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Strategies Utility Business Organizations Use to Deliver Construction Projects On-Budget and On-Schedule

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

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by

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MBA, University of Bolton, 2007

BENG, University of Ilorin, 1994

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Abstract

In many organizations, capital construction projects fail at an alarming rate despite the adoption and application of sophisticated project management techniques and tools. Utility organizations that lack effective strategies to deliver construction projects on-budget and on-schedule are at a high risk of experiencing project failure. Grounded in the contingency theory, the purpose of this qualitative multiple case study was to explore strategies successful project executives in utility organizations use to deliver construction projects on-budget and on-schedule. The participants comprised 3 project executives from 3 utility organizations located in the northeastern United States who implemented strategies to complete construction projects on-budget and on-schedule. Data were collected from semistructured interviews, the organizations' project documents, and the organizations' websites. Yin's 5-step process, thematic analysis, and methodological triangulation were used to analyze the data. The following 5 themes emerged from the data: develop a detailed project scope, apply relevant project management tools, apply effective project management skills, customize project management processes and procedures, and capture knowledge and share lessons learned. A key recommendation is that project executives develop a robust format or template for the project scope development before construction. The implications for positive social change include the potential for utility organization leaders to use funds saved from reduced project failure to enhance the maintenance and expansion of the utilities' infrastructures, resulting in a higher quality of service and improve the well-being of the local communities' residents.

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Dedication

My dedication goes to my wife and children for their support, sacrifice, and encouragement during the entire DBA doctoral study program. This study would have been impossible without you all; I am eternally grateful. My dedication also goes to my parents for instilling in me the value of hard work, perseverance, and integrity, and for always believing in me.

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Section 1: Foundation of the Study

Background of the Problem

Executing projects is one of the strategies that many business organizations, large or small, across the United States are using to either maintain or expand their market base or respond to ever-changing events in their environment, to ensure their long-term survival (Adesina, Omoregbe, & Oyewole, 2015; Itegi, 2015; Kiehne, Ceausu, Arp, & Schüler, 2017; Serra & Kunc, 2015). These organizations, though expending vast sums on executing projects, are experiencing massive project overruns or even complete failures every year and consequent financial loss. This project overrun or project failure phenomenon is particularly high for capital construction projects (Aljohani, Ahiaga-Dagbui, & Moore, 2017; Gbahabo & Ajuwon, 2017). Olawale and Sun (2015) mentioned that project overrun rates for typical construction projects ranged from 50% to 90% depending on the type of project and environmental context.

As Richardson, Marion, and Onu (2015) noted, the project overrun phenomenon persists despite the adoption of project-oriented structures by organizations to integrate organizational functions and efficient application of traditional project management practices and sophisticated project management tools. As a consequence of project overruns and project failure, an estimated $122 million is wasted for every $1 billion invested in projects in the United States (Niazi & Painting, 2017; Project Management Institute, 2016). Loss of opportunity costs also run into the trillions of dollars. This issue has gradually become not only a major concern for business leaders in construction or infrastructure development organizations, but also for investors and to some extent is a

public concern (Abusafiya & Suliman, 2017; Jatarona, Yusuf, Ismail, & Saar, 2016; Sinesilassie, Tabish, & Jha, 2018). The project overrun issue thus deserves attention and in-depth study.

Problem Statement

Despite the application of sophisticated project management techniques and tools, many large capital construction projects still experience project overruns at an alarming rate (KPMG, 2017; Richardson et al., 2015). A 2015 study of construction project owners indicates only 31% of projects were completed within 10% of their initial budget, and only 29% of projects were completed within 10% of their initial schedule (KPMG, 2015). The general business problem is the inability of some project executives in utility organizations to deliver infrastructure construction projects on-budget and on-schedule, resulting in the waste of significant financial resources, loss of public reputation, and loss of business competitive edge. The specific business problem is that some project executives in utility organizations lack strategies to deliver infrastructure construction projects on-budget and on-schedule.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that successful project executives in utility organizations use to deliver infrastructure construction projects on-budget and on-schedule. The targeted population for this multiple case study were three project executives from different utility organizations located in the northeastern United States who have implemented strategies that have led to reduction in budget and schedule overruns. Applying strategies to reduce overruns

allows utilities to save funds that can then be applied for constant maintenance and expansion of utilities, resulting in improved quality of service and improved well-being of the people served by the utilities. Constant maintenance and expansion of utilities may lead to creation or sustenance of more jobs, and income from such jobs may potentially be spent in the local community, positively impacting the local economy.

Nature of the Study

I chose the qualitative research method after determining that it was the most appropriate research methodology for this study. By applying the qualitative research method, I was able to conduct an in-depth investigation of the project overrun phenomenon to derive an understanding of strategies that can be used to deliver construction projects on-time and on-schedule. Antwi and Hamza (2015) and Long (2014) noted qualitative researchers can use the semistructured interview technique to collect relevant and detailed information directly from participants who have experienced the phenomenon in order to study the phenomenon in depth. Within the context of the utility business industry, Wong (2014) suggested the application of the qualitative research method when the researcher intends to explore causal links to the phenