., 2013; Joslin & Müller, 2015; Stoica & Brouse, 2014).

Joslin and Müller (2016a) described the project management methodology as a construct that is multidimensional; it comprises of management processes, structures, competencies, as well as tools and techniques. One of the most popular project management frameworks, the project management body of knowledge (PMBoK), includes five process groups and ten knowledge areas. The five process groups include (a) initiating, (b) planning, (c) executing, (d) monitoring and controlling, and (e) closing; each group is a set of activities expected at each stage of a project (Hornstein, 2015; Project Management Institute, 2017). The ten knowledge areas address the management aspects of projects including integration, scope, time, quality, risk, human resources, communication, procurement, and stakeholder management (Project Management Institute, 2017). Another popular framework, Projects in Controlled Environments (PRINCE2), focuses on the management of projects in stages, which involves continuous planning and re-evaluation of the project (Sanjuan & Froese, 2013). Although both frameworks represent different approaches to project management, they both focus on processes, standards, and techniques needed to manage those processes (Drob & Zichil, 2013; Sanjuan & Froese, 2013).

Various studies have indicated that the use of formal management processes or methodologies has been beneficial to the implementation of IS projects (Joslin & Müller, 2015; Joslin & Müller, 2016a; Wells, 2012). Wells (2012) found that many organizations implemented project management methodologies to manage, regulate, and standardize project management processes. Despite the benefits of project management methodologies and models, researchers have noted that no methodology is suitable for every situation; neither can a single methodology ensure implementation success (Joslin & Müller, 2016a; Klein et al., 2015; Mpazanje, Sewchurran, & Brown, 2013). Existing literature inferred that the effectiveness of project management methodologies and their contribution to project success might depend on other variables such as organizational culture, management competencies, as well as other human and environmental factors (Joslin & Müller, 2016a; Liu & Deng, 2015; Ram, Corkindale, & Wu, 2015). Scholars have indicated that factors such as culture, strategy, and project management skills exist and ought to be considered before project implementation (Joslin & Müller, 2016a; Ram et al., 2015; Subiyakto, Ahlan, Kartiwi, & Sukmana, 2015; Svejvig & Andersen, 2015).

Stakeholder Management and Project Success

Organizations initiate and execute projects to effect change in one form or the other; projects often involve the transformation of ideas or concepts into actual products or services (Hornstein, 2015). As a system, the project organization works towards achieving its given objectives; however, that process involves complex interactions among the various elements of the system including stakeholders who may have competing interests (Mishra & Mishra, 2013; Radu et al., 2014). Project stakeholders may include parties that are internal or external to the organization; they might have different expectations, but the project manager must be able to manage those expectations to achieve any level of success (Chang, 2013; Narayanaswamy, Grover, & Henry, 2013).

Stakeholder expectations may differ in various aspects of the project such as the requirements of the system, definition of success, communication methods, project management methodology and more. Nguyen, Nguyen, and Cao (2015) averred that the concept of success reflects the benefits that stakeholders expect from a project. In other words, with different expectations, stakeholders might have different definitions of success (Jetu & Riedl, 2012; Nguyen et al., 2015). To enhance the possibility of success, Jetu and Riedl (2012) highlighted the need for project leaders to meet with stakeholders to clarify their expectations and potential concerns. In that study, Jetu and Riedl (2012) identified stakeholder satisfaction as one of the critical success factors for IS projects.

Vrhovec, Hovelja, Vavpotič, and Krisper (2015) investigated the risks associated with stakeholders' resistance to change; they explored project risk factors and identified stakeholder resistance as a threat to the successful implementation of IS projects. The scholars classified the factors contributing to stakeholder resistance as organizational issues, power struggle, communication problems, and threats to professional or social status (Vrhovec et al., 2015). Vrhovec et al. (2015) positioned stakeholder management in the context of risk management, which implies that improper management of stakeholder engagement may lead to unfavorable project outcome. Mastrogiacomo, Missonier, and Bonazzi (2014) described IS projects as joint activities that involve multiple stakeholders; hence, they proposed a card-based conversation guide based on Herbert Clark's theory of joint activities. Mastrogiacomo et al. (2014) identified communication as an essential factor in managing stakeholder interactions and achieving consensus, which may enhance the possibility of success. Outlining the importance of stakeholder management, Anthopoulos, Reddick, Giannakidou, and Mavridis (2016) identified conflicting stakeholder interests as a potential risk to project success. The scholars noted that with a broad range of stakeholders, communications management might be a complex task (Anthopoulos et al., 2016). The authors examined the US government's Healthcare.gov project problems, and identified problematic project management knowledge areas; three of those involved stakeholders (Anthopoulos et al., 2016). The three stakeholder-related problem areas identified were stakeholder management, integration management, and communications management; the broad range of stakeholders seemed to have turned these management activities into extremely complex endeavors (Anthopoulos et al., 2016). Anthopoulos et al. identified conflicting political agendas and stakeholders’ expectations as some of the key contributors to the challenges of the Healthcare.gov project. Other failure factors for the healthcare.gov project included vague business requirements, the lack of clarity of the strategic vision, as well as ineffective oversight practices, and planning; these are all issues that require attention at project initiation (Anthopoulos et al., 2016; U.S. Government Accountability Office, 2014).

Management scholars have described stakeholder management as a multidimensional process; it involves the management of organizational change, risk management, communications management, and relationship management (Hornstein, 2015; Matook, Rohde, & Krell, 2013; Mazur & Pisarski, 2015). Stakeholder management involves the management of interested parties, and their levels of involvement or engagement in a project (Hornstein, 2015; Mazur & Pisarski, 2015). It also involves facilitating compromise in the face of conflicting interests, communications, and managing complex relationships between different stakeholder groups to achieve project objectives (Hornstein, 2015; Matook et al., 2013; Mazur & Pisarski, 2015; Nguyen et al., 2015). To make stakeholder management less complex, Mazur and Pisarski (2015) advocated the classification of stakeholders into groups and spheres of importance such as primary and secondary stakeholders. Mazur and Pisarski noted that such classifications might help project managers in deciding on the stakeholders to engage; hence, they may choose to focus the most effort on their key stakeholders. Stakeholder classification may be instrumental in determining whom to involve in the project decision-making process as Hornstein (2015) advocated. While stakeholder classification might be necessary and helpful, managers may have to strive to achieve a balance of interests to gain the support of all parties, as Jetu and Riedl (2012) suggested.

Mazur and Pisarski (2015) defined the developmental stages of project manager-stakeholder relationships as initiation or the establishment of relationships, and maintenance; these appear to align with the initiation and postinitiation stages of a project. While Mazur and Pisarski did not identify when to initiate the project manager-stakeholder relationship, the Project Management Institute (2017) suggested that it should start at the project initiation stage. Matook, Rohde, and Krell (2013) highlighted the importance of developing appropriate stakeholder relationships at project initiation. Whereas Mazur and Pisarski (2015) tested project managers' perception of their competencies in managing stakeholder relationships, Matook et al. (2013) examined project managers' perceptions of stakeholder interests. Matook et al. found that IT managers might resist the initiation of IT projects when they perceive illegitimate power as the motivation for initiating such project. Matook et al. noted that resistance to an IT project is stronger when people suspect that the project had been undertaken for personal benefits.

The Project Management Institute (2017) listed stakeholder identification and the planning of strategies required for stakeholder management as part of project initiation and planning processes while the management of stakeholder engagement is listed as an activity under project execution. However, Matook et al. (2013) and Hornstein (2015) suggested that organizational change, as well as stakeholder resistance to IT projects, might start at project initiation; hence, the management of stakeholder engagement might need to start at project initiation. While various scholars have highlighted the need for relationship management as an integral part of stakeholder management, Hornstein noted that the project management institute did not address the human elements of change in the project management body of knowledge. Thus, there appears to be a gap in the standards that guide stakeholder management; although it has been identified as a key factor in determining organizational readiness in project delivery and the governance of IS investment (Ali et al., 2015; Ram et al., 2015). With the management of IS investment and organizational readiness identified as critical factors in project (and organizational) performance, IS managers may need to address stakeholder management at project initiation as part of their implementation strategy (Ali et al., 2015; Mullaly, 2014; Ram et al., 2015).

Organizational Performance and Project Success

As many organizations rely on IS in one form or the other for the development and execution of their business strategies, IS have become enablers of organizational performance (Wu et al., 2015). While Wu et al. (2015) identified IS governance and strategic alignment as key factors that influence organizational performance, Petro and Gardiner (2015) identified a positive relationship between the project manager's influence on the organizational structure and business performance. Hence, while IS are critical to the execution of corporate strategy, and the achievement of strategic objectives, the design of the organization may affect project implementation and organizational performance (Petro & Gardiner, 2015; Wu et al., 2015). Scholars, therefore, suggested that IS projects be aligned with business strategy (Mullaly, 2014; Petro & Gardiner, 2015; Wu et al., 2015). In addition to aligning business and project strategies, a business may design the project organization with a structure that gives project managers some degree of influence in decision making within the organization (Mullaly, 2014; Petro & Gardiner, 2015; Wu et. al, 2015; Xue, Zhang, Ling, & Zhao, 2013). However, it is instructive to note that the business environment and strategy are factors that often predate the initiation and execution of the project; as Petro and Gardiner noted, these are factors to be considered when designing the project organization. In other words, the nature of the operating environment and the business strategy are input factors required in the design of the project organization, which is done at the project initiation and planning stages. Wu et al. (2015) cited communications and planning as examples of governance mechanisms required to align IS strategy with business strategy. Wu et al. underscored the importance of a strategic approach to project management, which considers the business environment and seeks to align the project design with organizational strategy while producing business value. However, it is important to note that Wu et al. identified IS planning methodology as one of the dimensions of IS strategic alignment. Planning for strategic alignment and designing the project's structure are factors that should be explored at project initiation (Project Management Institute, 2017).

Ali and Green (2012) identified effective IT governance as a critical facilitator of alignment between IT strategy and business objectives. Effective governance of IS ensures that IT/IS projects are selected and executed with a focus on business goals, the delivery of value, and ultimately the enhancement of organizational performance (Ali & Green, 2012; Wu et al., 2015). In the project management body of knowledge (PMBOK), the Project Management Institute (2017) defined project governance as a process of aligning the project with the needs of the business and stakeholders. The governance process helps the project manager to ensure that project outcomes create value that aligns with business strategy (Project Management Institute, 2017).

Miller (2015) argued for the co-creation of value as a practical approach to organizational performance. Value co-creation is not just about creating value for the organization but also considering what matters to clients, stockholders, and employees (Miller, 2015). In support of the co-creation of value, Andriole (2015) advanced the need for co-governance of IS initiatives and projects. Andriole noted that performance management requires the involvement of technology and business professionals; performance objective can be technical, as well as functional.

While IS may add value to the business process and support business performance, scholars have noted that such value cannot be created in a vacuum; it is important for IS managers to consider what value means to other stakeholders (Chen et al., 2014; Miller, 2015). Efforts to improve organizational performance ought to consider the interests of the organization, customer, as well as the employees (Al-Mamary, Shamsuddin, & Aziati, 2015; Chen et al., 2014; Miller, 2015). Organizational performance is about achieving organizational objectives; however, performance requires strategy, and IS projects are selected or initiated in the process of executing business strategy (Andriole, 2015; Miller, 2015; Wu et al., 2015). The outcome of an IS project can affect business performance; hence, the initiation process needs to include the identification of business goals and the alignment of the project with those objectives (Project Management Institute, 2017; Wu et al., 2015). Thus, existing literature indicates that project managers ought to consider organizational performance, value creation, and the alignment of the project with business strategies to achieve performance objectives when initiating and planning IS projects (Chih & Zwikael, 2015; Coombs, 2015). It is, therefore, possible that the lack of alignment between project and business objectives at project initiation is a factor that inhibits the notion of success with many IS projects.

Risk Management

Risk management is a critical part of project management that involves the identification, analysis, and planning for potential responses to risk; it involves the controlling of risk (Project Management Institute, 2017). Tams and Hill (2015) noted that IS project risks might affect organizational performance if they are not adequately addressed within the project framework; however, the Project Management Institute (2017) suggested that risks might have positive or negative outcomes. Interestingly, Mathiassen and Napier (2013) observed that a focus on risk management is symptomatic of a negative approach to project management research by IS researchers.

Risk management planning, risk identification, analysis, and response planning are typically done in the initiation and planning phases of a project, the actual management and control of risk occur during project execution (Project Management Institute, 2017). Practitioners commonly view risk as a potential deviation from an expected path in a project; however, scholars have differed on the definition and scope of risk (Carvalho & Rabechini, 2015; Hartono, Sulistyo, Praftiwi, & Hasmoro, 2014; Janssen, Voort, & Veenstra, 2015; Tams & Hill, 2015). The Project Management Institute (2017) defined risk, in the context of uncertainty, as an uncertain occurrence; however, Hartono et al. (2014) defined it in the context of normative decision theory.

Tams and Hill (2015) identified two classifications of risk; initial risks that may occur in the initial and planning stages of a project, and the residual risk that may arise in the later stages of a project.

Hartono et al. (2014) noted that the outcome of risk might be uncertain, but they defined risk as the possible deviation of the results of a process from its expected outcome; hence, the level of risk may be determined by its probability and potential consequences. To that end, Carvalho and Rabechini (2015) highlighted the distinctions between risk management and uncertainty management. That distinction between risk and uncertainty is a departure from the definition of risk given by the PMI. Carvalho and Rabechini (2015) referred to the PMI's definition as ambiguous; it made no distinction between risk and uncertainty. Supporting the normative decision theory view backed by Hartono et al. (2014), Carvalho and Rabechini surmised that risks are events associated with statistical p

robability while the likelihood of uncertain events cannot be determined.

The normative theory view of risk aligns risk management with decision theory, which is evident in the use of quantitative decision-making approaches in risk analysis; these include Monte Carlo simulation, causal mapping, Bayesian Belief Networks (BBN) among others (Carvalho & Rabechini, 2015; Hartono et al., 2014). Thus, in risk management, project managers apply predefined responses or tools to risks whose probabilities have been previously identified (Carvalho & Rabechini, 2015; Tams & Hill, 2015). Carvalho and Rabechini (2015) referred to the use of those predefined tools or responses as the hard approach, which requires hard skills. The hard approach to risk management based on predefined risks and mitigation plans suggest a significant gap in practice (Carvalho & Rabechini, 2015; Hartono et al., 2014). However, IS projects are inherently risky, and can be complex; they are susceptible to uncertainty (Liu, 2015; Tams & Hill, 2015). While hard skills or the rational approach may help in planning for and managing risks, scholars have suggested the need for soft skills in managing uncertainties (Carvalho & Rabechini, 2015; Hartono et al., 2014). The soft approach to managing uncertainty may include the use of intuition in responding to uncertainty, relational skills, situational context, and strategy (Carvalho & Rabechini, 2015; Hartono et al., 2014).

Hartono et al. (2014) found that many project management practitioners use intuitive decision making in managing risk instead of the quantitative tools; hence, they suggested a systemic approach to risk management. Carvalho and Rabechini (2015) appeared to support the systemic approach by advocating a comprehensive approach that includes risk management and uncertainty management. With implications for project performance, and by extension organizational performance, researchers have suggested a systematic risk management approach that supports the rational and strategic methods (Carvalho & Rabechini, 2015; Hartono et al., 2014; Liu, 2015; Tams & Hill, 2015). Janssen et al. (2015) proposed a complex adaptive systems (CAS) approach to risk management; they noted that response to risk might introduce new risk and suggested the continuous re-assessment and mitigation of risk. However, Janssen et al. pointed out that risk might affect system performance beyond the project lifecycle; hence, they advised that the necessary governance structures be addressed in the early stages of the project.

Project Learning and Success

Klein, Biesenthal, and Dehlin (2015) noted that Ashby's law of requisite variety requires the alignment of external and internal complexity in addressing issues with complex systems. In other words, to solve a complex problem, a manager needs a set of tools or techniques with at least as much variety as that of the problem (Klein et al., 2015). However, knowing the degree of variation to apply when addressing an uncertain event requires proactive, and continuous learning (Klein et al., 2015). The concept of lifelong learning; however, contradicts traditional project management methodologies that require project elements such as requirements and potential risks to be fully identified at the outset (Ahern, Leavy, & Byrne, 2014). Ahern et al. (2014) suggested that, while predefined project knowledge is useful, it is impossible to predict everything that will happen in a project; hence, continuous learning might help to fill emergent knowledge gaps.

IS projects are complex systems, but they are also temporary organizations, and to succeed, such project teams need to learn continuously as complex adaptive systems (Ahern et al., 2014). Thus, complex systems such as IS projects require the use of management models that promote learning; however, technical skills alone may not be sufficient to facilitate learning in projects (Ahern et al., 2014; Avison & Torkzadeh, 2013). Avison and Torkzadeh (2013) argued for a focus on the sociocultural aspects of IS project management over technical factors. The sociocultural aspects of project management are the nontechnical or soft aspects of project management; these include relationship management, context awareness, stakeholder management and intuitive decision making among others (Avison & Torkzadeh, 2013; Klein et al., 2015).

Learning opportunities in a project may come in the form of problem-solving; the project team may learn about unexpected problems as they occur, and develop effective responses (Ahern et al., 2014; Avison & Torkzadeh, 2013; Klein et al., 2015). Literature, therefore, supports a pragmatic approach to IS project management, which promotes learning, the use of intuition, and improvisation (Ahern et al., 2014; Avison & Torkzadeh, 2013; Klein et al., 2015). Other scholars have supported the need for competency development and continuous learning for project managers; such may be in the form of formal training or social learning through interaction with peers in project management offices or communities of practice (Lee, Reinicke, Sarkar, & Anderson, 2015; Ramazani & Jergeas, 2015).

Lee et al. (2015) identified management support as one of the factors that promote learning through communities of practice. They found a positive relationship between management support and the degree of participation by project managers in communities of practice, which led to individual and organizational benefits (Lee et al., 2015). Communities of practice may act as support groups, providing learning opportunities for project managers; researchers have found that the skills learned by project managers through communities of practice may contribute to improved project performance through reduced delivery times and improved quality (Lee et al., 2015). Lee et al. supported the notion that top management support is critical to the success of IS projects; management support encouraged social learning through communities of practice.

However, Lee et al. did not indicate if participation in communities of practice by a project manager could affect management support for the project.

While supporting social and formal learning for project managers, Ramazani and Jergeas (2015) decried the emphasis on technical skills by providers of project management training. As also noted by Avison and Torkzadeh (2013), Ramazani and Jergeas identified soft skills such as interpersonal skills, complexity management, and critical thinking as essential but lacking in most project management training programs. Ramazani and Jergeas also highlighted the importance of problem-based learning, which aligns with the project learning or learning through problem-solving as proposed by Ahern, Leavy, and Byrne (2014).

Scholars have suggested that learning in project management is multidimensional; learning may be technical, nontechnical, intrinsic, or extrinsic (Ahern et al., 2014; Avison & Torkzadeh, 2013; Klein et al., 2015; Lee et al., 2015; Ramazani & Jergeas, 2015). Learning and improvisation may require appropriate management support, and project management structures early in the project; they might also require substantial levels of learning throughout the project lifecycle (Ahern et al., 2014; Klein et al., 2015; Lee et al., 2015; Ramazani & Jergeas, 2015). The type of learning that is most helpful at each stage of the project is not clear; nevertheless, scholars have established the individual, organizational, and social benefits of learning to project and organizational performance (Ahern et al., 2014; Lee et al., 2015; Ramazani & Jergeas, 2015).

Positive Social Change

The field of IS management is often seen as technical, which is just one aspect of the field. However, the widespread adoption of technology has positioned IS as enablers of change in various facets of society (Faulkner & Runde, 2013; Rosner, Roccetti, & Marfia, 2014). Stephan, Patterson, Kelly, and Mair (2016) defined positive social change as a transformation process that may involve a change in thought patterns, human behavior, social interactions, or structures to produce positive results for individuals, social groups or the environment. Curtin, Stewart, and Cole (2015) corroborated that when they defined social change broadly as the change to attitudinal and behavioral characteristics, which may involve social justice.

Stephan et al. (2016) suggested that the outcomes of positive social change might be diverse, and without direct benefit to the individuals or groups that initiated the transformation. However, it is often a bottom-up process that starts with one or more people and impacts the behavior of a social entity (Curtin, Stewart, & Cole, 2015; Stephan et al., 2016). The notion that positive change in an individual's attitude may trigger positive social change within a social group aligns with the characteristics of complex systems that are sensitive to small changes in their initial conditions (Curtin et al., 2015; Radu et al., 2014).

As complex adaptive systems, IS have evolved, with advancements in technology, in response to change or as drivers of change (Lucas Jr., Agarwal, Clemons, El Sawy, & Weber, 2013; Rosner et al., 2014). Researchers and practitioners have sought to develop IS aimed at either meeting business needs or creating new markets (Chen & Bennett, 2013; De Luis, Cruz, Arcia, & Márquez, 2014). However, there appears to be a dearth of research into the social value of IS, which is a knowledge gap (Chen & Bennett, 2013; Lucas Jr. et al., 2013). Some researchers are beginning to address that gap; see Figure 4 for an overview of the relationships between some uses of IS and positive social change.

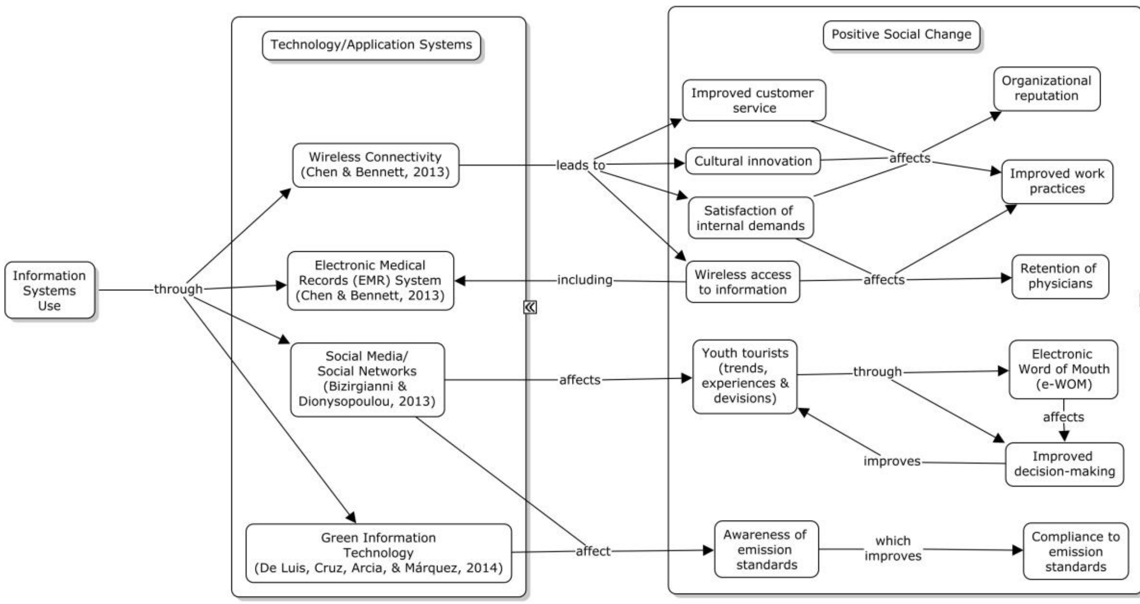

Figure 4. Examples of information systems use and positive social change (created by J. O. Afolabi).

In a quantitative study, De Luis et al. (2014) investigated the relationship between green information technology and the behaviors of car owners. The researchers observed that, despite mandatory emission certification requirements, emission-related pollution was not abating; hence, they sought to introduce a different approach to emission testing. De Luis et al. launched a mobile application and an on-the-road emission measurement tool; the tool measured emission as drivers went about their regular business and sent data to the Green application on drivers' mobile phones. Before the study, drivers viewed emission control as an economic issue; however, after the introduction of a mobile application and the device that measured emission on the go, most of the participants saw emission control as a health issue (De Luis et al., 2014). The developers linked the Green mobile application to social media, and drivers took advantage of the social media integration to share emission data; they also encouraged social media contacts to reduce emission (De Luis et al., 2014). In that study, the integration of hardware with the Green application and social media on mobile devices made information available to drivers, which enhanced social learning and influenced driver behavior (De Luis et al., 2014). The authors identified the use of social media as a by-product of the use of green information technology; however, it is possible that social media influenced the use of the Green information system. People want to be seen to be doing the right thing before peers; hence, social media may have influenced the results, which is an implication for future studies (De Luis et al., 2014).

In another study, Chen and Bennett (2013) explored the social effects of the installation of wireless network technology at two healthcare facilities. In that case study, one healthcare center adopted wireless technology early and improved on it while the other played catch-up with the installation of the latest wireless systems. However, in both cases, the researchers found that the availability of wireless networks had internal and external social benefits. Internal social benefits included the retention of members (physicians), cultural innovation, and the satisfaction of internal demands. External benefits included improved organizational reputation and patronage. With the availability of wireless technology, doctors could access lab results and electronic medical records (EMR) without the need to sit at a desk; they could access the required information through their mobile devices. Hence, efficiency improved; doctors and patients were satisfied with the impacts (Chen & Bennett, 2013). Chen and Bennett (2013) suggested that social change could not be economically measured, which appears to be a gap in the study.

Bizirgianni and Dionysopoulou (2013) explored the impact of social media on tourism trends among youths in Greece. The authors conducted a quantitative survey with participants between the ages of 16 and 29 years old. Bizirgianni and Dionysopoulou found that participants relied more on information from their social media contacts than tourism board adverts when making travel decisions. The youths relied on electronic word of mouth (e-WOM) in the form of photographs and videos posted by their social media contacts when choosing vacation destinations. An interesting realization from that study was that national tourism boards were wasting money with their approach to advertising on social media platforms; most of the participants ignored such adverts (Bizirgianni & Dionysopoulou, 2013). However, e-WOM marketing through social media contacts was found to be effective as participants were more satisfied with their travel destination choices; they were likely to choose destinations with favorable reviews from social contacts. The findings of that study provided valuable insight that could change the way tourism agencies market their packages to prospective travelers (Bizirgianni & Dionysopoulou, 2013).

Rosner et al. (2014) presented IS and technology as enablers for positive social change in culture. The authors explored the role of interactive software applications in the preservation and propagation of art and other cultural artifacts. In a Brazilian study, Wainer, Vieira, and Melguizo (2015) identified a positive relationship between computer ownership at home and improved test score performance among students. With a population sample that included a set of fifth grade and ninth grade students in Brazil, the authors found that access to computers and internet access at home helped students improve their test scores (Wainer, Vieira, & Melguizo, 2015). Indeed, it is hard to imagine social services such as traffic management and healthcare systems without the role of IS and technology as enablers.

The idea that social influence may not be quantified financially appears to be a common characteristic of IS research literature. That is a gap that other researchers may seek to address. The use of IS in the form of social media platforms and the near-instant availability of information through mobile applications enabled positive social change (Bizirgianni & Dionysopoulou, 2013; Chen & Bennett, 2013; De Luis et al., 2014). The literature reviewed might help in addressing the social change requirements in research. While organizations and practitioners may use IS to drive the achievement of social change, the effects of social change such as customer satisfaction may be intangible (Chen & Bennett, 2013).

Gaps in the Literature

Project success and failure have for long been the focus of research in the fields of IS management, and project management (Cecez-Kecmanovic et al., 2014; Jonas, Kock, & Gemünden, 201). To advance the study of IS success, DeLone and McLean (2003) proposed the DeLone and McLean model of IS success, which is a set of dimensions and measures for IS success. DeLone and McLean (2003) provided some clarity on the criteria for IS success, but Petter et al. (2013) suggested that the model was one of many independent variables that may determine IS success, indicating gaps in IS success research.

The DeLone and McLean (D&M) model represented a systematic approach to measuring the success of IS; however, the model addressed postimplementation factors, which indicates a knowledge gap. While the D&M model addressed postimplementation measures of success, it left out factors that may affect the implementation, that is, before project completion. To address the knowledge gaps, Petter et al. (2013) proposed the examination of other factors, including project and organizational factors as possible determinants of IS success. Hence, IS management researchers have examined various project and organizational factors in contributing to the study of IS success (Al-Shargabi & Sabri, 2015; Dwivedi et al., 2015; Subiyakto et al., 2015).

Project management researchers and professional organizations have developed methodologies, and best practices to guide the successful practice of the profession. While those methods and best practices appear to have led to some level of success in other fields such as construction and engineering, things seemed to be different with IS projects (Ram & Corkindale, 2014; Wells, 2012). Despite the espoused benefits of project management methodologies and best practices, they sometimes appear lacking when applied to IS projects. Various researchers have advocated the use of one methodology or the other, each espousing the benefit of his or her approach over others; however, other researchers have found that there is more to IS project success than the use of any single methodology (Ram & Corkindale, 2014; Wells, 2012). It is, therefore, evident that despite the use of methodologies and best practices, a knowledge gap remains as most IS projects become unsuccessful or troubled (Stoica & Brouse, 2014; Vrhovec, Hovelja, Vavpotič, & Krisper, 2015).

Coombs (2015) suggested that the conventional definition and measures of success might have contributed to the low success rate of IS projects; this aligned with the argument by Serrador and Turner (2014) that traditional measures of project success are not ideal. Many organizations use the traditional measures of success to evaluate IS projects; these are adherence to schedule, budget, and quality. However, other scholars have argued that those measures might be unsuitable for use in evaluating IS projects; they have proposed the use of measures such as customer satisfaction and benefits realization (Chih & Zwikael, 2015; Coombs, 2015; Serrador & Turner, 2014).

Scholars examining project factors have identified factors such as stakeholder management, communications management, risk management, and project governance as key factors that may affect project outcome (Dwivedi et al., 2015; Ram & Corkindale, 2014; Subiyakto et al., 2015). However, many scholars have failed to associate the structures, necessary to manage those factors, with the initiation phase of the project (Fulford, 2013; LeRouge, Tulu, Tuma, Arango, & Forducey, 2013; Mullaly, 2014). Mastrogiacomo et al. (2014) alluded to that in their study of the effects of conversation on IS project success; they suggested that their proposed model be used from the initiation phase where the degree of complexity might be high. While they recognized the need to start structured communication at project initiation, as well as the potential for a high level of complexity, the focus was on reducing coordination surprises based on three cases (Mastrogiacomo et al., 2014).

Thus, some scholars have investigated project initiation factors in the context of project execution, without acknowledging the stage at which the factors are determined. Many scholars ignored the effect of the interactions of multiple initiation factors on project outcome; hence, that remains a knowledge gap (LeRouge et al., 2013; Matook et al., 2013; Mullaly, 2014; Ram et al., 2015). As LeRouge et al. (2013) noted, further research is needed to understand the effects of project initiation decisions on project success. Through this study, I sought to fill the knowledge gap by examining the effects of project initiation factors including decision-making factors on the outcome of IS projects.

Summary and Conclusions

As IS projects continue to face complex issues despite progress already made in research and practice, it is necessary to explore how initiation might affect project outcome (LeRouge et al., 2013; Mullaly, 2014; Ram et al., 2015). Chapter 2 includes the examination of various dimensions of IS project management, and project success using the conceptual framework consisting of chaos theory and Ashby's law of requisite variety. The literature review revealed gaps that supported the need for a closer examination of the effects of project initiation factors and decisions on the outcome of IS projects.

Ashby's law of requisite variety and chaos theory appear to complement each other in the sense that one seems to fill a gap for the other. Ashby's law prescribes an approach to regulating the behavior of dynamical systems when they face uncertainties. While regulation may help to achieve equilibrium in a system, it requires learning and preparation that might be more efficient if regulators knew the source of the disturbance or uncertainty. Chaos theory, on the other hand, is useful in explaining the behavior of complex systems; it indicates that uncertain behavior is the result of small changes to the initial conditions of the system. Whereas chaos theory indicates that a system may be manipulated to achieve desired objectives if all its initial conditions are known, Ashby's law of requisite variety outlines an approach to regulating the behavior of the system without knowing the initial conditions. Conversely, the idea that a system is sensitive to small changes in its initial conditions, as supported by chaos theory, indicates that preparation might be critical to the ability to regulate a system's behavior (Flach, 2012; Klein et al., 2015). In other words, improvisation requires adequate preparation, but managers require continuous learning to apply different remedies to various problems that may occur in a project (Flach, 2012; Klein et al., 2015).

The lack of emphasis on the importance of project initiation to project outcome appears to be a knowledge gap in IS management literature. Considering the concept of systems regulation as supported by Ashby's law of requisite variety, there is a gap between regulation and initial conditions. Many IS project scholars have focused on different aspects of regulating project behavior to achieve project objectives. However, they seem to have paid little or no attention to the study of initial conditions that might affect project performance and outcome. A project leader might not know all the initial conditions that might affect the performance and outcome of a project; this might make improvisation necessary during execution. However, appropriate structures need to be in place for improvisation to be successful (Flach, 2012; Klein et al., 2015).

Regulation or control is often necessary during the project execution stage, but the definition of the necessary structures that enable regulation ought to occur at project initiation. Such structures may guide the formation of the project organization, moderate stakeholder interactions, influence decision-making, and help determine if improvisation is acceptable to the organization. With the frequent change in information technology, and the business environment, what works well for one IS project might not work for the other; IS projects are increasing in complexity and managers might need to approach each IS project with a different set of tools. As IS project performance continues to be an issue, it is possible that practitioners are taking the preparation required during the initiation stage for granted; it is also possible that project leaders need to do more at initiation to prepare the project for success.

Chapter 3 includes the structure for the grounded theory study. I explored the experiences of IS managers and project managers to understand the possible effects of project initiation factors on IS project success. Chapter 3 includes details on the role of the researcher, the iterative research process, participant selection, as well as the data collection, and analysis methods. Issues of trustworthiness and ethics were also discussed.

Chapter 3: Research Method

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that might affect project outcome. It involved the exploration of initiation factors such as relational and decision-making factors and how they might influence the outcome of IS projects. Petter, et al. (2013) suggested the examination of project and organizational factors as potential determinants of IS success, among others. However, project and organizational factors are intertwined; management researchers have classified projects as temporary organizations (Floricel et al., 2014; Jacobsson, Lundin, & Soderholm, 2015). Management researchers have tried to draw attention to the notion that projects are not just a set of processes but a complex social system involving processes, methods, tools, as well as social and political interactions (Floricel et al., 2014; Lloyd-Walker, French, & Crawford, 2016; Winch, 2014). That classification has helped to advance the understanding of project management from the purely technical point of view to one that includes social concepts related to human behavior and social interactions (Jacobsson et al., 2015; Lloyd-Walker et al., 2016; Swärd, 2016). The implication of that shift in research focus is that technical and procedural factors alone may no longer explain project outcome; there is a need for researchers to also explore social and behavioral factors that might significantly alter the complexity of a project (Söderlund, Hobbs, & Ahola, 2014; Zolper, Beimborn, & Weitzel, 2014). That need is evident in the field of IS management where researchers and practitioners are more likely to focus on the technical aspects of the project rather than a combination of the technical and social aspects (Avison & Torkzadeh, 2013; Floricel et al., 2014).

IS projects are complex by nature; they might combine intangible elements like software, abstract concepts in the form of methodologies, as well as physical and social constructs (Arsenyan, Büyüközkan, & Feyzioğlu, 2015; Colomo-Palacios, Casado-Lumbreras, Soto-Acosta, & García-Crespo, 2013). As Ahimbisibwe, Cavana, and Daellenbach (2015) observed, IS projects do not often face challenges for technical reasons alone; technical problems are more likely symptomatic of human or procedural problems. Complex phenomena such as IS project success might be best explored through qualitative methods that allow some degree of flexibility in approach; this thought informed the choice of the conceptual model that includes chaos theory and Ashby's law of requisite variety.

The rising complexity and costs of IS projects, as well as the statistically low rate of IS project success, are valid reasons for researchers to explore various aspects of IS project success (Dwivedi et al., 2015; Petter et al., 2013). However, with much of the effort focused on the execution and control or regulation of IS projects, there remains a gap in what is known about the initiation phase and how it affects project outcome. Researchers had discussed certain factors as potential success factors for IS projects without linking them to the initiation phase, and without exploring the relationship between the factors and project success. Hence, there was a need to understand project initiation factors, their interactions, and how they might influence the outcome of IS projects.

Ali et al. (2015) called for the establishment of effective mechanisms and processes for governance of IS projects while Ram et al. (2015) noted that scholars have not sufficiently examined the relationship between organizational readiness and IS implementation factors. They suggested that managers may use organizational readiness to clarify an organization's capabilities before commencing an IS project (Ram et al., 2015). In addition to those gaps, Wu et al. (2015) identified information technology (IT) governance mechanisms, alignment with business strategy, and business performance as areas requiring further research; they suggested that these might have strong influences on IS project success. The need to study the effect of governance, strategic alignment, and organizational performance on IS projects represent knowledge gaps; these are factors that are traditionally addressed before project execution begins.

Thus, for a complex phenomenon such as the influence of project initiation factors on project outcome, it seemed most appropriate to use the grounded theory method in developing theoretical explanations. As Birks, Fernandez, Levina, and Nasirin (2013) noted, many IS researchers have found the grounded theory method to be credible in the development of new theory in the field. Urquhart and Fernández (2013) supported that view when they surmised that, despite some concerns about the use of grounded theory method in IS research in the 1980s, it had found more acceptance in the IS field in recent times. Following that trend, I used the grounded theory method to develop theoretical explanations for how the initial stage of IS projects might influence project outcome. The following sections contain details of the grounded theory approach used to conduct this study.

Research Design and Rationale

The objective of this study was to extend the understanding of project initiation factors that may improve project outcome in the field of IS management. To achieve this aim, I sought to provide a theoretical explanation for the possible effects of project initiation factors on the outcome of IS projects. Through a grounded theory study, I sought answers to the following general question (GQ) and subresearch questions (RQs):

GQ. What is the nature of project initiation, and how can adequate due diligence at that stage improve the success rate of IS projects?

RQ1. What project initiation factors are capable of improving IS project outcome?

RQ2. How can practitioners manage those initiation factors to improve the possibility of project success?

RQ3. How can the decision-making process during the project initiation phase contribute to a successful project outcome?

The research questions helped me identify some of the factors established at initiation that might influence the outcome of IS projects. These are equivalent to the initial conditions of the components of a system that managers may manipulate to determine the behavior of the system (Olaniran, Love, Edwards, Olatunji, & Matthews, 2015). In addition to identifying initial conditions, and how they were manipulated to achieve project success, I explored how the decision-making process established at project initiation contributed to achieving project success. Scholars have argued that giving project managers some degree of autonomy, and flexibility in making decisions might be beneficial to the project (Mullaly, 2014; Petro & Gardiner, 2015). However, it was not sufficiently clear how the decision-making process established early in the project might lead to the success of IS projects.

Central Concepts

Project management and IS researchers have investigated the topic of IS project success for years; however, many researchers focused on various aspects of project execution while few examined the role of the initiation and planning stages in IS project success. Having considered chaos theory, and the sensitivity of systems to their initial conditions, it was necessary to explore the subject from a different dimension. The degrees of complexity associated with IS projects may vary depending on diverse factors, including the objectives of the system and the composition of the project (Liu, 2015). Hence, it was fitting to conduct this research with the aid of the grounded theory method, which is useful for developing theory, as well as the conceptual framework that was centered on complexity theory.

Qualitative Research Tradition

Qualitative research involves the social construction or interpretation of meaning; it is a collection of inductive research methods, and useful for exploring complex relationships (Corbin & Strauss, 2014; Miles, Huberman, & Saldana, 2013; Parylo, 2012). In qualitative research traditions, the researcher is usually an integral part of the study; the researcher interacts with participants to make sense of phenomena (Corbin & Strauss, 2014; Lawrence & Tar, 2013; Miles et al., 2013). Qualitative research supports diverse worldviews, methods of inquiry, data collection methods, and interpretations; hence, qualitative research may be defined as a multidimensional approach to research

(Cleary et al., 2014; Miles et al., 2013). In qualitative research, the researcher may choose to use one method of inquiry or a combination of methods to explore one or more dimensions of a phenomenon (Patton, 2002). The qualities of the qualitative research tradition make it valuable in exploring complex phenomena; the rich data generated through qualitative methods provide the multidimensional view that is necessary for understanding complex phenomena.

Döös and Wilhelmson (2014) noted that individuals often execute qualitative research as a solo effort; the individual researcher plans the study, collects the data, and analyzes the data. Hence, the interpretation of findings is a solo effort (Döös & Wilhelmson, 2014). While qualitative researchers might work alone, there are advantages to the team approach to research (Döös & Wilhelmson, 2014; Miles et al., 2013). A team of researchers may split tasks among team members; they can collect different types of data at the same time and perform triangulation in data analysis (Döös & Wilhelmson, 2014; Miles et al., 2013). There are several qualitative research traditions, some of which are phenomenological research, case studies, narrative analysis, ethnography, and grounded theory (Miles et al., 2013; Parylo, 2012). I used the grounded theory approach for this study.

In proposing grounded theory as a research method, Glaser and Strauss (2009) asserted that a close association exists between the acts of proving and generating theory in research. They described theory as a form of strategy for managing qualitative data in sociological studies; it is necessary for the conceptualization, explanation, and description of phenomena (Glaser & Strauss, 2009). Glaser and Strauss further noted that such a theory, as a strategy, should provide comprehensible hypotheses that may advance current or future research. The hypotheses, inherent in theory, should be in such a form that others might validate through quantitative research (Glaser & Strauss, 2009). Hence, Glaser and Strauss proposed a systematic approach to theory development in the form of the grounded theory method, which is aimed at discovering theory that is grounded in data. Corbin and Strauss (2014) suggested that the grounded theory method might be useful for examining the complex interactions of objective and subjective factors, and how they might affect the behavior of people or complex systems. While grounded theory is a theory as its name suggests, it is also a set of techniques for systematically conducting research and developing theory.

Other qualitative methods, particularly case study method and phenomenological research, were considered for this study but they were found not to be as suitable as the grounded theory approach. The case study approach facilitates the examination of a phenomenon through one or multiple cases, which leads to the in-depth analysis and description of the phenomenon in a situational context (Cronin, 2014; Pearson, Albon, & Hubball, 2015). Glaser and Strauss (2009) averred that while case studies may generate theory, they are often used to elaborate theory. Methodology scholars have suggested that case studies may begin or end with theoretical propositions or generalizations, which differentiates the approach from grounded theory (Cronin, 2014; Pearson et al., 2015; Tsang, 2014). However, stressing the flexibility of qualitative traditions, other scholars have suggested the application of grounded theory techniques for data analysis in case studies to develop theories (Tsang, 2014; Yazan, 2015).

Phenomenological research is useful for understanding and describing the essence of the lived experiences of research participants with a phenomenon (Bevan, 2014; Yüksel & Yildirim, 2015). It is not suitable for developing a theory or the essence of a phenomenon (Bevan, 2014; Yüksel & Yildirim, 2015). Strandmark (2015) surmised that phenomenological research differs from grounded theory in that phenomenological research is most suitable for addressing research problems related to emotion or existence. Grounded theory, on the other hand, is most appropriate for studying research problems related to processes; it is aimed at identifying key characteristics of the phenomenon, the relationships among these features, and how they might influence behavior (Corbin & Strauss, 2014; Strandmark, 2015). However, as Malterud (2016) observed, it is common to find elements of phenomenology in most qualitative studies where researchers have used other methods. As with grounded theory research, the case study and phenomenological methods have interviews as their primary data collection method (Bevan, 2014; Malterud, 2016; Strandmark, 2015; Walsh et al., 2015). While the three methods primarily use interview data, they all permit the use of other qualitative data types, while grounded theory and case study methods allow the use of quantitative data (Charmaz, 2014; Palinkas et al., 2015; Walsh et al., 2015). Grounded theory method differs from case study and phenomenological research methods in that it is most suitable for theory development and process-related research problems (Pearson et al., 2015; Strandmark, 2015). Unlike other research methods, grounded theory involves an iterative process of constant comparison of data (Charmaz, 2014; Corbin & Strauss, 2014). The systematic approach to data collection and analysis sets the grounded theory method apart from the phenomenological and case study methods; grounded theory adds a structured and repeatable approach to qualitative research.

The quantitative and mixed method research traditions were considered unsuitable for this study. The need to develop a substantive theory made the quantitative tradition unsuitable; quantitative research is suitable for testing theories or hypotheses (Macfarlane et al., 2015). A mixed methods approach would require a qualitative component, as well as a quantitative component (Parylo, 2012). It would require a qualitative study to develop the theory, and a quantitative study to verify that theory, which could be time consuming. Hence, the mixed methods approach was considered not feasible due to the constraints of time and cost.

Project initiation involves a complex group of processes that precede the execution of a project; it involves decision making, the definition of scope, initial planning, as well as the definition of structures and stakeholder interactions (Mullaly, 2014; Sanjuan & Froese, 2013). The focus of this study was the initiation process for IS projects, with the goal of developing theoretical explanations for the nature of initiation factors and how they might affect project outcome. Hence, the grounded theory method seemed the most suitable approach for this study.

Role of the Researcher

In qualitative research, the researcher is integral to data collection and analysis; while the researcher gathers data from participants, the researcher analyzes and interprets the data (Bendassolli, 2013; Maxwell, 2013). The researcher is, therefore, an instrument in the qualitative research process (Maxwell, 2013). In grounded theory research, interviewing is the primary mode of data collection; this puts the researcher in partnership with the participant in the construction of data (Bendassolli, 2013; Charmaz, 2014). Through interviews, the researcher gains first-hand contact with the data; the researcher also interacts with the data in the process of analysis (Charmaz, 2014; Corbin & Strauss, 2014; Strandmark, 2015). The grounded theory process involves an iterative process of data collection and analysis or constant comparison; the results from one iteration may lead to changes in questions asked in the next iteration (Charmaz, 2014; Glaser & Strauss, 2009).

The Researcher and Data Collection

The traditional method of conducting interviews is through face-to-face meetings; however, advances in technology have provided other means of conducting interviews (Janesick, 2011). Face-to-face interviews are a source of rich data; in addition to communicating with the interviewee, the interviewer can observe the participant (Cleary et al., 2014; Janesick, 2011; Katz, 2015). As Janesick (2011) noted, the researcher may observe the participant's body language as the participant answers specific questions; this produces more data than oral communication. However, the face-to-face interview is limited, as the interviewer and interviewee must be in the same place for such an interview to hold. Robinson (2014) noted that with face-to-face interviews, participants may put up an appearance or performance that is superficial. Apart from the possibility of participants putting up a front, they may hold back certain information that they consider embarrassing (Robinson, 2014). Virtual or internet-enabled interviewing methods make it possible to overcome some of the challenges of face-to-face interviews; however, they also have their challenges.

Virtual means of conducting interviews include email, internet forums, chats, and video calls among other ways. Unlike face-to-face interviews, virtual means of interviewing do not require the interviewer and participants to be at the same physical location (Moylan, Derr, & Lindhorst, 2015). The lack of the need for physical presence can make virtual interviews more cost efficient than face-to-face interviews. For example, through email, the researcher may interview a participant in another part of the world; an added advantage is that the participant may take some time to reflect on the questions and answers before sending a response (Moylan et al., 2015). Virtual interviewing through text messages and Internet forums provide participants with the feeling of anonymity, and they may talk about personal matters that they may not be comfortable talking about in face-to-face interviews (Moylan et al., 2015). On the other hand, the video chat is the closest approach to face-to-face interviewing; the interviewer and participant may see and hear each other in real time.

With video cameras primarily focused on the faces of the parties in the conversation, it is difficult (as with other virtual methods) for the researcher to observe the participant's body language. It is also challenging to build quality relationships between the researcher and participants through virtual interviewing channels (Moylan et al., 2015). Thus, there are advantages and disadvantages to every method (face-to-face or virtual) of conducting interviews. The researcher may choose an interviewing approach that is most suitable for the study and the circumstances surrounding it. In this study, I interviewed participants, transcribed the interviews, and analyzed the data until theoretical saturation was achieved. A three-stage coding approach was used to analyze the data; it included open coding, focused coding, and theoretical coding (Charmaz, 2014).

Relationships and Researcher Biases

I am a certified project management professional (PMP) in the field of IS management, and a member of the PMI. I did not involve participants who work within my organization; however, I solicited participants who work in the same professional field as I do. As project managers or functional IS managers, some participants were also members of the PMI. I guarded against bias with the use of member checking, which involved sending transcribed interviews back to participants for review and validation (Birt, Scott, Cavers, Campbell, & Walter, 2016). I also used a reflexive journal to document thoughts and decisions.

Methodology

The grounded theory method was used in this study. The details in the following sections include the participant selection process, instrumentation, as well as the sampling strategy and data collection procedures. A plan that outlined the data collection and coding process was also discussed.

Participant Selection Logic

Population. The target population sample for this study included functional and project managers in the field of IS or IT. They had to be managers or project managers that have managed or sponsored one or more IS/IT projects from initiation to completion.

A purposive sampling approach was used; in addition to the purposive strategy, the snowball approach, which involves referrals from known participants, was also used to identify additional participants.

While the provisional target was to conduct 25 interviews, I conducted 24 interviews; data saturation was considered achieved by the 20th interview. Although I set a target sample size, the final sample size was different as might be expected in grounded theory studies (O'Reilly et al., 2012; Robinson, 2014). I interviewed IS project managers to seek their perspectives on the nature of project initiation factors and how they might affect project outcome.

Selection strategy. Potential participants for this study were contacted primarily through a social networking platform (LinkedIn.com) and referrals (snowball). Participants were asked to complete a short questionnaire, which was created through Google Forms; this was used to facilitate the selection of participants that met the criteria outlined above. I solicited participants through LinkedIn groups, and reached out to industry contacts who are IS project managers or managers, using the snowball approach.

Sampling strategy and size. A purposive sampling approach was used with the requirement that the participants were IS managers or project managers who had managed one or more IS/IT projects. Robinson (2014) described sampling as a critical component of qualitative research design but noted that sampling had not been given much attention in textbooks and journals addressing research methodology. Robinson (2014) further described purposive sampling as a nonrandom approach to selecting research participants or cases relevant to the phenomenon under investigation. Robinson

(2014) noted that the criteria for selecting participants are known at the onset; however, Palinkas et al. (2015) suggested that the sample variations that the researcher might need are often unknown at the beginning of the study. Hence, in the grounded theory tradition, Palinkas et al. suggested an iterative approach to purposive sampling. With the iterative approach, the researcher may change the sampling criteria as necessary and select a new sample set (Palinkas et al., 2015). In grounded theory studies, the sample size may not be fixed at the beginning, as the focus is not on generalization; the sample size depends on when theoretical saturation occurs (Charmaz, 2014; Glaser & Strauss, 2009; O'Reilly et al., 2012). Saturation occurs when no new information may be derived from the data; the researcher may continue with the iterative process of data collection and comparative analysis until theoretical saturation occurs (Glaser & Strauss, 2009; O'Reilly et al., 2012). However, Corbin and Strauss (2014) argued that various constraints, including time and the availability of participants, might limit data collection. When data collection is limited or stopped before saturation occurs, the resulting theory might not be well-developed (Corbin & Strauss, 2014). Further to that, Charmaz (2014) noted that the sample size is not synonymous with the number of participants, but the number of interviews; participants may be interviewed more than once. A sample size of 25 participants was the target for this study; however, data collection ended when saturation was considered achieved.

Instrumentation

In qualitative research, the researcher is an instrument in the data collection and analysis processes. I conducted semistructured interviews, using questions that addressed the research questions; each interview was recorded and transcribed for coding and analysis. The plan was to have face-to-face interviews with participants; however, where that was not feasible, telephone interviews were conducted. To preserve the privacy of participants, information that might facilitate the identification of participants were replaced with pseudonyms in the transcripts; the transcript of each interview was shared with the participant.

A qualitative analysis software, NVivo, was used for data organization, and comparative analysis. A three-stage coding approach was used; the stages comprised the initial or open coding, focused coding, and theoretical coding (Charmaz, 2014).

Open coding was the initial coding stage, and it involved the analysis of data one line or word at a time, to identify core codes or concepts (Charmaz, 2014; Seidel & Urquhart, 2013). Focused coding took the analysis a step further; it involved the selection of the most frequently occurring codes, and their grouping into categories or subcategories (Charmaz, 2014; Engward, 2013). Theoretical sampling was the last stage, where theoretical themes were generated through the identification of relationships between categories or subcategories of data (Seidel & Urquhart, 2013).

Interviewing is the usual method for data collection in grounded theory studies; it involves first-hand interaction between the researcher and the participant (Bendassolli, 2013; Charmaz, 2014). In this study, I conducted 24 interviews; the interviews began after the institutional review board approved the study, and consent had been obtained from each participant. I informed participants that follow-up interviews might be needed, and obtained their permissions in advance; they were also advised that they could exit the study at any time by notifying me. The interviews were semistructured; a set of questions listed in Appendix B was used to guide the interviews, but I asked follow-up questions based on participant responses. Each interview was recorded and transcribed for analysis; permission to record was obtained through the consent form and confirmed before each interview. Participants were asked to verify the accuracy of transcriptions; this process is called member checking (Birt et al., 2016).

An iterative process of data collection and analysis was used for this study (see Figure 5). A period of 5 weeks was set aside for data collection through interviews, which meant a target of five interviews per week for 25 interviews. However, data collection and analysis took 5 months, at the average rate of approximately five interviews per month. Grounded theory method is an iterative process of data collection and analysis; hence, data analysis followed each data collection cycle (Charmaz, 2014).

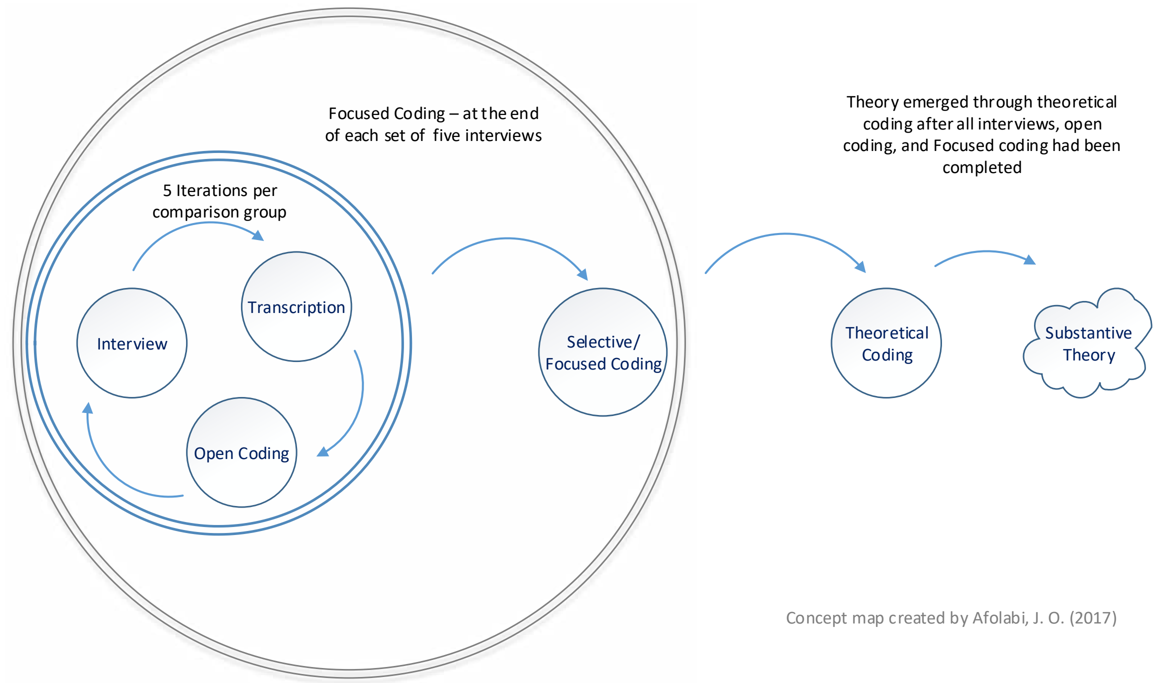

Figure 5. The iterative process of data collection and coding (analysis). This concept map was created by J. O. Afolabi.

Pilot Study

A pilot study was conducted to test the interview questions and instructions; this was to ascertain their clarity and suitability for the main study. The pilot study was initiated after the Institutional Review Board (IRB) approved the proposal with approval number 02-27-17-0340017. Kistin and Silverstein (2015) noted that pilot studies are primarily used as field trials for the logistical components of future research. Doody and Doody (2015) further surmised that pilot studies are useful for evaluating the effectiveness of the research procedures for data collection and analysis. A pilot study may, therefore, be defined as a prototype of the main study; it may be used by the researcher as a practice run to test the research instruments (Doody & Doody, 2015; Kistin & Silverstein, 2015).

In this study, the key logistical components included the data gathering and analysis plan, as well as the interview questions. I used the pilot study to field-test the interviewing process and assess the effectiveness of the data collection and analysis approach. The pilot study was conducted to facilitate revisions to the interview questions and coding approach (if necessary) before the main study; however, no change was found to be necessary. The pilot study was conducted using a set of five iterations of the data collection, transcription, and analysis process illustrated in Figure 5. Thus, for the pilot study, I interviewed five participants and analyzed the data collected after each interview.

Participants for the pilot study were chosen through purposive sampling to reflect the population of participants to be selected for the main study. Participants were invited to the pilot study through LinkedIn (Linkedin.com), and referrals (snowball approach). I reviewed their LinkedIn profiles to identify IS managers or project managers. With the initial contact, I asked them to provide additional details through a short questionnaire on Google Forms; this was used to select managers or project managers that had managed at least one IS project. Through the questionnaire, I informed participants that the interviews would be recorded and sought their consent; I also advised them of their right to withdraw their participation in the pilot study.

I used the interview questions outlined in Appendix B as a guide for each interview and asked additional questions to probe deeper. At the end of each interview, I asked each participant for feedback to ascertain if the instructions in the recruitment questionnaire were clear and understandable; I also asked to know if the interview questions were suitable or if they needed to be changed. I reviewed the questions and answers after the interviewing sessions, but participants indicated no need to change the questions or instructions. The results of the pilot study are included in Chapter 4.

Data Analysis Plan

As illustrated in Figure 5, data gathering and analysis were done iteratively. Each iteration included the interview, transcription of the recording, and open coding or analysis. The transcript of each interview was loaded to NVivo, which was used for the first two stages of coding. Iterations (of data collection and open coding) were grouped into comparison groups to facilitate data analysis; each group consisted of five interviews. After each set of five iterations (including interviews, transcription, and open coding), further analysis was done through focused coding. An initial plan for data collection and analysis was presented in Figure 6; however, that plan was found to be inadequate as the process took much longer than planned.

Through open coding, initial codes or classifications were created after each transcription. The next coding stage, which is selective or focused coding, involved the grouping of the frequently occurring codes into categories and subcategories; emergent themes from the different comparison groups and their relationships were examined. Focused codes created were exported to Microsoft Excel for theoretical coding. Theoretical coding was done after all themes had been identified; theoretical saturation was achieved at this stage. As expected with grounded theory techniques, the process of data collection and analysis continued until theoretical saturation was achieved (Charmaz, 2014; O'Reilly et al., 2012).

ID	Task Name	Duration
1	Participant Selection	14 days
2	**Data Collection and Analysis**	**40 days**
3	**Comparison Group 1**	**5 days**
4	**Iteration #1**	**0.38 days**
5	Data Collection	1 hr
6	Open Coding	3 hrs
7	**Iteration #2**	**0.38 days**
8	Data Collection	1 hr
9	Open Coding	3 hrs
10	**Iteration #3**	**0.38 days**
13	**Iteration #4**	**0.38 days**
16	**Iteration #5**	**0.38 days**
19	Selective/Focused Coding	5.19 hrs
20	**Comparison Group 2**	**5 days**
21	**Iteration #1**	**0.38 days**
24	**Iteration #2**	**0.38 days**
27	**Iteration #3**	**0.38 days**
30	**Iteration #4**	**0.38 days**
33	**Iteration #5**	**0.38 days**
36	Selective/Focused Coding	5.19 hrs
37	**Comparison Group 3**	**5 days**
54	**Comparison Group 4**	**5 days**
71	**Comparison Group 5**	**5 days**
88	Theoretical Coding	4.98 days

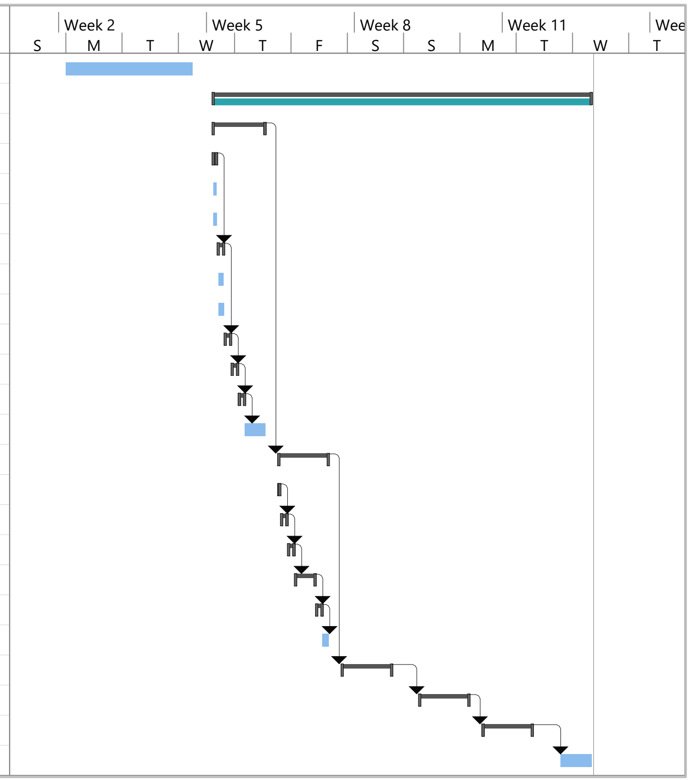

Figure 6. Data collection and analysis plan (created by J.O. Afolabi).

Issues of Trustworthiness

Credibility

A researcher's experiential knowledge and worldview may introduce the element of bias into the qualitative research process; however, researcher bias may affect the credibility of research findings (Maxwell, 2013; Roulston & Shelton, 2015). In grounded theory studies, researchers are expected to set aside their opinions of phenomena and follow the data wherever it leads; hence, the resulting theory emerges from data through an exploratory process (Glaser & Strauss, 2009; Walsh et al., 2015).

Glaser and Strauss (2009) described the systematic coding process in grounded theory methodology as a compelling way to convey credibility of research findings. This study used a three-stage coding approach that involved open coding, focused coding, and theoretical coding. The iterative process of data collection and analysis conveyed credibility, or internal validity, as the process is replicable.

In addition to systematic coding, member checking was used to ensure the credibility of the data in this study. Birt et al. (2016) defined member checking as the process of assessing the validity of research data or results. Member checking involves asking research participants to review interview data for accuracy; participants may also be invited to review research results (Birt et al., 2016). Birt et al. suggested that credibility of the research findings is the basis for transferability of those conclusions.

Transferability

Transferability in qualitative research is the potential to apply the research process or results in other areas of study (Birt et al., 2016; Miles et al., 2013). While the goal in qualitative research is not the generalization of results, transferability is achievable (Bloomberg & Volpe, 2015). However, Glaser and Strauss (2009) implored researchers to consider the transferability of their substantive theories with caution; they advised researchers to consider emergent integration before transferability.

In this study, I explored project initiation factors and their relationships with the outcome of IS projects. While the focus of this study was the field of IS, the potential exists for the findings to be applied to other types of projects, such as construction or engineering design projects. The potential transferability of the data and results is premised on the fact that the initiation phase is the first stage of a project (or phase of the project) irrespective of the professional field (Project Management Institute, 2017).

Dependability

Morse (2015) noted that dependability is synonymous with reliability; it refers to the replicability of the research process. Noble and Smith (2015) further associated reliability with the transparency and consistency of the analytical process in qualitative research. The grounded theory approach provides a set of tried and tested techniques that may be replicated in different situations. The process of data collection and analysis is iterative; the analytic coding processes have been used by grounded theory researchers over time. As illustrated in Figure 5, the data collection and analysis processes used in this study align with the systematic techniques that make up the grounded theory method. The analytic process was clearly defined; it is transparent and replicable.

Confirmability

As the primary research instrument, the qualitative researcher interacts directly with participants and is responsible for analyzing the data. To avoid researcher bias, and ensure the confirmability of data in this study, interviews were transcribed and sent to participants for validation. The transcribed data were stored in NVivo’s database and may be used as an audit trail to ensure that the data and analysis reflect the views of the participants. At the completion of the study, I encrypted and archived the data as ZIP files; the archive files were stored on an encrypted external drive.

Reflexivity is another approach to enhancing the transparency and confirmability of findings in qualitative research; a reflexive journal may serve as an audit trail of the researcher's thoughts and decisions (Malterud, 2016; Morse, 2015; Noble & Smith, 2015). I used a reflexive journal, during this study, to guard against researcher bias and enhance the transparency of the process.

Ethical Procedures

The consideration for ethics remains a key aspect of social and scientific research; Wallace and Sheldon (2015) noted that every form of empirical inquiry has some inherent risk. The data collection process in qualitative research involves direct interaction with participants, and the researcher is the primary instrument; the potential for bias and other hazards elevates the need for approved ethical practices (Robinson, 2014; Wallace & Sheldon, 2015). As Wallace and Sheldon (2015) argued, ethics in research should include consideration for fairness to participants, beneficence, respect, integrity, and benefits of the study.

The research proposal was subject to review by Walden's institutional review board (IRB) to ensure that this study followed ethical guidelines. Following IRB approval for the study to proceed, I sought the informed consent of every participant before scheduling the interviews; this included individual consent. There was no incentive to participate in the study, but participants could withdraw their participation at any stage of the process; this was stated in the consent form.

I sought out participants who were functional or project managers in the field of IS, and participants could divulge sensitive information about their projects or organizations. Hence, to preserve the privacy of participants, and the confidentiality of data, information that could identify each participant, organization, or project were replaced with pseudonyms. I encrypted the data as archive (ZIP) files and stored them on an encrypted hard drive after the completion of the study; that data will be destroyed after five years.

Summary

The purpose of this grounded theory study was to explore project initiation factors and how they might affect the outcome of IS projects. Chapter 3 included details of the research design, method of inquiry, and the researcher's role in the study. In this chapter, the plan for data collection and analysis was provided, and issues of trustworthiness were addressed. Chapter 4 includes details of the data collected, the analysis of the data, and a presentation of the findings.

Chapter 4: Results

The purpose of this grounded theory study was to explore project initiation factors and understand how such factors may affect the outcome of IS projects. I explored management and organizational factors that are often associated with initiating IS projects and sought to understand how they might be addressed to achieve project success. The overarching research question was: What is the nature of project initiation, and how can adequate due diligence at that stage improve the success rate of IS projects? The subresearch questions derived from the general research question were:

RQ1. What project initiation factors are capable of improving IS project outcome?

RQ2. How can practitioners manage those initiation factors to improve the possibility of project success?

RQ3. How can the decision-making process during the project initiation phase contribute to a successful project outcome?

The study was hinged on a conceptual framework that comprised of chaos theory and Ashby's law of requisite variety. Chaos theorists noted that a system is sensitive to small changes in its initial conditions; this supported the notion that IS project performance might be sensitive to how initiation factors are managed (Goh et al., 2013; Radu et al., 2014). Ashby's law of requisite variety supports the notion that the performance of a system or project can be regulated through the application of a variety of control measures (Ashby & Goldstein, 2011; Flach, 2012; Radu et al., 2014).

The findings of the study are presented in this chapter and it includes a description of the research setting, participant demographics, data collection process, and the data analysis process.

Pilot Study

A pilot study was conducted to test the research instrument, instructions, and procedures; the first five participants that provided their consent to participate in the study were included in the pilot. As noted by Doody and Doody (2015), a pilot study may serve multiple purposes; researchers may use the pilot study as a field test to evaluate the clarity of interview questions, and instructions. Researchers may also use a pilot study as a trial run for the data gathering and analysis procedures (Doody & Doody, 2015; Kistin & Silverstein, 2015). The pilot study involved an iterative process of data collection and analysis; data analysis was done in two coding stages, open coding and focused (or selective) coding. The third stage of coding, theoretical sampling, would require additional data; hence, it was excluded from the pilot study.

A sample size of five participants was used for the pilot study; participant selection was made through a combination of purposive sampling and snowball sampling (referrals). Participant recruitment started after the Institutional Review Board (IRB) approved the proposal. Potential participants were primarily solicited through LinkedIn, and email messages. An invitation to participate in research was sent to each participant; participants were asked to provide their consent to participate in the study by completing an online consent form available through Google Form. Participants were also asked to provide some demographic information through the Google Forms document. Following the completion of the consent form, and the identification of contact details (email address and phone number), a telephone interview was scheduled with each participant. The interview questions were sent to each participant in advance as an attachment to the invitation to the interview session. Interviews were recorded and transcribed.

At the end of each participant interview, a copy of the transcript was sent to the participant with a request for feedback on the clarity of instructions and appropriateness of the questions. The feedback received suggested that the questions and instructions were appropriate or the study. The results of the pilot study, as well as the feedback received, indicated that the interview questions and instructions were suitable for the grounded theory study. The two stages of coding were done through NVivo, and they resulted in codes and categories that support the conceptual framework (see Table 1). There was no change to the instrument, instructions, or procedures following the feedback received from participants in the pilot study. Hence, data collected during the pilot study were classified as the first of five comparison groups in the main study.

Table 1

Coding Categories Derived from the Pilot Study

	Coding references by Research Question (RQ)				
Category	RQ1	RQ2	RQ3	Total	Total %
Project Governance	44	10	4	58	16.9%
Stakeholder engagement	40	0	11	51	14.9%
Management and Test Strategies	29	3	4	36	10.5%
Competency	20	2	8	30	8.7%
Clarity of scope	28	1	1	30	8.7%
Methodology	9	2	10	21	6.1%
Success Criteria	14	2	2	18	5.2%
Business case	15	0	0	15	4.4%
Environmental/Cultural factors	13	0	1	14	4.1%
Decision-Making	1	2	10	13	3.8%
Alignment	12	0	0	12	3.5%
Communications	8	1	1	10	2.9%
Proper initiation	4	1	5	10	2.9%
Project Manager	6	0	3	9	2.6%
Integration	3	0	2	5	1.5%
Team Learning	1	1	2	4	1.2%
Vision	4	0	0	4	1.2%
Tools	1	0	1	2	0.6%
Clarify Assumptions	1	0	0	1	0.3%
Grand Total	253	25	65	343	100.0%

Research Setting

Research participants were selected, as noted in Chapter 3, from a sample of IS/IT managers (functional and project managers). The participants were identified through a search of public profiles on a social networking platform (LinkedIn.com), and referrals using purposive and snowball sampling methods. The industry and location of each participant's employment were not constraints in the selection process. Prospective participants were invited to complete the consent form through Google Forms; as part of the consent form, they were asked to provide some basic demographic and contact information. Participant interviews were mostly done by telephone while a small number of interviews were done through face-to-face meetings.

Although 24 participants were involved, 25 projects were discussed; one participant discussed two projects. Participants were spread across North America, mainly Canada and the United States; however, environmental factors such as organizational culture and management styles were found to have influenced how projects were initiated and managed. Some participants were employees of the organizations for which they managed projects while some were consultants hired by such organizations to manage their projects; others were project managers representing vendors who had been engaged to implement IS solutions.

As shown in Table 2, on 44% (n = 11) of the projects, the project managers were hired by the client organization as consultants; 32% (n = 8) of the projects had project managers who were employees of the organization that owned the project. Furthermore, on 24% (n = 6) of the projects, the project managers worked for vendors that had been contracted to implement the products or services by the client organizations. As an environmental factor, the nature of the project manager's employment on the project seemed to influence their perspectives on project governance, and the level of details they were willing to divulge. In one case, the participant had signed a nondisclosure agreement, and while that did not affect the integrity of the data, the participant could only generalize when answering questions related to the environment and the purpose of the project.

Table 2

Nature or Participant's Employment by Project

Nature of Project Manager's Employment	Projects	% Total
PM Worked for a Vendor	6	24%
PM was the Organization's employee	8	32%
PM Was a consultant hired by the client	11	44%
Total	25	100%

In addition to the nature of the project manager’s employment, another environmental factor that influenced the experiences shared by participants was the type of organization in which they worked. For example, participants who managed projects in public or government organizations highlighted the laid-back culture in such organizations as a constraint that they had to consider in initiating and managing their projects. A participant in an educational institution had to consider the independent thinking nature of academics in engaging stakeholders at project initiation. Table 3 shows the types of organizations by projects discussed. The table indicates that 84% (n = 21) of projects explored in this study were in businesses, 12% (n = 3) of the projects were in government departments or organizations, and 4% (n = 1) of the projects were for educational institutions.

Table 3

Number of Projects by Organizational Type

Type of Organization	Projects	% Total
Educational institution	1	4%
Government/Public Organization	3	12%
Business/Enterprise	21	84%
Grand Total	25	100%

Demographics

Research participants were drawn from a set of IS managers and project managers who have managed at least one IS/IT project from inception to completion. The current job titles of participants and their years of experience in IS/IT management or project management are shown in Table 4. Twenty-four participants ($N = 24$) participated in this study; most participants ($n = 18$) had over 10 years of experience. Others ($n = 6$) had between 5 and 10 years of experience; no participant had less than 5 years of experience in IS/IT management or project management.

The job titles of participants varied widely; most participants had titles directly related to project, program, or portfolio management. Other titles indicated senior management or consulting roles; however, all participants managed IS/IT projects in one form or the other. The diverse job titles suggest varying levels of seniority within the organizations that they worked. An analysis of demographic data by gender showed that 87.5% ($n = 21$) of participants identified themselves as male, while 12.5% ($n = 3$) identified as female (see Figure 7). A comparative analysis of research data by gender was beyond the scope of this study; it may be considered as a topic for future studies.

Table 4

Participant Current Job Title and Years of Experience

Participant #	Current Job Title	Experience	
		5 to 10 Yrs.	Over 10 Yrs.
P1	Director, Technology Risk Governance		1
P2	VP Global Services		1
P3	IT Program Director		1
P4	Portfolio Technology Leader/Account Manager		1
P5	Senior Principal Consultant		1
P6	IT Project Manager		1
P7	Senior Project manager		1
P8	Director of Business Development		1
P9, P15, P16, P19, P22	Project Manager	2	3
P10	Service Delivery Lead		1
P11	SharePoint Consultant	1	
P12	Co-Founder		1
P13	Program Manager		1
P14	Senior Network Administrator		1
P17	Partner		1
P18	Business analyst		1
P20	Management Consultant	1	
P21	Sr Consultant	1	
P23	Portfolio Lead/Project Manager	1	
P24	Project Manager - Consultant		1
	Grand Total	6	18

Note. Yrs. = Years. The number listed under each range of years indicates the number of participants whose years of experience fall within that range.

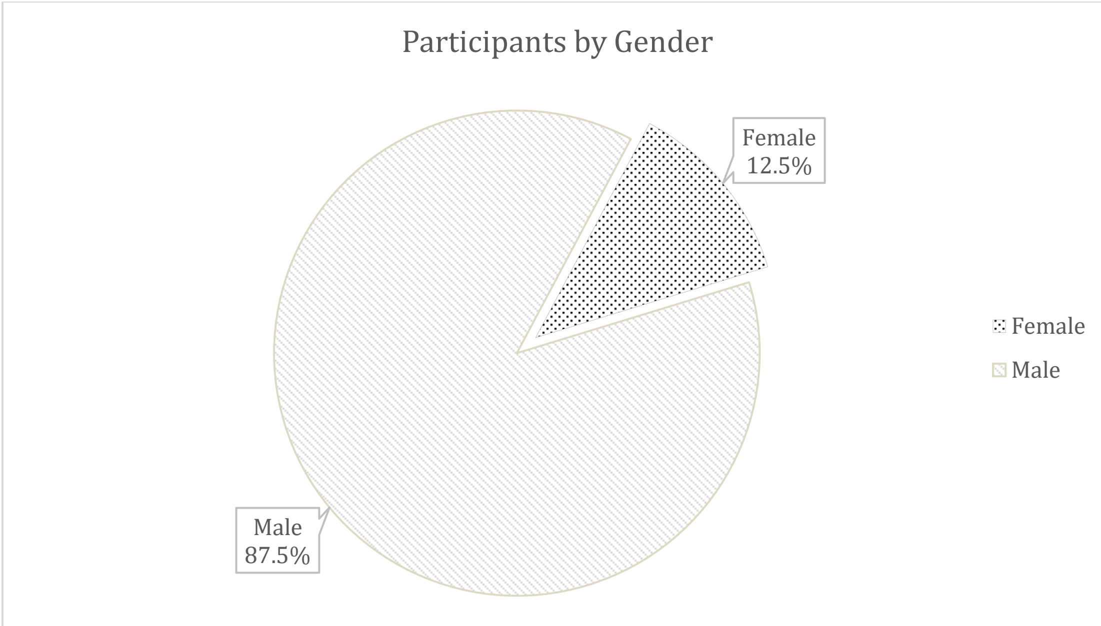

Figure 7. Participants by gender. This chart was created by J. O. Afolabi.

Data Collection

Data collection for this qualitative grounded theory study was done through semistructured interviews; a total of 24 participants were involved in the study. I collected data following the proposal approved by the IRB with approval number 02-27-17-0340017. Most participants (*n* = 21) agreed to telephone interviews while others (*n* = 3) opted for face-to-face interviews. Two more potential participants had indicated their interest in participating in the study; however, they did not complete the consent form despite repeated reminders. The target sample size for the study was 25 participants, but data saturation was achieved by the twentieth interview; nevertheless, data collection continued till all scheduled interviews had been completed. The data were organized into five comparison groups, and each group comprised of five participants; the last group had data from four participants. The data were organized in comparison groups (see Table 5) to facilitate focused coding and constant comparison as required in grounded theory research (Corbin & Strauss, 2014; Walsh et al., 2015). Focused coding was done for each group after the completion of open coding for five participants; the participants were assigned pseudonyms (P1-P24) and added to groups in the order that they were interviewed. Group 4 had four participants because I stopped data collection after the 24th interview due to data saturation. The interview questions listed in Appendix B were used in conducting the participant interviews; the questions were geared towards answering the three subresearch questions:

RQ1. What project initiation factors are capable of improving IS project outcome?

RQ2. How can practitioners manage those initiation factors to improve the possibility of project success?

RQ3. How can the decision-making process during the project initiation phase contribute to a successful project outcome?

Table 5

Comparison Groups and Participants

Comparison Group	Participants
Group 1	P1, P2, P3, P4, P5
Group 2	P6, P7, P8, P9, P10
Group 3	P11, P12, P13, P14, P15
Group 4	P16, P17, P18, P19, P20
Group 5	P21, P22, P23, P24

Frequency

Data collection took approximately 5 months, with an average of 4.8 interviews per month. Most interviews (*n* = 7) were conducted in April, while the least number of interviews (*n* = 2) were conducted in July 2017 (see Figure 8). I recorded each interview as an audio file, and transcribed it; each transcript was saved as a Microsoft Word file. A copy of the transcribed data from each interview was sent to the participant interviewed for review and verification before they were deemed ready for use. Corrections were made where necessary, and final versions of the transcribed data were imported into NVivo for organization and analysis.

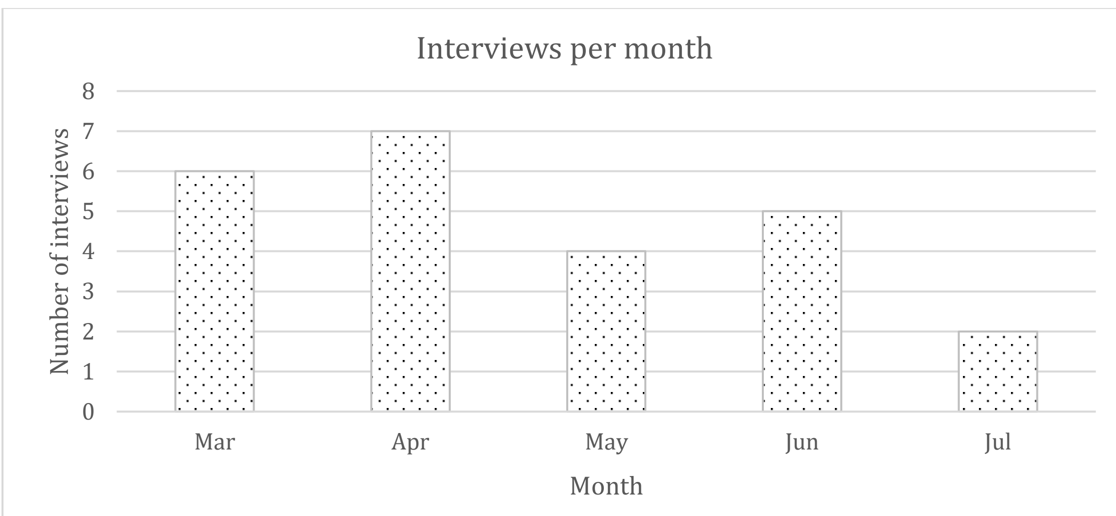

Figure 8. Number of interviews per month. This chart was created by J. O. Afolabi.

Data Saturation

Corbin and Strauss (2014) noted that data collection in qualitative research could go on forever; the researcher must get to a point where they have sufficiently developed a concept, and consider what is left within the limitations of the study. In other words, data saturation is reached when coding redundancies are observed (Corbin & Strauss, 2014;

Marshall, Cardon, Poddar, & Fontenot, 2013). The total number of coding references generated after the first stage of coding (open coding) for each set of transcribed data is shown in Figure 9. The trendline shows that the number of unique codes peaked within comparison Group 2, and continued to decline.

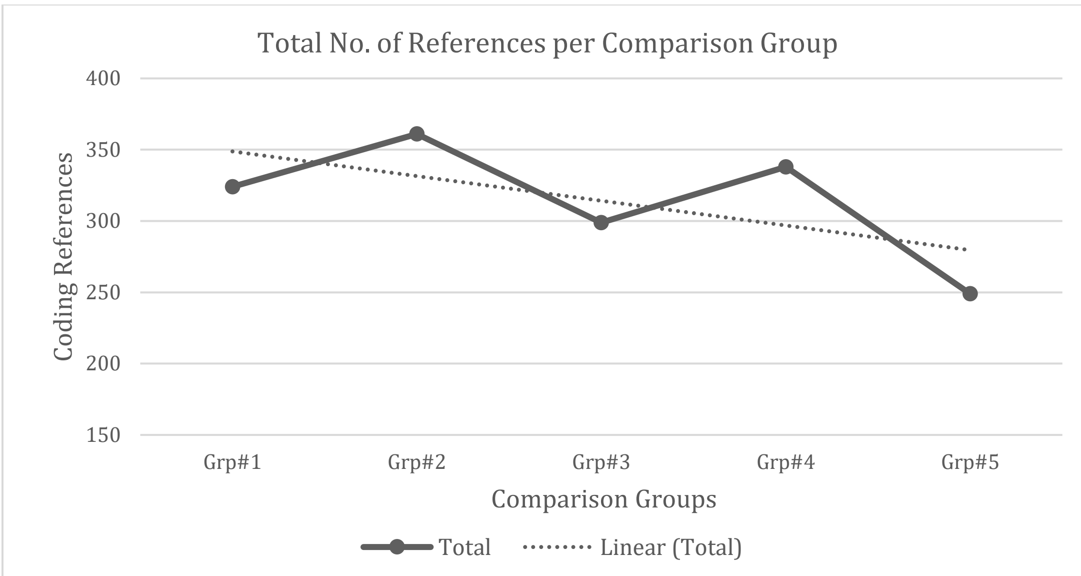

Figure 9. Total number of unique coding references by comparison group (created by J. O. Afolabi)**.**

The transcribed data for participant P19 generated the least number of coding references after open coding, which indicated that data saturation was achieved with P19. As Marshall et al. (2013) suggested, a sample size between 20 and 30 is optimal for grounded theory studies. However, the sample size depends on when saturation is achieved. I stopped collecting data after interviewing the 24th participant (n = 24), which was one participant short of the target (N = 25), although no new theme was generated after the 20th interview. A couple more individuals had indicated interest in participating in the study, but they did not complete the consent form after several reminders; hence, they were dropped as participants.

Data Analysis

Data analysis was done using an iterative approach as illustrated in Figure 5. As this was a grounded theory study, each data collection session was followed by the first stage of data analysis (Charmaz, 2014). A participant number (P1-P24) was assigned to each participant interviewed as part of the transcription process to protect the identity of the participant and facilitate coding. The document containing transcribed data from each participant was uploaded to NVivo before the first stage of coding. Data analysis involved three stages of coding. The stages included open coding, focused coding, and theoretical coding. Open coding was done after the transcription of each interview while focused coding was done after open coding had been completed for data collected from five participants within a comparison group. Theoretical coding was the last stage of coding. See Table 6 for the iterative process used in collecting and analyzing data. In addition to the steps outlined, I created hand-written memos during the interviews and while transcribing the recorded interviews.

Table 6

Procedure for Participant Selection, Data Collection, and Analysis

Step	Description
1	Search for (and identify) potential participants through LinkedIn.com or referrals; contact them individually or through project management groups on LinkedIn.com. Potential participants must be information systems (IS) managers or project managers who have managed at least one IS project from initiation to completion
2	Collate responses
3	Select 25 participants
4	Ask interested participants to fill out contact information and consent through Google Forms
5	Set up interview sessions with selected participants and send them copies of the interview questions
6	Start iteration (of data collection and analysis)
7	Data collection and analysis (see subtasks below)
8	• Interview participant and record the interview
9	• Transcribe recorded interview
10	• Analyze data through open coding
11	• Send copy of transcribed data to participant for verification (member checking)
12	Repeat steps 6 through 11 for each set of five participants
13	Perform selective/focused coding
14	Repeat steps 6 to 13
15	Perform thematic/theoretical coding
17	If theoretical/data saturation has been achieved, proceed to step 18; otherwise, repeat steps 6 to 15
18	Complete data collection and analysis
19	Report and discuss findings

Data Organization

In preparation for coding, I imported each document containing transcribed data into NVivo as a source. The imported data were organized into five groups, each consisting of five transcripts except for the last group, which had four transcripts (see Figure 10). In addition to organizing the transcripts, I created a node for each comparison group. Within each group-level node, I created child nodes for the research questions; for each node representing a research question, I created a third level of nodes representing the interview questions (see Figure 11). The first set of codes were created as child nodes under the interview questions with which they were associated. Additional levels of nodes were created to represent codes and categories of codes.

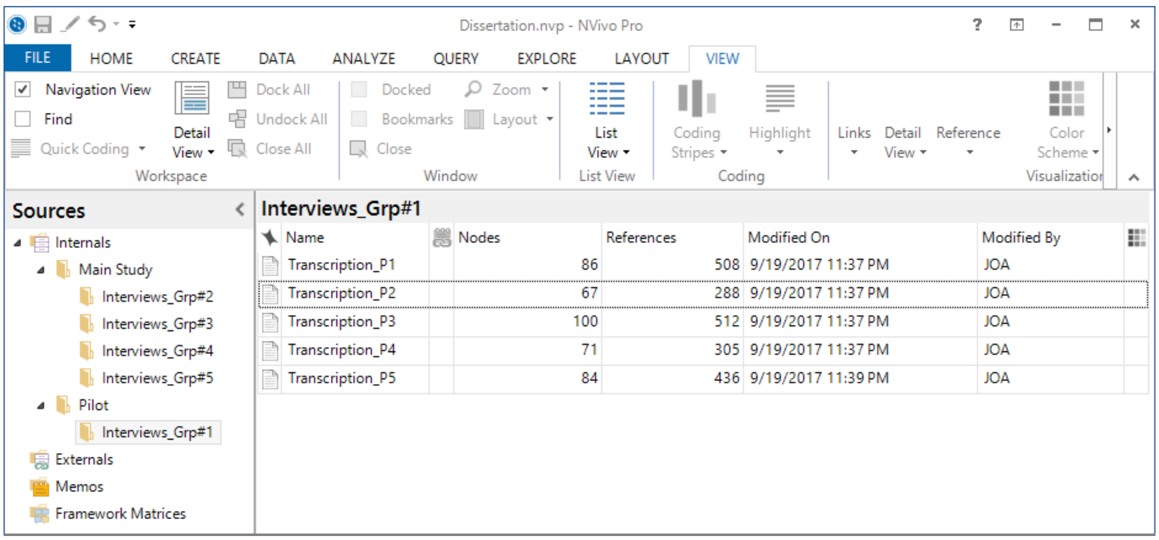

Figure 10. Organization of transcripts in NVivo.

Open Coding

The first stage of analysis was done through open coding; this stage generated the largest number of codes. Open coding involves the generation of codes line by line, word by word, or paragraph by paragraph of the transcribed data; this is the lowest level of coding (Charmaz, 2015; Seidel & Urquhart, 2013). This coding stage was completed in NVivo, and each code was created as a child node to the node representing the associated interview question (see Figure 11); this was achieved by selecting a desired line or paragraph of text in each source and coding that section as a node. Some lines of text were coded to existing nodes where they were found to be similar concepts; hence, new nodes were only created for unique concepts within a comparison group. However, some sections of text were coded to two or more nodes to capture the variety of concepts discussed by the participant. Open coding was done after each completed interview had been transcribed; this level of coding generated 1,439 nodes (codes) and 13,285 coding references (lines or sections of text coded) for all data collected.

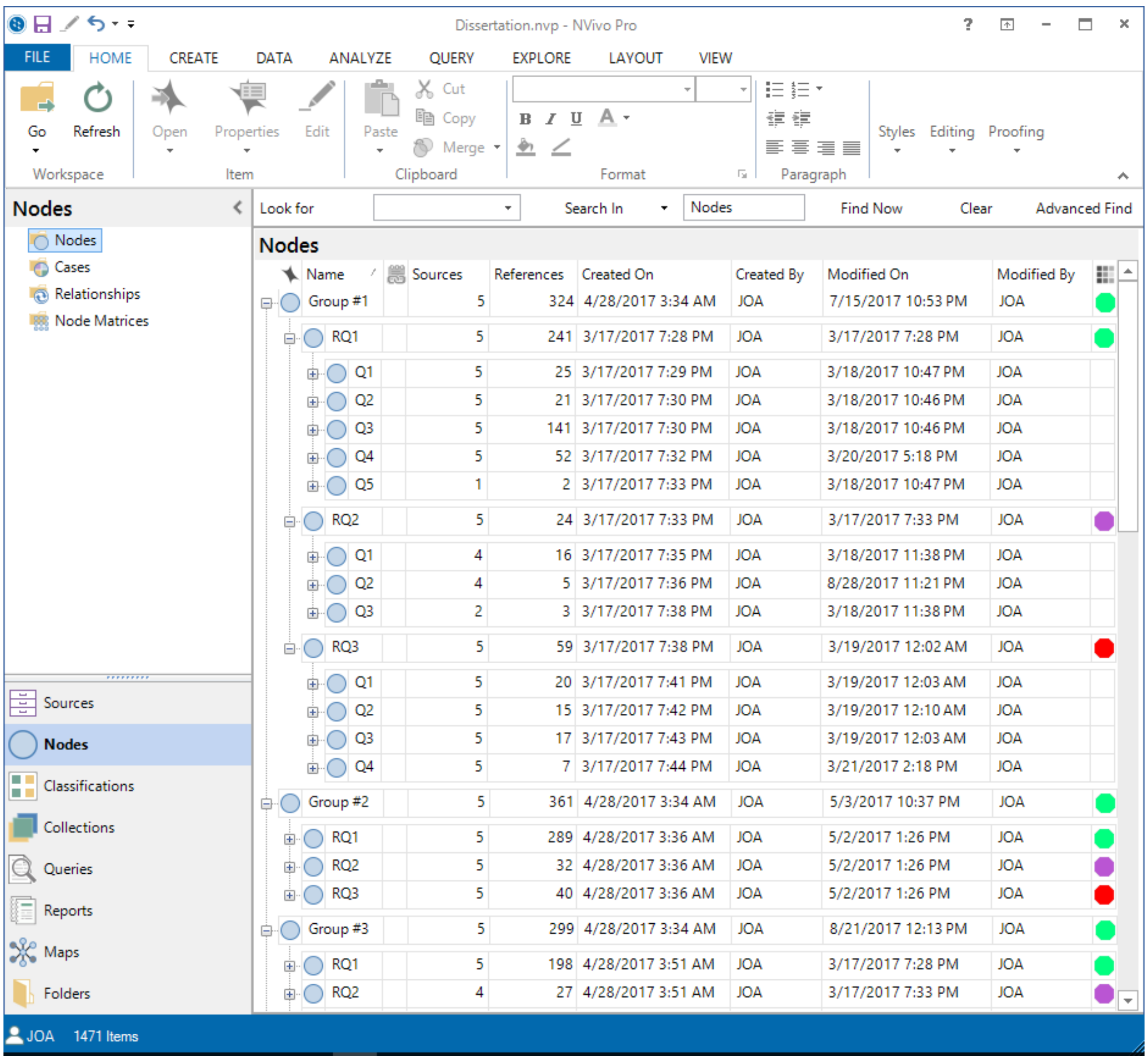

Figure 11. Organization of codes in NVivo.

Focused Coding

The focused (or selective) coding technique was used for the second stage of coding; this involved the grouping and categorization of codes into emergent themes using the most significant codes (Charmaz, 2015; Seidel & Urquhart, 2013). This level of coding was done for each comparison group after open coding had been completed for all data associated with that group. A list of the 20 most frequently occurring categories across research questions (RQs) is shown in Table 7; a complete list may be found in Appendix C.

Table 7

The top 20 Categories by References Across Research Questions.

Categories	RQ1	RQ2	RQ3	Total
Governance	215	44	72	331
Initiation activities and artifacts	155	12	31	198
Stakeholder/Executive support and engagement	120	17	27	164
Scope management	96	3	11	110
Communication and collaboration	66	10	29	105
Project management methodology	58	5	24	87
Learning/Knowledge management	28	4	42	74
Resource management	40	6	21	67
Competency	51	2	8	61
Team dynamics	56	1	4	61
Enterprise environmental factors	48	8	5	61
Limiting factors	58			58
Organizational change management (OCM)	39	1	8	48
Managing Expectations	26			26
Planning/Strategy Development	11	3	4	18
Conflict management	15			15
Agency - Contracts management	8	3	2	13
Assumptions - Identification and Verification	8	2	2	12
Uncertainty management		11		11
Relationship management	7		3	10

The first set of focused codes were generated using NVivo. After the five iterations of focused coding for all the five comparison groups, the codes were exported to Microsoft Excel for additional iterations of focused coding with the groups merged. The merged codes were grouped into categories, using project management terms or phrases that best represent the data; this represented thematic coding (or theoretical sampling). The most significant category identified was *Governance*, which includes factors related to project governance.

Theoretical Sampling

The third stage of data analysis involved theoretical sampling in which the themes were generated based on related coding categories or concepts (Charmaz, 2014). Themes were generated based on the coding categories identified through focused coding for each comparison group; it involved the grouping of related categories and concepts. The data presented in Table 8 shows how the themes are represented across the three research questions; this provides an overview of the themes.

The themes emerged with time after several coding iterations and the search for related concepts. The six emergent themes include (a) project governance and project management; (b) stakeholder engagement, support, and credibility; (c) enterprise environmental factors; (d) communication and collaboration; (e) learning/knowledge management; and (f) team dynamics. The themes and how they address each research question are discussed in the Study Results section.

Table 8

Themes and Number of References by Research Questions

Themes and Key Codes/Categories	RQ1	RQ2	RQ3	Total	%Total
Project governance and management	761	102	214	1077	67%
Governance					
Project management approach/methodology					
Organizational change management (OCM)					
Vendor behavior					
Tools					
Stakeholder engagement, support, and credibility	120	19	27	166	10%
Credibility					
Stakeholder engagement					
Executive support and engagement					
Enterprise environmental factors	99	11	13	123	8%
Enterprise environmental factors					
High turnover of project managers					
Prior experience					
Competency					
Communication and collaboration	66	10	29	105	6%
Communication					
Collaboration					
Learning/Knowledge management	28	4	42	74	5%
Learning (continuous, from past experiences, and failures)					
Knowledge management					
Team dynamics	57	1	4	62	4%
Team structure (composition, size)					
Having a voice in decision making and planning					
Team's location (Colocation/Distributed)					
Team development and cohesion					
Team culture encouraged transparency					
Team's commitment to the cause					
Total	1131	147	329	1607	100%

Note. Coding references were generated through open coding, which involved line by line coding of transcribed data in NVivo. Focused codes and reference counts were exported to Excel for grouping by categories and themes; this table was created by J.O. Afolabi.

Discrepant Case

There was one discrepant case, in which the participant (P24) objected to the notion that elements of project initiation could affect the outcome of a project. The participant expressed disagreement with the thought that chaos theory, as explained by the butterfly effect, could hold true in IS project management:

> P24: Let me just check for a second. I saw these questions in the initial web sign-up form, and asked for more questions because I was worried about those questions; I will tell you more about that in a second. I was worried about what you are trying to study, which is what you explained now. The reason for my concern is that I do not identify with what you have just told me.

I explained to the participant that this study was not to prove an opinion, but that opposing views were in order. When prompted to provide reasons for not identifying with the concept of the butterfly effect, the participant noted that he had taken over projects at various stages in the project lifecycle and completed them:

> P24: I guess that you were assuming that something at the beginning could impact the end-result as you mentioned the butterfly effect. For what I do, I can come into a project that is 25%, 50%, or 75% done and take them over; within a short period, I can create stability and go forth. People understand where they are going, how they are going to get there, and get to an end that is satisfactory. I have a hard time when I read these questions, for example, the one on initiation factors that influenced the end-results; I do not see them as necessarily being related. So, I was going to ask you what you consider project initiation.

The participant went on to answer some of the research questions after receiving assurances that opposing views were acceptable. As it was a semistructured interview, I probed further based on the responses received to understand success factors from the participant's point of view. I thought it was great to have an opposing view, and included that data in the analysis. The participant emphasized the importance of team culture, learning, and getting the project team to work together, using Tuckman's model that includes forming, storming, norming, and performing (Scherrer, Olcoń, Butterfield, & Kebede, 2016). Those factors aligned with codes categorized as learning, and team dynamics.

Evidence of Trustworthiness

Credibility

To ensure the credibility of the study, I followed the strategies outlined in Chapter 3; these include the iterative but rigorous process of data collection and analysis. The data collection schedule depended on the availability of participants; however, the member checking process was used to confirm the accuracy of data collected from each participant. After each interview session, a copy of the transcript was sent to the participant for review; participants either asked for corrections or confirmed the validity of the transcript. Where corrections were requested, changes were made, and the revised transcripts were sent to the participants for re-validation.

There were no changes to the data after participants had confirmed the credibility of the transcripts. The data were analyzed using a three-stage coding strategy that included open coding, focused (or selective) coding, and theoretical sampling (or thematic coding). Data gathering and analysis continued until data saturation was reached and scheduled interviews had been completed.

Transferability

The data collection and analysis procedures used in this grounded theory study were outlined in Chapter 3; that process was further specified in detail in Table 6. The design of the study may be used for similar grounded theory studies. Although the study is focused on initiating factors affecting IS project success, the findings may be transferable to other project management disciplines as all projects go through an initiation phase, although initiation activities might differ (Project Management Institute, 2017).

Dependability

The grounded theory method of research provides a set of techniques for data collection and inductive analysis; these have evolved other several years (Charmaz, 2014; O'Reilly et al., 2012). Following that trend, the iterative process of data collection and analysis used in this grounded theory study are replicable and have been documented. A pilot test was conducted to test the interview questions and instructions, and they were found to be adequate for the study; hence, there was no change to the questions, instructions or techniques.

All interviews were recorded and transcribed; the accuracy of each transcript was confirmed through the member checking process. The data were imported into NVivo for organization and storage; every identifying information was removed during the transcription process. Two stages of analysis were done using NVivo while the last stage was done with Microsoft Excel; these are available and may be used to verify the findings of the study.

Confirmability

As the researcher, I was the primary research instrument for this grounded theory study. I created reflexive notes while gathering and analyzing data to document my train of thoughts, and that was helpful in the analysis and reporting stages of this study. In addition to my reflexive notes, I created different Excel files through the many iterations involved in thematic coding; these may be used as an audit trail reflecting the transparency of the inductive process of theory development.

Study Results

The third stage of data analysis involved theoretical sampling in which the themes were generated based on related coding categories or concepts (Charmaz, 2014). Themes were generated based on the coding categories identified through focused coding for each comparison group; it involved the grouping of related categories and concepts. Figure 12 shows the distribution of themes for all research questions by the number of coding references. The data presented in Table 8 shows how the themes are represented across the three research questions; this provides an overview of the themes. To address the themes and how the apply to each research question, the results have been organized by research questions.

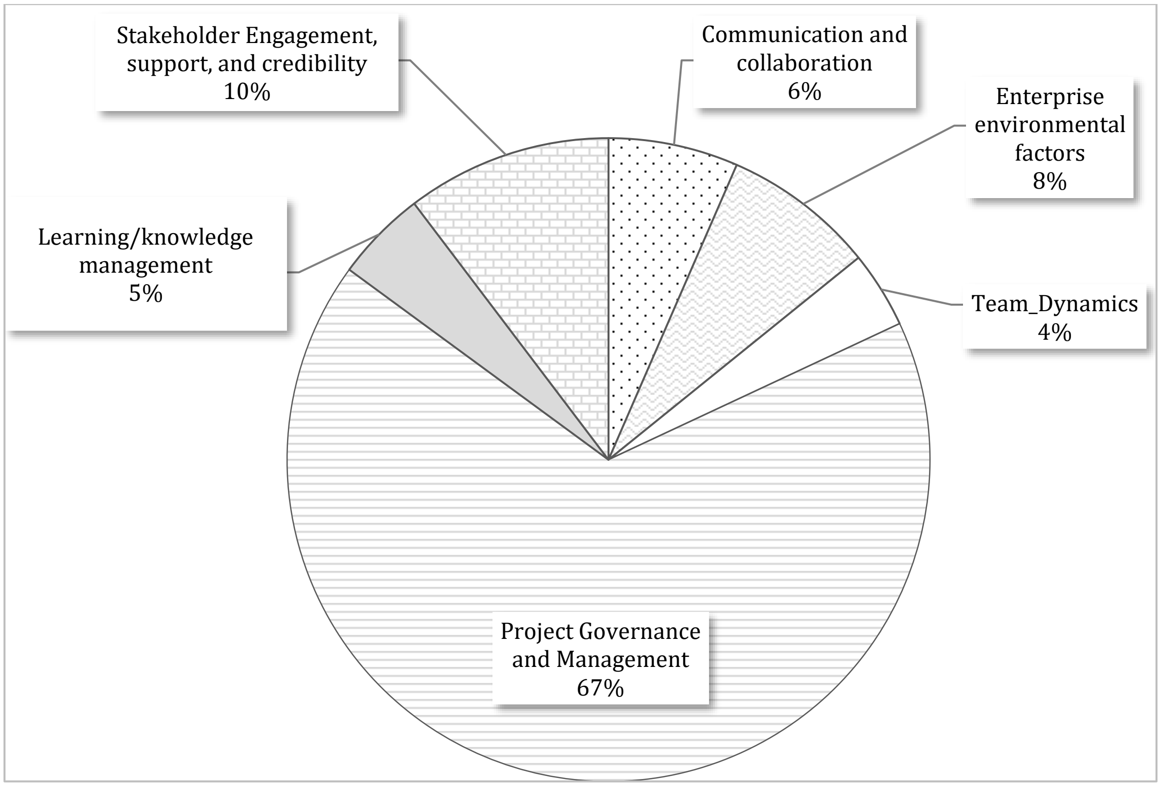

Figure 12. Distribution of themes by coding references (created by J.O. Afolabi).

RQ1: What project initiation factors are capable of improving IS project outcome?

It is pertinent to note that initiation factors are not limited to the start of a new project; they are also applicable to the start of a new phase in an existing project. The Project Management Institute (2017) defined the initiation process group in the context of starting a new project or a new phase of a project; initiation processes are necessary to define and authorize a new project or phase. Hence, it was not surprising to come across projects where project managers and their teams had to stop other activities and go back to address initiation factors that were previously ignored to make desired progress. In some other cases, the project managers were engaged to manage projects after previous attempts to implement those projects had been unsuccessful.

In response to the first research question, participants identified several initiating factors that may be carefully addressed to improve the chances of success in IS projects. Those factors have been grouped into themes, as shown in Table 8; the themes reflect factors that are interdependent. Figure 13 is an illustration of the initiation factors as identified through the themes, as well as some of the subelements and relationships; these were derived from participant responses.

Project governance and management factors. Project governance refers to the framework, regulations, processes, and systems established to guide project management activities and ensure that they align with project, and business goals (Project Management Institute, 2017; Samset & Volden, 2016). As the theme infers, most participants suggested that a combination of governance and project management factors need to be addressed during project initiation. Elements of project governance and management were identified 761 times in the set of focused codes generated from participant responses to the first research question.

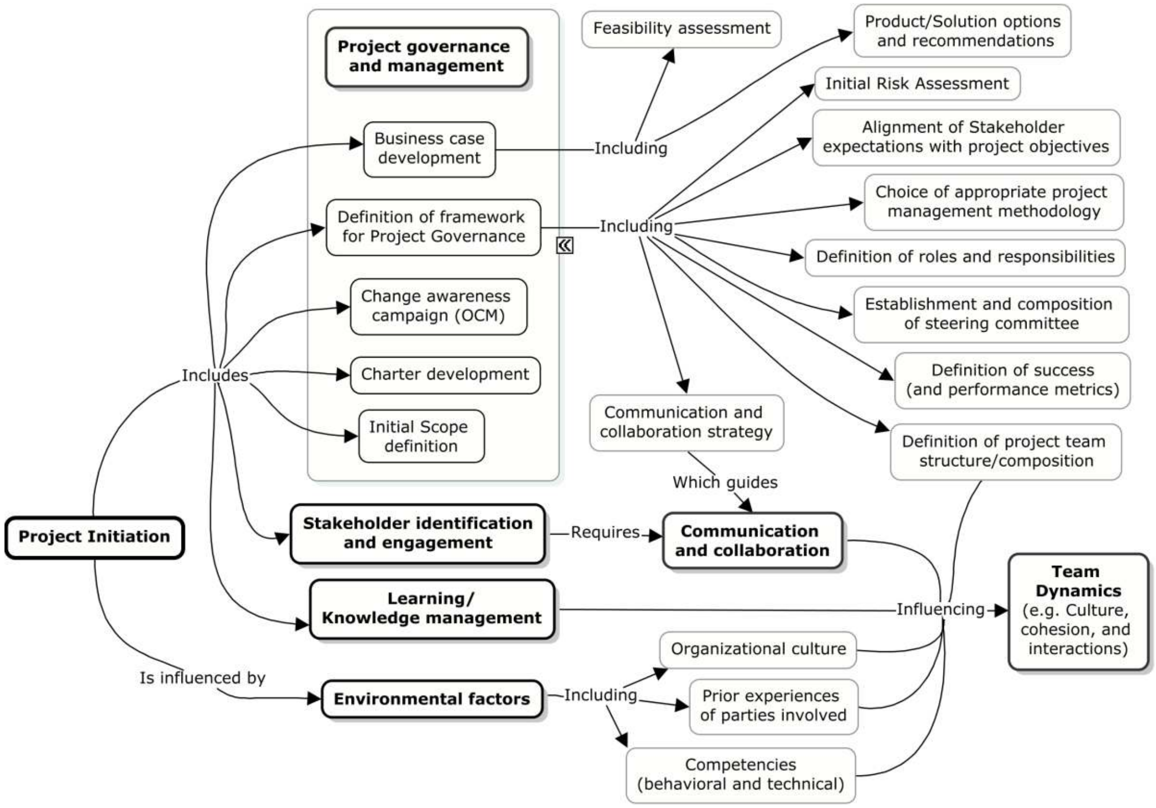

Figure 13. Initiation factors and related subfactors. A concept map created by J. O. Afolabi as a representation of the project initiation process and associated coding categories derived from data. Key themes are labeled in bold font.

Excerpts of related participant responses are as follows:

> P2: The number two thing that influenced the outcome was the governance. I talked a little bit about sponsorship, which is partly governance, but they had a very clear governance model on top of the program … how change management was going to be handled, how the sprints were going to be organized. The roles and responsibilities of people in the sprints were documented and clear; I think everybody understood what their role and responsibility were at any given time, how they escalate. There was an architectural review forum; there was a technical review board, there were different groups to make decisions.

Concerning project management activities during the initiation phase, P15 noted the importance of developing a business case document and using that to obtain buy-in:

> P15: As part of the business case, we identified the potential benefits of deploying the solution; we did an ROI, identified possible benefits to the organization and put numbers to them. We went through various levels of approvals until we got everyone's approval to proceed. Having that ROI helped; presenting the potential benefits helped in getting buy-in from management.

In addition to setting up governance structures and identifying potential benefits during initiation, many participants identified the need to develop an organizational change management (OCM) strategy during project initiation.

> P3: The last thing we did was having a clearly defined OCM strategy, which is not too premature because I always say … begin with the end in mind. You might have a project that is successful, but if the adoption is low or the technology is not well received, it is a failure.

On another project, the project team had to stop the project and go back to initiate the project by adopting OCM principles:

> P9: In terms of early adoption of OCM, it would have saved us a lot of time and money. We would have started the OCM piece right from the initiation stage…. That would have saved us much effort because at a point we had to put the project on hold. Then, we started doing the OCM piece until we got to a comfortable state and realized that people had a better understanding of what we were doing, what the program was about - what exactly it was that we were doing.

On the need to pay more attention to project initiation processes, P7 and P14 stated the following:

> P7: At the granular level, we had to understand the rules we are implementing. Before we could get to the rules, there had to be an initiation process, using the usual project management approach.
>
> P14: Initiation is not as simple as people take it to be; it requires a lot of time and effort. We do not have a lot of tools out there that can help people work through initiation. Most project managers rely on their past experiences and competencies; I do not doubt that, but initiation sometimes requires you to be familiar with that environment.

Stakeholder engagement, support, and credibility. The second most significant theme that emerged from participant responses ($n = 120$) to RQ1 is the need for stakeholder engagement during initiation to generate support and develop credibility that the project team would need to successfully manage the project. Missonier and Loufrani-Fedida (2014) defined stakeholder management in the context of identification and engagement; these include the identification of stakeholder interests, relationships, and motivations, as well as strategies for mobilizing and engaging them. The theme, *Stakeholder engagement, support, and credibility*, was used to categorize codes related to stakeholder identification, engagement, and support, as well as the benefits and issues related to stakeholder engagement. P3 highlighted the need for a strategy to engage stakeholders in the following statement:

> P3: The other thing is clearly differentiating (and all these are things we consciously talked about during the initiation phase) … One other thing we did was stakeholder engagement strategy. How are we going to engage the stakeholders? How do we ensure that they are engaged from the beginning of the project to the end? How do we keep them motivated?

Some participants used OCM techniques to facilitate stakeholder engagement. In the case of the project discussed by P20, a small pilot group of executives was created during project initiation; these were asked to test the product to be implemented, and they became change advocates:

> P20: They stood in front of their business groups and their leaders; they were just like testimonials. Another thing that I would like to add is that I set up a very effective pilot group. Some of the leaders were members of the pilot group; so, when they were presenting, they were giving testimonials based on their experiences in the pilot. So, those were some of the aspects that led to the success. Remember all the big heavy lifting part that we would normally do on a project, the scheduling, and the monitoring like you said; those are the aspects on which people tend to put much focus. However, the initiation factors in most IS projects are not given much attention; I realized that on a previous but similar project, so I laid emphasis on it (initiation) on this project.

Enterprise environmental factors. The Project Management Institute (2017) defined enterprise environmental factors as those internal or external factors, not under the control of the project manager. Such factors may influence or become constraints to a project (Project Management Institute, 2017). In this study, the environmental factors were found to include organizational and team culture, prior experiences, and competencies of stakeholders, as well as employee turnover (see Table 9).

Table 9

RQ1: Enterprise Environmental Factors with Categories and Coding References by Comparison Groups.

	Coding References by Comparison Group					
Theme/Categories for RQ1	#1	#2	#3	#4	#5	Total
Enterprise environmental factors:	21	22	16	31	9	99
Competency (of client and staff)						
Environmental factors (including culture)						
High turnover of project managers						
Prior Experience						

These factors may exist before project initiation, but they might also be introduced at any time in the project lifecycle. For example, P16 noted that the boundaries of project initiation could vary from one environment to the other:

> **P16**: The other thing that is going to vary drastically from environment to environment is how much uncertainty is left in your scope, cost, and schedule at that point. Some people will assume that everything is nailed down because, otherwise, you would not get the money. Other people assume that this is completely up in the air because of the nature of IT projects, you cannot know that upfront; so, all you have is the authority to start figuring out what you are going to do.

Organizational changes might also affect a project; for example, in the case of P17, management decided to insource project management functions and that decision affected on-going projects:

> P17: We were one of the few projects that got some success. I took an agile approach; so, we did get to production with the first iteration, but then (this is a different problem), they said that they were done with consultants and would do things internally but then things unraveled after that.

Organizational culture might help make the project management process more efficient; for example, employees that work in an organization that emphasizes collaboration are likely to work better together on projects:

> P1: Team cohesion was driven more by the organization's culture. The organization had a really strong culture in terms of collaboration, helping out, and all that. It was not really about the project structure; it was more of how the organization functions.

While environmental factors may affect a project at any stage in the lifecycle, the governance and project management strategies can be developed and applied to mitigate the effects of environmental factors on project outcome (Project Management Institute, 2017). To ensure cultural fit, an organization introduced a cultural assessment during the vendor selection process:

> P2: They have a very, very interesting RFP process in the sense that they did not just measure the companies on technical [capabilities] and price, but they had

> cultural assessments … meaning how well they think they would work with the vendor.

To address political sensitivities, another organization considered the sponsor's reputation in selecting a sponsor, and soft skills when choosing a project manager:

> P4: When the project was established, we knew that it would be politically sensitive. People had been asking why they were being charged for one thing or the other, so it was a toxic environment at that point. So, we took that into consideration. People were already angry about how we were spending their money, which means that in identifying the sponsor (and I was the person who made that decision), there was a need for the person to have a very good reputation, the soft skills had to be strong. Similarly, when the project manager (that is me) was being chosen, they made sure that they picked someone that had a good reputation and someone that had very good soft skills. So, what made the project successful was not the technical stuff; it was more of who could bring people together, talk nicely to people, and get things done.

Communication and collaboration. One set of factors that appears to connect all others at project initiation is *Communication and collaboration*. Communication and collaboration were paired as they appeared to complement each other in the data (see Table 10).

Table 10

RQ1: Communication and Collaboration Theme with Categories and Coding References by Comparison Groups.

	Coding References by Comparison Group					
Theme/Categories for RQ1	#1	#2	#3	#4	#5	Total
Communication and collaboration:	2	14	14	10	27	67
Communication						
Collaboration						
Broken feedback loop						
Collaborative decision-making						
Communication gaps						
Training plan development was collaborative						
Through collaboration, IT and business strategies were aligned						
IT management was not explicit in communicating issues						
PM was collaborative in dealing with a difficult client						

Building stakeholder relationships based on trust require collaboration, which in turn requires communication (Arsenyan et al., 2015). P21 described communication in the context of governance, which exemplifies the interactions between the categories identified:

> P21: I would say there were three key factors. One was overall communication with the client PM... They had a similar structure on their side. I think it was important from a foundational perspective to set up the communication plan, and communicating channels; that could include starting from the top establishing your steering committee meetings, looking at the high-level stuff, having weekly touch points with your project managers, and setting up the communication tools.

Similarly, P24 highlighted the importance of continuous communication and collaboration in managing expectations after initiation:

P24: …So, you must continually check and manage expectations, ensuring that people are communicating and collaborating throughout that time.

Learning/Knowledge management. Learning and knowledge management are two of the significant categories that were mentioned by many of the participants. As shown in Figure 12, the theme (Learning/knowledge management) accounted for 5% of the coding references from responses to all research questions. The distribution of coding references for the theme from responses to RQ1 is shown in Table 11.

Table 11

RQ1: Learning/Knowledge Management and Coding References by Comparison Groups.

	Coding References by Comparison Group				
Theme/Categories for RQ1	#1	#2	#3	#4	Total
Learning/Knowledge management:	12	12	1	3	28
Project learning					
Knowledge management					
Training					

The theme represents concepts including continuous learning, the documentation and use of knowledge gathered through lessons-learned sessions, methodology orientation for stakeholders, as well as end-user training. Participant P16 noted that an IS project should be set up as a learning adventure as such projects often affect business processes:

P16: For companies that overthink initial approval and scope definition steps, I say… you might be better off treating this more like an adventure. Try to ensure you have enough supplies, keep yourself open to surprises without losing sight of your destination, and enlist folks who can come up with creative solutions to

> unexpected challenges. Let your detailed expectations flow with knowledge you gain during the adventure.

Participant P24 supported P16's assertion by suggesting that a culture of learning could be set up at project initiation, and developed further throughout the lifecycle of the project:

> P24: Yes. That is more of setting a culture into your project team; you start with setting a culture possibly at initiation, but that culture has to continue going forth, and people must adhere to that culture to continue the learning.

The conduct of lessons-learned sessions also appeared significant as a success factor. While lessons-learned sessions are often conducted at the end of the project, participants P3 and P6 noted that having those sessions after each stage or phase of the projects added more value to their projects as they could adapt their projects to the lessons learned. Participant P3 noted that lessons-learned sessions were conducted weekly for his project:

> P3: We also had the retro (retrospective) calls, where at the end of the week we reflected on what went well and what did not go well. Basically, on a weekly basis, you are doing your lessons learned.

As participants P7 and P24 noted, some others reviewed previously documented lessons-learned as part of the project initiation process:

> P7: As part of the initiation, we had to look at lessons learned from similar projects; they cannot be the same, but you have to look at the issues and learn from them.

P24: It is something that could be addressed at the initiation stage; instead of having lessons-learned come up at the end of the project, you can have previous lessons-learned being brought up at the beginning of the project to understand what we should do, and what we should avoid. Also, that is something related to the forming of the team, understanding how they should work - what we should do and the critical points on which we should focus.

However, it appears that many project managers who conduct lessons-learned sessions at the end of the project do so mainly to fulfill process requirements; as P24 noted, many organizations do not have knowledge management systems in place for the storage and retrieval of such documents. Hence, the knowledge documented for one project becomes difficult to retrieve by the next project team. Participant P7 suggested that a document management system for the project could be set up as part of the project governance framework:

P7: You have to specify where your documentation is going to be, the SharePoint site and all that. You have to make sure that all those things are in place.

Hence, project managers may consider learning and knowledge management in developing their governance frameworks as that would enhance information sharing and learning within the team after project initiation.

Team dynamics. Factors related to team dynamics (or group dynamics in the project team) were identified by some participants across comparison groups in response to RQ1. The coding categories that make up the theme for RQ1 are listed in Table 12. The factors include the structure and composition of the team, as well as the size, strengths, and weaknesses of the team. Participants also discussed team development and cohesion with reference to Tuckman's model (forming, storming, norming, and performing) (Scherrer et al., 2016).

Table 12

RQ1: Team Dynamics and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ1	#1	#2	#3	#4	#5	Total
Team dynamics:	5	3	6	12	31	57
Team had a voice in decision making and planning						
Team's Location (Colocation/Distributed)						
Team development and cohesion						
Team structure (composition, size, competencies)						
Team culture encouraged transparency						
Team's Commitment to the cause						

In the context of project initiation, the preparation and planning aimed at improving team dynamics appeared to be dependent on the governance framework, and project management approach; on some projects the teams were formed during initiation while others formed the team after initiation. Nevertheless, many project managers considered the team structure, as well as roles and responsibilities during project initiation or at the initiation of a new phase. On a project that was re-initiated after the first unsuccessful attempt, P16 noted they had a core team that was co-located during the initiation stage, and that facilitated improved communication:

> P16: A couple of things were set up well at initiation; the core team was good. They were dedicated people; there were some subcontractors and some employees. Everybody was co-located; so, communication was fabulous, it was

> instantaneous. We had a big bullpen area; we were the only ones who had access to it, and everybody sat close together.

On a successful project, P7 noted the benefits of being able to choose the personnel that constituted the project team at the beginning:

> P7: One thing that I believe really helped on this program was having the leeway to choose my people. At the end of the day, it is the people that you have that determine if you will be successful or not. I was able to choose the people I worked with; I ensured they were tried and tested, and knew what they had to do.

While some project managers had the opportunity to select resources for their teams, others did not; however, they created the necessary atmosphere for team cohesion. In the case of P10, the members of the team were consulted during the planning stage, and that helped the project manager to gain credibility with the team and members of the steering committee:

> P10: If you have a solid plan, and if you have taken it through your team and the steering committee, you would have probably gained some credibility. So, you maintain it by adjusting, listening, and not blaming. Things will change; there will be challenges. It is technology; it is not a recipe that you go from one to ten steps and definitely know the outcome. It is not that simple; you have to do what it takes. You create an atmosphere for people to be honest with their reporting by not pointing fingers. Instead, you proactively work through issues with the team; and by transparently reporting them to your steering committee, you are

> maintaining that credibility, and you will maintain an atmosphere of people working together to get things done.

Another significant factor that came up was the need for a project manager to provide leadership to the team. In an environment where the prevailing thought was that they could do without project managers, P10 was asked to take on a troubled project. On assessing the state of the project, P10 discovered that the team was not making progress without the leadership of a project manager:

> P10: They thought they were in execution, but they had not really delivered anything; they had not accomplished anything.

Thus, the results indicate that organizations need to consider healthy team dynamics as a goal when considering the structure and composition of their project teams.

RQ2: How can practitioners manage those initiation factors to improve the possibility of project success?

In support of the second research question (RQ2), participants were asked to answer the three interview questions associated with RQ2 as shown in Appendix B. The responses to those questions were grouped within similar themes as responses to RQ1. The purpose of RQ2 was to understand how the critical elements of project initiation identified in responses to RQ1 may be addressed after the initiation stage to ensure project success. Participants' responses indicated that factors related to project governance and management were the most significant set of factors; the theme accounted for 69% of coding references for RQ2. Stakeholder engagement, support, and credibility came next with 13% of coding references in response to RQ2 (see Table 13).

Table 13

Responses to RQ2 by Theme

RQ2 Themes	Coding References	%Total
Project governance and management	102	69%
Stakeholder engagement, support, and credibility	19	13%
Enterprise environmental factors	11	7%
Communication and collaboration	10	7%
Learning/knowledge management	4	3%
Team dynamics	1	1%
Total	147	100%

Project governance and management factors. Having defined the foundational elements including the governance framework and project management artifacts, Participant P21 maintained the governance documents including the activity tracker and risk log during project execution. With roles and responsibilities already defined as part of the governance framework, P21 advised the client of their responsibilities and associated risks:

> P21: When we started using the activity tracker, the decision log, and the risk log, it became apparent that we were waiting on them for a lot of key decisions and actions on their side, and these were causing delays.

In other words, the governance framework was used as a reference tool for managing the project, and engaging the client; see Figure 14 for an overview of governance based on responses to RQ2. As shown in Figure 14, P6 and other participants engaged the steering committees established at initiation as decision-making organs for approvals and issue resolution. According to P6:

P6: We had regular steering committee meetings, which helped each project and the program overcome a lot of the hurdles with the vendors and government bodies.

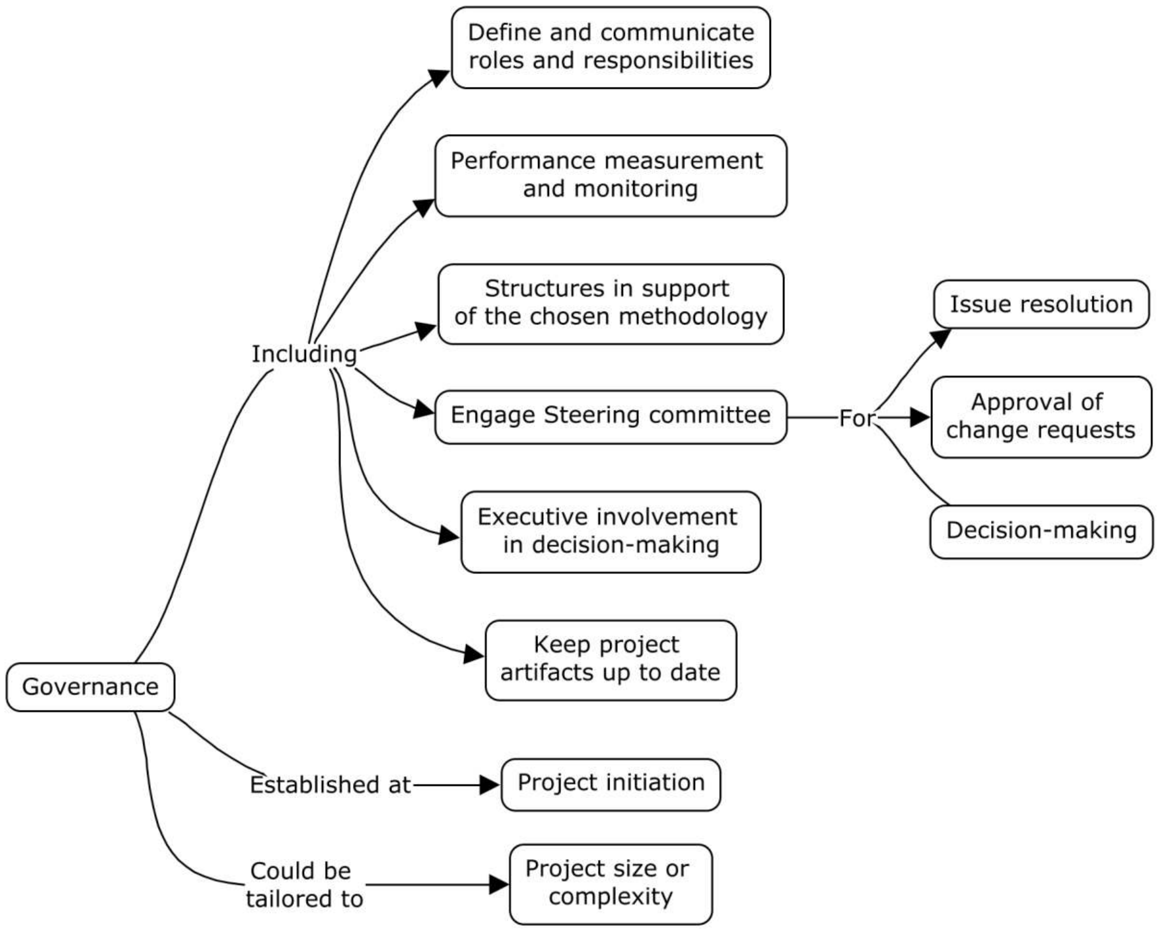

Figure 14. The role of the governance framework after project initiation. This concept map was created by J. O. Afolabi as a representation of governance and related coding categories derived from data.

In addition to the use of the governance framework as a guide for project management, participants talked about using artifacts and methodologies approved at initiation in managing the project. At this stage, the careful selection of governance framework, and an appropriate project management methodology appeared to be very important. In the case of a project that P3 discussed, an agile methodology was chosen during project initiation, but that led to resistance from the extended project team as the organizational was not structured to support the Agile methodology, which is a constraint brought on by an environmental factor:

> P3: One thing that I found very interesting but not unusual … as I told you, we had a core team, and we had an extended team. The organization is not structured to support an agile methodology; so, we had a lot of push-back from the extended team.

In that case, P3 had to resort to stakeholder engagement, communication, and knowledge management strategies to address the problem. The project manager engaged with the resisting parties to address their concerns and made them aware of available communication channels for information access. Hence, it is not enough to have a governance or project management framework in place; it is also important to engage in team learning to be aware of issues and address them through stakeholder engagement and communication.

Stakeholder engagement, support, and credibility. As noted earlier, with P3's project as a reference, the governance framework and project management methodology may provide the necessary structures and guidance for managing the project. However, participants' responses revealed that stakeholder engagement had to be continuous within the constraints of the governance framework to maintain the support of key stakeholders, and the credibility of the project manager (see Figure 15). To that end, P9 recounted the level of support that the project team got from various levels of leadership because of their stakeholder engagement efforts during the initiation stage of the project. As the project got into execution, some end-users in opposition to the project went to their bosses and the union to complain, but got the following responses:

> P9: They went to the union, but the union told them: Yeah, they came to us, and we think it is something that they should do. … Then they went to their boss, and the boss said: Yes, we heard about it, and we think it is something that we must do, not something that we may do; we have looked at it, and we believe it is something that the institution should do.

P18 also leveraged executive support for conflict resolution:

> P18: The other thing that helped was that I had very good executive backing; there were times that I would escalate if a department were not cooperating. I would escalate it to my supervisor who would then go from top-down.

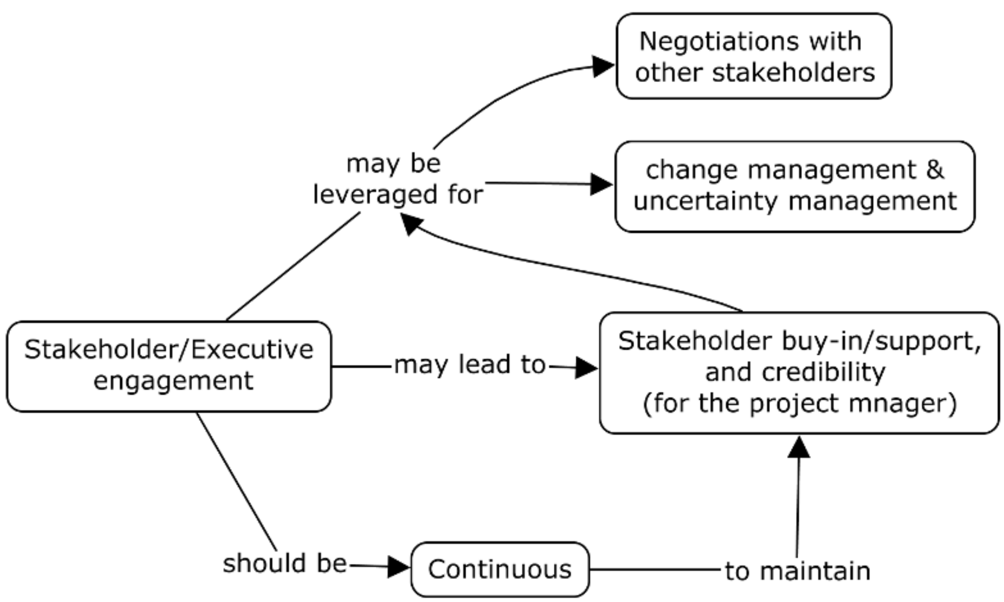

Figure 15. A concept map showing the effects of stakeholder/executive engagement; this was created by J.O. Afolabi as a representation of the theme and associated coding categories derived from data.

Through early and continuous engagement with key stakeholders, the project team gained support and credibility with institutional leaders, and that helped to address resistance to change.

However, as P10 recounted concerning another project, continuous engagement is not only required for the core stakeholders or executives; the project manager also needs to continuously engage members of the project team as they are also stakeholders. P10 was asked to take on a project after the departure of another project manager; hence, she started the process of initiating the project again. However, she discovered that the project team was not in support of the project plan that was passed on to her as they were not consulted by the previous project manager, although the steering committee supported the plan. P10 negotiated with the steering committee on the need for changes to the plan:

> P10: I informed them first that the plan was not good, and told them I would not come back to them with a plan until I had something that I feel I could stand behind, and that had everyone's approval.

In the case discussed by P10, the project team was in place before a new project manager was hired, and the project had stalled. However, having regained the support of the project team by engaging and collaborating with them on a new plan, the project was reinitiated and completed successfully.

Enterprise environmental factors. Categories of responses associated with the theme, and how they are coded by comparison group are shown in Table 14. In responses to the interview questions for RQ2, environmental factors were found to be either beneficial or challenging to the project team. For instance, P6 gave credit to prior experiences and competencies on the part of the client's program manager and the sponsor for helping to avoid delays in a bureaucratic environment:

> P6: The experience that the program manager and his boss had from working on other projects helped us to speed up things and be successful on this project within a short time.

Table 14

RQ2: Enterprise Environmental Factors with Categories and Coding References by Comparison Groups

	Coding References by Comparison Group				
Theme/Categories for RQ2	#1	#2	#4	#5	#Total
Enterprise Environmental factors:	2	1	5	3	11
Client behavior/actions					
Competency					
False advertising /product marketing					
Sponsor's Competency and experience					
Management practices					

On the other hand, enterprise environmental factors may cause project challenges and would require the reliance on the governance framework, project management techniques, and stakeholder engagement for mitigation. For example, when management changes threatened the survival of a project because the new manager had other priorities, P15 used the project charter to convince the new manager of the need to complete the project:

> P15: The project charter also had the roles and responsibilities; so, we used that as a tool to communicate all the work that had been done in the past and who did what, as well as the role of the new manager within the project. It was almost as if

> it was a contract, but not so much because, internally, those documents do not carry the same weight.

P17 discussed a case where the management culture in the organization was such that the steering committee dictated the architectural requirements of the software to be developed, and the project manager had no voice; hence, lines of communication were broken. P17 noted:

> P17: You know when architects run a company, and they do not care what reality is; so, they were poor at listening to implementation feedback or project management feedback. We would tell them that it would cost them millions of dollars, and it might not work, but they would ask us to make it work.

In that case, the project eventually failed; the steering committee refused to act on feedback from the project management team. When the program manager tried to get the steering committee to act on the feedback, he was fired. Thus, enterprise environmental factors, including organizational governance practices (not project governance) may adversely affect a project if the communication feedback loop is broken.

Communication and collaboration. Participants' responses revealed that communication and collaboration had to be continuous and sustained throughout the project lifecycle to maintain stakeholder support and achieve desired project objectives (see Table 15). P20 reported the following:

> P20: I worked on the budget and timeline, and although I had a little bit of fallback regarding timeline, I communicated it well ahead of time as soon as I was aware of it. Because the leaders were part of the show, they were not waiting for

> me to come to a board session or weekly steering committee meeting; they saw things happen daily.

As a project manager for the vendor on a project, P21 had to communicate regularly with the client's project manager to maintain a collaborative relationship:

> P21: I think that it depends on whom we were talking to on the customer's side. I spoke daily with the project manager (PM) on the other side, and depending on the phase, whether it is the requirements phase or the testing phase, I would get in touch with the lead.

Table 15

RQ2: Communication and Collaboration Theme with Categories and Coding References by Comparison Groups

	Coding References by Comparison Group			
Theme/Categories for RQ2	#3	#4	#5	Total
Communication and collaboration (C&C):	3	3	4	10
Broken feedback loop				
Helped to maintain stakeholder engagement				
C&C with stakeholders				
C&C was helpful in addressing uncertainties				
Communications and conflict resolution				

Learning/knowledge management. Factors related to project learning and knowledge management accounted for 3% (n = 4) of all coding references (N = 147) generated from responses to RQ2. The related responses for RQ2 were mostly concerning the documentation and use of lessons learned after project initiation; see Table 16 for the number of coding references generated per comparison group. For example, on the project that P3 discussed, they had weekly retrospective calls to discuss the performance of the project, and identify lessons learned; those lessons learned were then used to improve the performance of the project.

Table 16

RQ2: Learning/Knowledge Management and Coding References by Comparison Groups

	Coding References by Comparison Group			
Theme/Categories for RQ2	#1	#3	#5	Total
Learning/Knowledge management:	1	1	2	4
Continuous learning				
Team made changes according to lessons learned				
Weekly lessons-learned sessions				

Team dynamics. In participants' responses to interview questions for RQ2, there was only one coding reference related to Team dynamics. P24 noted that while high-level requirements may be identified during project initiation, the level of understanding or knowledge would change as the project moved into other phases.

RQ3: How can the decision-making process during the project initiation phase contribute to a successful project outcome?

Participants' responses to interview questions for RQ3 indicated that the decision-making function and frameworks reside with project governance, which represented 65% of coding references for RQ3 (see Table 17). Other responses were related to learning (13%), communication and collaboration (9%), stakeholder support (8%), environmental factors (4%), and team dynamics (1%).

Table 17

RQ3 Themes and Coding References

RQ3 Themes	Coding References	% Total
Project governance and management	214	65%
Learning/Knowledge management	42	13%
Communication and collaboration	29	9%
Stakeholder/Executive support and engagement	27	8%
Enterprise environmental factors	13	4%
Team dynamics	4	1%
Grand Total	329	100%

Project governance and management factors. Through their responses, participants identified the decision to set up a governance framework as one of the critical factors that improved the performance of their projects. In response to interview questions related to RQ3, P6, and P7 suggested that implementing the governance framework provided the necessary guidance for decision making and helped to avoid bureaucratic bottlenecks. P13 noted that specifying roles and responsibilities helped with the decision-making process:

> P13: Very good. You know those people who can make decisions, and the role of each person; so, it becomes easy, and each person would know their role on the project regardless of their role in the business.

Learning/knowledge management. In response to interview questions for RQ3, participants referred to decisions related to the conduct of lessons-learned sessions, the management of information gathered in those sessions, and the use of the lessons learned to address project issues. While implementing a claims processing system, P16 identified some requirements of a data conversion standard that had to be applied in data transfers between different parties. The team decided to document the findings and make them available to other project managers running projects that require similar conversions. Incidentally, another project manager forgot about those standards and ran into problems with data conversion:

> P16: I went to another project manager at the other location and told her - I know you are doing a similar conversion, and here is what I found out. The standard only accepts capital letters, and there are other little quirks with the pharmaceutical data standards that you should keep in mind as those could kill your conversion. She forgot about it, did her conversion about a month later, and everything failed.

Another participant (P22) identified learning as a process associated with challenges. P22 noted that a new project management methodology was implemented without training for project managers; the organization’s management team used his project as a field test for the new methodology and learned much from the project:

> P22: We were the guinea pigs; because of the challenges that we had, this went up to a management lessons-learned as well concerning the new methodology. So, they learned a lot from this project on fine-tuning the governance methodology.

The responses suggested that project teams had to decide on making learning and adapting their projects with insights gained as a continuous exercise (see Table 18); P24 described this as a learning culture that should be developed for the team.

Table 18

RQ3: Learning/Knowledge Management and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ3	#1	#2	#3	#4	#5	Total
Learning/Knowledge management: Continuous learning Project can be adaptive Training	3	2	4	5	28	42

Communication and collaboration. Participants and their teams took some decisions that helped to improve communication and collaboration (see Table 19). P20 referred to a decision to have a project manager representing the vendor onsite with the team; that helped to improve communication with the vendor, and access to the vendor's resources.

> P20: Another decision that I took, apart from the choice of resources, was related to the location of vendor resources. That helped because I had an easily accessible person, someone that I could grab (pardon my language) and hold accountable for anything I needed instead of having to deal with people through emails, and phone calls.

Table 19

RQ3: Communication and Collaboration Theme with Categories and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ3	#1	#2	#3	#4	#5	Total
Communication and collaboration: Communication and feedback Collaborative Requirements Specification	1	5	2	12	9	29

Stakeholder/executive support and engagement. As shown in Table 20, participants recalled decisions that affected stakeholder support. P8 discussed the decision to engage end-users as part of stakeholder engagement at project initiation, and its value to the project:

> P18: I think, for me, what I have learned that has helped with other projects that I managed after this includes knowing the end-users and getting them involved right from the beginning. Once they are involved, it is easier to work on the project; that is something that I learned.

P16 also highlighted the importance of stakeholder engagement and communication as reflected in the lack of support from a product vendor:

> P16: Every time we tried to get something out of OC, they just would not answer the phone; they had no skin in the game whatsoever. So, I as an implementation partner went in and asked: Where does OC get off selling a million and a half dollars of licenses to a company of 85 people that only sells one product? It is obviously the wrong tool, and it is not going to work.

Table 20

RQ3: Stakeholder/Executive Support and Engagement Factors with Categories and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ3	#1	#2	#3	#4	#5	Total
Stakeholder/Executive support and engagement:	7	3	16	1		27
Executive support empowered the team						
Stakeholder support helped to make schedule overrun a nonissue						

Enterprise environmental factors. The responses provided by participants indicated that the level of competencies available in an organization could be affected by decisions made or those that management failed to make (see Table 21). For example, P5 described a situation where management decided not to hire more resources for a project despite conflicting priorities:

> P5: The decision not to staff adequately. NYB and IDK... On the NYB side, because of competing priorities, they only had a PM and a BA, but they expected IDK to get all the information from the existing system. We had people, but they were incompetent, including the PM.

Table 21

RQ3: Enterprise Environmental Factors with Categories and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ3	#1	#2	#3	#4	#5	Total
Enterprise environmental factors	4		4	5		13
Competency						
Client's lack of commitment to the project						
Organizational Culture						

Team dynamics. On the theme of team dynamics in responses to RQ3, some participants identified collaborative decision making as an approach that could promote transparency and trust within the project team and among key stakeholders (see Table 22). P11 noted the following:

> P11: I think another key aspect of this project was the transparency. I do not know if I had said it earlier, but I think that was something good; we were able to be

quite transparent between all the stakeholders, and everyone was able to see progress. We made decisions together, and it was quite a healthy team.

Table 22

RQ3: Team Dynamics and Coding References by Comparison Groups

	Coding References by Comparison Group					
Theme/Categories for RQ3	#1	#2	#3	#4	#5	Total
Team dynamics	2		2			4
Team Location and Impact						
Transparency						

Summary

The objective of this study was to explore critical factors associated with project initiation, and understand how management practitioners may address them to deliver successful IS projects. A pilot study was conducted with the first five participants as a field test of the interview protocol and instructions; the pilot study resulted in no change to the instrument or instructions. Twenty-four participants were interviewed, which was one less than the target of 25 participants; however, data saturation was considered achieved after the 19th interview as no new theme was identified from the data after that interview.

To answer the three research questions, participants were interviewed using a protocol that included 12 interview questions. The interviews were digitally recorded and transcribed with all identifying information removed. The data generated were uploaded to NVivo and organized for analysis. An iterative analytical process that involved three stages of coding was used; the three stages included open coding, focused coding, and theoretical coding. The analytical process led to the emergence of six themes that linked all concepts discussed in response to all the research questions; the themes include:

- Project governance and management
- Stakeholder engagement, support, and credibility
- Enterprise environmental factors
- Communication and collaboration
- Learning/Knowledge management
- Team dynamics

An interpretation of the results of this study is presented in Chapter 5, which also includes a discussion on the limitations of the study, recommendations for future research, as well as implications for research, practice, and social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative grounded theory study was to explore project initiation factors, identify those factors that may affect the outcome of IS success, and determine how they may be managed to achieve project success. A conceptual framework comprising of chaos theory and Ashby’s law of requisite variety was used as a lens for the study. Researchers of Ashby’s law of requisite variety inferred that a greater or equal degree of variety (of control measures) is required to regulate variety (or uncertainty) in the behavior of a system (Ashby, 1957; Flach, 2012). On the other hand, proponents of chaos theory inferred that the behavior of a system is sensitive to minor changes in its initial conditions (Radu et al., 2014).

This study was designed on the premise that a project is a system with initial conditions that may be regulated to achieve desired project objectives. The seemingly unpredictable nature of IS projects indeed requires a variety of management skills and tools to increase the potential for success (Klein et al., 2015). However, as Ahonen and Savolainen (2010) noted, the cancellation of some IS projects may be traced to mistakes made before those projects were started. Hence, with IS projects often exceeding budget and taking longer than planned, it was pertinent to explore project initiation to understand factors that IS managers and project managers might need to manage closely to ensure project success. While it is practically impossible to identify all the initial conditions of a system or project that may cause uncertainty in performance or outcome, the expectation is that the findings of this study will provide some insight into elements at play during the initiation of IS projects.

Twenty-four participants were interviewed for this study. The participants were IS/IT managers and project managers who had managed at least one IS project; the interviews were semistructured. Through the study, six themes were identified from thousands of codes generated from participants' responses. The most significant theme was *Project Governance and Management*, which accounted for 67% of coding references; this was followed by *Stakeholder engagement, support, and credibility*, which represented 10% of coding references. Others include *Enterprise environmental factors* (8%), *Communication and collaboration* (6%), *Learning/Knowledge management* (5%), and *Team dynamics* (4%). The themes represented interdependent factors that were defined (or needed to be defined) during project initiation but implemented or used during the project lifecycle to improve project performance and achieve success.

Interpretation of Findings

Research participants responded to 12 open-ended questions in semistructured interviewing sessions; the interview questions were aimed at seeking answers to the three research questions. The research questions were designed to aid in identifying critical elements of the initiation stage for IS projects, and how those elements could be managed to increase the possibility of project success. The third research question was aimed at finding out how those factors are related to decision making, which is integral to management and leadership (Smith, 2014). Thus, the research questions were interrelated, and so were the findings; they indicate that project initiation is a complex exercise.

The Project Management Institute (2017) described the initiating process group as a set of activities required to authorize a new project or a new phase of an existing project; one can, therefore, infer that every project has an initiation phase, irrespective of the chosen methodology. However, it may be inferred from participants' responses that the activities, inputs, and outputs that constitute the initiation process may vary depending on several factors. Those factors may include environmental factors, project management methodologies and governance processes adopted by those organizations; these support the assertion made by Mullaly (2014) that organizational and contextual factors might influence initiation decisions.

In discussing project initiation and how it affects (or does not affect) project outcome, most participants identified factors related to project governance and project management as elements that helped them to be successful or elements that were missing and led to project troubles. With project governance and management accounting for 67% of all coding references, the findings suggest that this combination of factors ought to be addressed during project initiation and afterward for success to be achieved. On most successful projects discussed, project governance and project management processes were defined during project initiation while project governance was used in regulating project management activities during the execution stages. Joslin and Müller (2015) had earlier identified project governance as a moderating factor between project management methodologies and success; the findings thematically represented by project governance and management appear to extend Joslin and Müller's findings into the initiating phase. The responses provided by participants to the research questions suggest that project governance had a moderating effect on the relationship between enterprise environmental factors and effective project management practices. Where project governance was established and used, project managers could use agreed rules and contracts to achieve compliance. On the other hand, where project governance was not effectively defined or enforced, project managers had to contend with issues related to environmental factors. For example, when a management change threatened the survival of a project, P15 used the project charter in discussions with the new manager to show that the project had been approved, explain what had already been done, and convince the new manager to keep the project on their list of priorities. In contrast to that, another project with ineffective governance structures had to be temporarily put on hold due to organizational changes. P12 noted that they had no defined steering committee, but relied on a group of managers for weekly status meetings. However, without a defined structure for the steering committee (a governance structure), the meetings were not regular, and when a new chief executive officer (CEO) was appointed, the project had to be delayed as resources focused on new priorities. Hence, it could be inferred that project governance has a moderating effect in the interactions between environmental factors and effective project management; this is an extension to findings by Joslin and Müller (2015).

The combination of project governance and project management (processes, systems, and artifacts) were found to have provided an enabling framework for stakeholder engagement, support, and the development of healthy team dynamics. The Project Management Institute (2017) defined project governance is a mechanism to guide project management activities; the goal is to align the project and project management activities to the organization's strategic or operational goals. Project governance involves stakeholders; they are part of the governance structures, and their roles need to be defined for effective project management (Bekker, 2015). While stakeholders are involved in project governance, the findings of this study reiterated the need to manage the relationship with stakeholders within the scope of project governance. Participants identified end-users as a group of stakeholders that is sometimes ignored, but which needs to be engaged early at initiation to avoid resistance to change. In one organization, the project had to be placed on hold and an organizational change management (OCM) professional engaged to help identify the reasons for resistance and reinitiate the project. The findings indicate that some participants used OCM techniques during initiation in the form of change awareness campaigns to engage stakeholders. OCM techniques were also used after initiation in stakeholder management activities. The prominent use of OCM principles in project management by participants supports the suggestion that project management and organizational change management need to be integrated (Hornstein, 2015). Hornstein (2015) observed that several organizations had started integrating OCM with their project management practices to address the planning and people aspects of project management; hence the use of OCM by participants is consistent with Hornstein's observations.

In addition to stakeholder engagement, communication and collaboration were found to be two key factors needed to facilitate stakeholder engagement and team cohesion. While participants reported different levels of engagement requiring different types of communication, communication was necessary for collaboration, which project managers nurtured to strengthen trust and earn some degree of credibility with stakeholders. Managers also used communication and collaboration in developing conducive atmospheres for trust and transparency within project teams. As P24 noted, project managers must consciously ensure that people are communicating with each other, working together, and learning together; this theme confirms, to an extent, the dimensions of collaboration put forward by Arsenyan et al. (2015). Arsenyan et al. identified the dimensions of collaboration as trust, coordination, co-learning, and co-innovation; these dimensions highlight the interactions between collaboration, team learning, and team dynamics.

Communication and collaboration in planning and scope definition were found to be instrumental in team development, engagement, and cohesion. P10 noted that on a project, members of the team were consulted in the initial planning activities, and that helped the team to bond; it was also important to work through issues with team members in a collaborative way. Collaboration in the decision-making process was found to have helped improve information sharing and team learning. Using one project as an example, P24 noted that because the project manager was not interacting with the team, they did not trust him and did not share critical information with him. Without the necessary information on issues, the project manager did not learn about events on the project but kept reporting that things were going well while the team was struggling. That project manager was fired and when P24 took on the project, he re-established regular communication with the client and regular interaction with the team to rebuild trust on both sides. Hence, one may infer that there appears to be a cyclic relationship between communication, collaboration, trust, and learning. Communication helps to build trust and facilitate collaboration while trust helps to improve communication and collaboration; communication and collaboration, in turn, are necessary to facilitate learning, which is critical for decision making and the management of project risk (Flach, 2012; Klein et al., 2015). Ahern, et al. (2014) noted that continuous learning was necessary to identify and address emergent knowledge gaps on projects. Applying Ashby's law of requisite variety, Klein et al. (2015) proposed the need for continuous learning and improvisation as techniques for addressing emergent complexity in technology projects.

The Emergent Theory of IS Project Initiation

Six specific themes emerged from the data, and these were used to generate the emergent theory of IS project initiation. The themes include

- Project governance and management.
- Stakeholder engagement, support, and credibility.
- Enterprise environmental factors.
- Communication and collaboration.
- Learning/knowledge management.
- Team dynamics.

However, the themes are not mutually exclusive of each other. As shown in Figure 16, the factors represented by the themes are interrelated, and those complicated relationships need to be carefully addressed and managed to achieve project success.

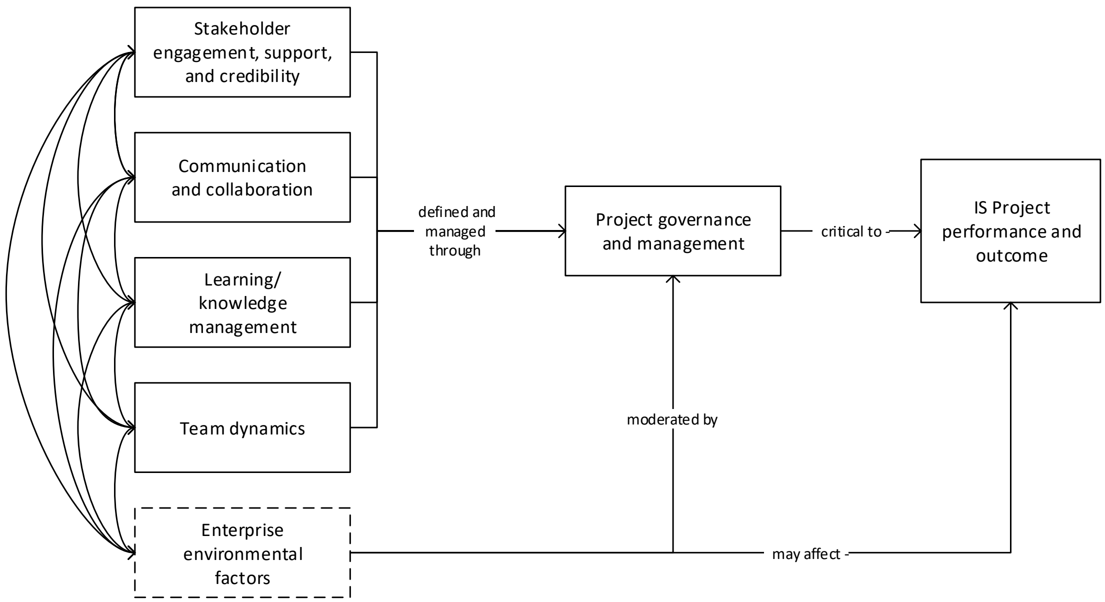

Figure 16. The emergent theory of IS project initiation. The dashed border around *Enterprise environmental factors* indicates that these factors are not project-specific; they may exist with or without the project. This diagram was created by J.O. Afolabi.

The emergent theory of IS project initiation is comprised of the following theoretical statements:

1. Enterprise environmental factors may affect a project positively or negatively. Continuous learning, knowledge management, communication, and the application of governance and project management are needed to moderate the effects of enterprise environmental factors on a project. As P7 noted, "There are certain things that are constant… That is why the governance is important".
2. A project governance framework, and associated project management process (including methodology) are best defined during project initiation to ensure that

the project aligns with organizational goals and strategy. P3 noted the importance of starting well with the statement: “Begin with the end in mind”.

3. Stakeholder engagement and support are necessary for success, and should start during project initiation. It is important to create a stakeholder strategy during initiation and use it in engaging with stakeholders throughout the project lifecycle. On project initiation and execution, P15 stated: “I think that they are interrelated; so, regarding stakeholder buy-in and project support, if the project does not have the right support in place, it is more likely to fail or to be moved down the priority list that people have with the different business units”.
4. Communication and collaboration are critical to everything else; they are necessary for building trusting relationships with stakeholders including executives and the project team. As shown in Figure 16, there are complex interactions between the themes, and communication makes those interactions possible. P8 talked about creating a strategy for collaboration: “We mapped the process flow of all the various situations where collaboration was required. Those things went quite well.” P24 also stated: “You must continually check and manage expectations, ensuring that people are communicating and collaborating”.
5. Learning and knowledge management involve the acquisition, sharing, and management of information; these could be included in the project management strategy during initiation or addressed during the planning stage. However, learning and knowledge management are required to ensure that past mistakes are not repeated. They are also needed to improve team dynamics. P6 stated: “I also

believe that the program manager and his boss had done similar projects in the past; they had lessons learned from the past, and that gave them some leverage for this project." P24 added: "It is great if you could tap into some previous lessons-learned repository, but generally, that previous lessons-learned repository comes from the knowledge of the team at the beginning of the project as part of risk management."

6. Team dynamics need to be healthy for success to be achieved; however, the cultivation of healthy team dynamics should start from project initiation. P24 explained this in the context of the project team's culture: "It is not necessarily my culture; it is not the company's culture, it is about developing a new culture that works best for the type of project with the dynamics of people and what you are trying to achieve altogether."

Limitations of the Study

The study was limited in scope to a sample of IS managers and IS project managers; all participants were based in North America (Canada and the United States), but the location of each participant was not considered a factor. The study was limited primarily by the types of projects that participants were willing to discuss during the interviews. The majority (80%) of the projects discussed were deemed successful, while 20% were classified as unsuccessful (see Table 23). Although projects were considered successful based on adherence to plan, most projects were measured by predefined success criteria including customer satisfaction. Twenty-four participants were interviewed, but one participant discussed two projects; hence, 25 projects were discussed. While most participants discussed freely, one participant mentioned that he had signed a nondisclosure agreement with a client; hence, he discussed certain aspects of a project without mentioning names or locations. Nevertheless, that did not affect the trustworthiness of the data as identifying information would have been removed during the transcription process.

Table 23

Classification of Project Outcomes as Discussed by Participants

Classification	Project Outcome/status	#Projects	% Total
Unsuccessful	Failed/Canceled	2	8%
	Troubled	3	12%
Successful	Successful	14	56%
	Initially troubled but successful	6	24%
Grand Total		25	100%

Recommendations

A grounded theory study was conducted to explore project initiation factors, and how they may be addressed to manage IS projects successfully. Six themes were identified; however, these are theoretical. Although the themes and inferences are grounded in data collected during this research, the study was limited to 24 participants. I therefore recommend that the theoretical statements be tested for generalizability with a larger sample size through a quantitative study. The data collected reflected IS projects of different sizes; however, data related to cost and number of personnel on the project were not considered. Hence, while *Project Governance and Management* was a prominent theme, I do not know if they will hold for projects of all sizes, cost, and levels of complexity.

P21 and P22 referred to having different levels of governance oversight on successful projects; these were different by stakeholder group, and cost of the project. On the other hand, P17 complained about too many levels of management between the steering committee and the project team; that led to broken feedback loops. Allassani (2013) noted that it was no longer sufficient to apply project management principles to IS/IT projects, and there was a need to adopt IT governance principles in the management of IT projects. Bekker (2015) further averred that project governance could be viewed in three levels (a) technical, (b) strategic, and (c) institutional. However, neither Allassani (2013) nor Bekker (2015) prescribed criteria for applying governance by size or cost. One may, therefore, ask: When is governance enough? How much governance is too much in project management to affect innovation and project performance? Further research is recommended to explore the relationship between project governance, innovation, and success in the management of IS projects; that will extend the findings of this study.

A subset of participants used organizational change management (OCM) techniques and professionals to engage stakeholders and manage change. The analysis of data from this study and findings from previous research indicate that OCM use is a growing trend (Hornstein, 2015). Some participants mentioned the use of OCM as one of their success factors, and P9 recounted how a project had to be stopped and an OCM professional hired to help identify the reasons for user resistance. With the help of an OCM practitioner, they identified causes of user resistance and implemented OCM strategies to help complete the project. It was only after the integration of OCM principles that they could forge ahead and complete the project. Although the Project

Management Institute (2017) identified OCM as necessary for transforming organizational practices and encouraged the awareness of OCM by project managers, OCM is considered a separate discipline and out of the scope of the project management body of knowledge (PMBOK). On the strength of the data and available evidence of the growing use of OCM principles in IS project management, I recommend that further research explore the introduction of OCM at project initiation and its effect on project success.

The data indicated that some organizations did not consider it necessary to engage project managers and the project management discipline until their implementation teams ran into challenges with their projects. In some organizations, project initiation was done by information technology architects who designed the solution; hence, a project manager was assigned to execute a project after the architects had designed a solution, and chosen the desired implementation methodology. As P17 described them, architects are dreamers who are good at creating a vision of the product; they are not pragmatic. Thus, as captured with the *Enterprise environmental factors* theme, organizational culture and management practices seem to be getting in the way of effective project management practices. While some organizations had mature project management structures and used project governance to moderate the effects of culture, others did not have such structures. Future research may be necessary to understand how an organization's aversion to project management principles and project managers are affecting IS projects. It may also be necessary to understand how project managers fare in environments not receptive to the ideals of the project management discipline. Highlighting the problems associated with implicit or explicit aversion to the project management discipline in IS organizations may help address the cultural issues and their effects. Sharma and Bhattacharya (2013) used game theory to address similar issues from a knowledge management perspective and noted that without a knowledge management policy, individual behaviors might conflict with strategies that may be beneficial to the organization. Hence, further exploration of this phenomenon is recommended in the context of IS project management and organizational culture.

In summary, four recommendations for future research were discussed. These include:

1. Testing the results of this study for generalizability through a quantitative study.
2. Further research to explore the relationship between project governance, innovation, and success.
3. Further research to explore the introduction of OCM at project initiation, and its effects on project outcome (success).
4. Investigation of how project managers fare in organizations that are averse to the ideals of the project management discipline, and how that affects project outcome.

These recommendations may help to advance research and knowledge in IS project success.

Implications

IS projects have been increasing in cost over the years, but that has also led to increases in the financial impact of project failure. Ahonen and Savolainen (2010) argued that the cost of project cancellations or abandonments each year could be up to US$75 billion; if one considers the cost effects of troubled projects, the cost of unsuccessful IS projects could be much more. When IS projects fail, the cost of such failure to the sponsoring organization may be known; what is often not considered is the social effect of such failure. For example, Ahonen and Savolainen (2010) found that the cancellation of an IS project that they analyzed led to the bankruptcy of the supplier involved; one may assume that the bankruptcy led to job losses. In the case of Healthcare.gov, the political effects of delays and cost overruns of that project are well documented (Anthopoulos et al., 2016; U.S. Government Accountability Office, 2014).

The purpose of this qualitative grounded theory study was to add to the understanding of factors at project initiation that might affect project outcome. While scholars have done much research regarding IS project management methodologies, Wells (2012) found that no single methodology could guarantee success. Ahonen and Savolainen (2010) found that some IS projects might have failed before they were started; however, there has not been much focus in research to explore the relationship between project initiation and IS project success.

Implications for practice and social change

Through the findings of this study, IS managers and project managers may be prompted to pay more attention to the initiation process for their projects; with the results, I have highlighted critical factors that should be addressed to achieve success. The findings may help IS project managers and functional managers achieve increased rates of project success; this will potentially lead to end-user satisfaction. With increased potential for success, IS managers and executives can avoid or reduce financial losses associated with project failure. The application of the findings of the study might help governments avoid some of the issues found with the implementation of Healthcare.gov, and help such governments to retain public support for IS projects.

The conceptual framework used in this study, which included Ashby's law of requisite variety and chaos theory, may be used to model system behavior and regulation in other fields. As may be inferred from the first and third themes (*Project Governance and Management* and *Enterprise environmental factors*), IS project success is not just the responsibility of the project manager and project team. Joslin and Müller (2016b) observed that the relationship between project governance and project success might be affected by leadership's level of orientation—between shareholder and stakeholder orientation. Shareholder-oriented governance is more about control and the generation of value for shareholders such as the return on investment; by contrast, stakeholder-oriented governance empowers managers to make strategic decisions, adapt to emergent opportunities, and be innovative (Joslin & Müller, 2016b; Müller & Lecoeuvre, 2014). As organizational governance often influences project governance, organizational leaders need to create environments that are conducive to success; they can achieve this by being more stakeholder-oriented (Joslin & Müller, 2016b). Hence, there are implications for practice and social change in the organizational context; leaders may examine their organizational cultures or management practices, and effect the necessary changes to support project teams in the delivery of successful projects.

Implications for research

This study also has implications for further research in the field of IS project management. As suggested in the Recommendations section, this study may be extended to a quantitative study to test the theoretical themes and establish generalizability. Through findings that are based on the data collected and analyzed, I established that what is done or not done during project initiation can affect the outcome of a project. The implication, therefore, is that researchers may begin to explore the interactions between project initiation factors and other aspects of IS project management such as the project management methodology, OCM principles, and IS success models. A participant (P20) put it succinctly: "The initiation factors in most IS projects are not given much attention; I realized that on a previous similar project, so I laid emphasis on it on this project". Thus, the findings of this study have the potential to encourage other researchers to explore project initiation practices for IS projects and their relationships to project success. Practitioners may apply the findings to strengthen their project management practices. Furthermore, I have indicated that the findings of this study have implications for positive social change in the organizational context, which may help improve public perception of those managers who initiate or implement IS projects.

Conclusions

This grounded theory study was conducted to explore project initiation factors and understand how they affect IS project success. Wells (2012) argued that no single project management methodology may guarantee success, but a look at the project lifecycle indicated that there is always a project initiation phase where the project is authorized to start. Hence, with IS projects often facing challenges despite the choice of methodologies and the dearth of research examining the initiation phase, it was necessary to ask the central research question—What is the nature of project initiation, and how can adequate due diligence at that stage improve the success rate of IS projects?

Twenty-four participants were interviewed over 5 months; the interviews were transcribed and analyzed through a three-stage coding process involving open coding, focused coding, and theoretical coding. I generated 1,439 codes in the first stage (open coding), and 412 codes in the initial round of focused coding. Through categorization of significant codes, I generated 170 categories of focused codes in the final iteration of focused coding. The 170 categories were grouped based on how they were related, and this process of theoretical coding led to the generation of six theoretical themes. The themes include (a) project governance and management, (b) stakeholder engagement, support, and credibility, (c) enterprise environmental factors, (d) communication and collaboration, (e) learning/knowledge management, and (f) team dynamics. The themes formed the basis of the emergent theory of IS project initiation and the recommendations provided.

The emergent theory of IS project initiation indicates that the factors represented by the six themes identified need to be addressed during project initiation and afterward to ensure project success. It was also determined that the project initiation process might differ from one organization to the other, which informed the suggestion that enterprise environmental factors need to be moderated with project governance and management factors to ensure project success. However, a critical observation from this study is that it is not enough to get strategies and structures right during project initiation; those project management strategies and governance structures need to be maintained and enforced throughout the project lifecycle for success to be achieved. This study, therefore, complements previous research in the field of IS success.

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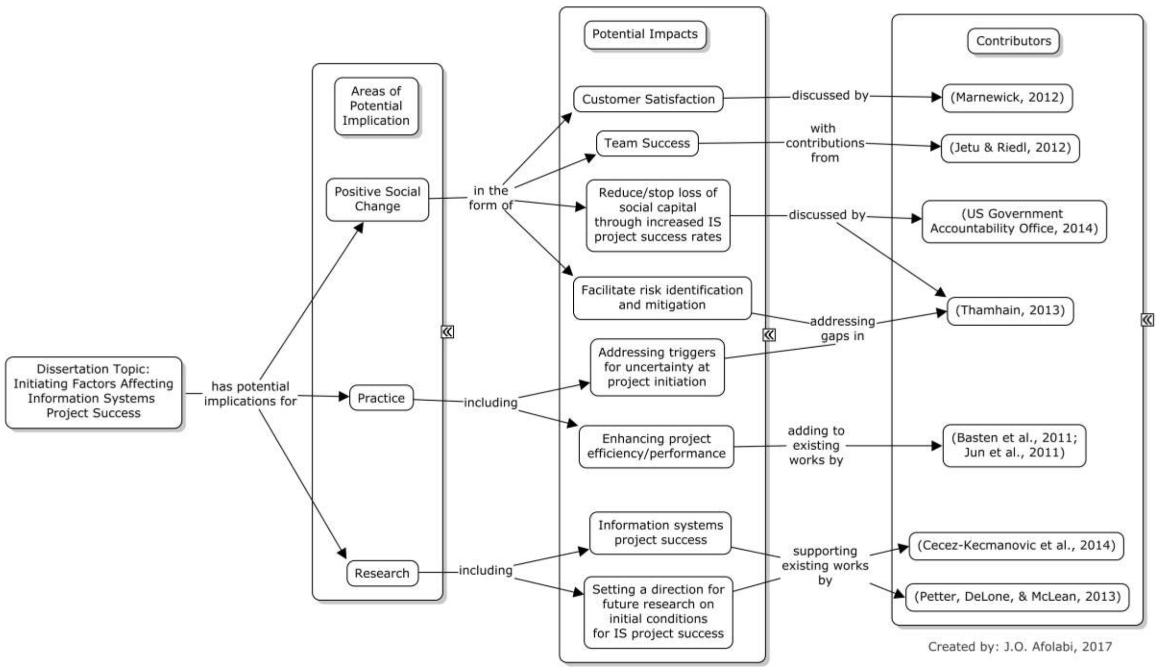
Appendix A

Significance of the Study



Appendix B

Interview Questions and Associated Research Questions

RQ#	Research Question	IQ#	Interview Question
RQ1	What project initiation factors are capable of improving IS project outcome?	1	Tell me about a project that you managed from beginning to the end.
		2	How did the project end?
		3	What key factors influenced the outcome of the project?
		4	What did you do or fail to do at the initiation of the project that had the most impact on the project outcome?
		5	If you had addressed those factors at the beginning of the project, in what ways would you have had a different outcome?

(*table continues*)

RQ#	Research Question	IQ#	Interview Question
RQ2	How can practitioners manage those initiation factors to improve the possibility of project success?	1	How did you use the initiation factors to manage uncertain events during project execution?
		2	In what ways did those factors affect project execution?
		3	How did the combination of project initiation and execution factors affect your performance on the project?
RQ3	How can the decision-making process during the project initiation phase contribute to a successful project outcome?	1	What types of decisions did you make at the start of the project that determined the trajectory of the project?
		2	In what ways did those decisions affect the project?
		3	What would you have done differently to get a better outcome?
		4	In what ways would you have implemented those decisions?

Appendix C

Focused Codes by Research Question and Coding References.

Categories/Focused Codes	RQ1	RQ2	RQ3	Total
Governance	125	36	68	229
Stakeholder engagement and executive support	118		22	140
Initiation process	86	5	24	115
Communication and collaboration.	66		29	95
Define performance/success indicators	76	1	1	78
Methodology	49	1	24	74
Competency	51	2	8	61
Team	56			56
Project objectives	48			48
Organizational change management (OCM)	39		8	47
Scope definition and management	46			46
Enterprise environmental factors	42			42
Learning: Project can be adaptive when learning is continuous		4	38	42
Resource management	38			38
Business case and agreements	32			32
Project setup	29			29
Learning/Knowledge management	28			28
Managing expectations	26			26
Resource Management - Getting the right resources at the right time			17	17
Stakeholder/Executive support and engagement		17		17
Conflict management	15			15
Adaptability	9	4		13
Scope management		2	10	12
Uncertainty management		11		11
Strategy	7		3	10
Relationship management	7		3	10
Alignment	9			9
Complexity	8			8
Contracts management	8			8
Charter	5		3	8
Verification of Assumptions	8			8
Collaboration		7		7
Risk assessment and management	7			7
Prioritization	6			6

(*table continues*)

Categories/Focused Codes	RQ1	RQ2	RQ3	Total
Resource management issues		6		6
Vendor behavior	5			5
PM Engagement - should have been involved in the sales process			5	5
Training			4	4
Business case			4	4
Sales process	4			4
Prior experience	4			4
Client behavior/actions		4		4
Systems integration	3			3
Product selection & Issues			3	3
Performance metrics		3		3
Benefits/value management	3			3
Initiation benefits		3		3
Transition planning		3		3
Lack of Business Analysts			3	3
Extra cost was not passed on to the client	3			3
Rigidity			3	3
Turnover			3	3
Executive support empowered team			3	3
Communication and collaboration		3		3
Issue resolution - Team built workarounds		2		2
Release cycle			2	2
Tools	2			2
Business case was compelling		2		2
Decision-making aligned with Success criteria		2		2
PM was engaged to rescue the project	2			2
Assumptions			2	2
Type of contract	2			2
Executive ownership	2			2
Access to the system was a useful catalyst			2	2
Solutions architecture - a more pragmatic approach could have been used			2	2
Project Management Office (PMO)	2			2
Agency (Contractual aspects)		2		2
Agency - Due to the contractual setup, the product supplier was not committed to the project after selling licenses			2	2
Vision	2			2
Risk management		2		2

(*table continues*)

Categories/Focused Codes	RQ1	RQ2	RQ3	Total
Team Location and Impact			2	2
Customer satisfaction			2	2
Credibility		2		2
High turnover of project managers	2			2
Transparency was the result of healthy team dynamics			2	2
Indecision	2			2
Release management		2		2
Solution architecture was visionary, not pragmatic	2			2
False advertising - unmet expectations		2		2
Rigid timeline	2			2
Verified assumptions at the second attempt		2		2
Adherence to budget and scope			1	1
Rushing to judgment (without analyzing problem)			1	1
Budget included a buffer	1			1
Never managed a fixed-cost project	1			1
Align methodology with success criteria			1	1
Control			1	1
Test cases influenced development			1	1
Could have hired during initiation	1			1
Clearly-defined objectives	1			1
Non-optimal contract arrangement			1	1
Scheduling did not consider public holidays	1			1
Budget-Could have negotiated a cost management protocol			1	1
Stakeholder support helped to make schedule overrun a nonissue			1	1
Organizational Culture - PM had to push back to address some cultural issues			1	1
Team adhered to objectives and constraints set at initiation		1		1
Pace of activities - Slow		1		1
Location - co-location was helpful			1	1
Participant replaced previous PM	1			1
Value or benefits realization was the focus			1	1
Participatory Kick-off Meeting	1			1
A Business case had to be presented to new managers		1		1
Performance measurement was hard		1		1
Scapegoating	1			1
Adherence to specification	1			1
Client's lack of commitment to the project			1	1

(*table continues*)

Categories/Focused Codes	RQ1	RQ2	RQ3	Total
Person without adequate domain knowledge initially ran the project	1			1
Sponsor's Competency and experience		1		1
Advice - Take the incremental delivery approach	1			1
Started without a PM	1			1
Dedication to objectives	1			1
Behavior - PM was initially aggressive	1			1
Agency - Contracts made it easier to manage vendors than internal employees		1		1
Benefits Realization-Could have put in place a process for monitoring ROI after project completion			1	1
Postcompletion follow-up	1			1
The solution's architecture changed too frequently	1			1
Postcompletion review	1			1
Transparency	1			1
The previous PM reported progress, but not much progress had been made	1			1
Misunderstanding of Roles	1			1
Deployment			1	1
Vendor managers took a back-seat approach		1		1
End-product was successful	1			1
Risk assessment could have been done properly			1	1
Process Definition		1		1
Rollback plan was not executed; project was successful	1			1
Product Acceptance	1			1
Improvisation			1	1
Product quality	1			1
Schedule changes - As recommended by the new PM			1	1
Product selection	1			1
Inconsistent and idealistic architectural principle	1			1
Change management		1		1
Security assessment of the proposed solution	1			1
Project Charter - limited to Scope definition	1			1
A Project manager was assigned	1			1
Project management-Would not have changed the approach			1	1
Initiation shaped the project, but team made adjustments based on requirements and Governance structures		1		1
Project manager was empowered	1			1
Integration		1		1

(*table continues*)

Categories/Focused Codes	RQ1	RQ2	RQ3	Total
Established project checkpoints and milestones	1			1
Strategic benefits were achieved despite cost overruns			1	1
Project on hold but will be completed	1			1
Suitability for future services	1			1
Project Schedule-Could have added time for possible third-party delays			1	1
Completed components yet to be tested by the client	1			1
Estimating – The previous team included unnecessary buffers in the budget	1			1
Team engagement - started at initiation		1		1
Project structure	1			1
Telecommunication issues required more time		1		1
Project was reassessed	1			1
Testing - Testing was comprehensive	1			1
A rollback plan could have been created	1			1
Location - Co-located and remote	1			1
Executive support			1	1
Management changes introduced issues due to change in priorities		1		1
Choice of solution design worked well			1	1
Adherence to design created at the beginning		1		1
Choice of tools			1	1
Methodology caused resistance		1		1
Failed to plan for transition to operations	1			1
User acceptance			1	1
Clear definition of objectives			1	1
More rigor in developing strategy			1	1
False product marketing - Promised feature was nonexistent		1		1
Needs assessment and review of potential solutions	1			1
Go-live with completed functionality			1	1
New PM re-assessed project's feasibility	1			1
A backup plan should have been created	1			1
Non-Disclosure Agreement (NDA) signed	1			1
Grand total	1131	147	329	1607

Note. The focused codes were generated after multiple iterations of stage-2 coding; they are listed in a descending order of the total number of references per focused code.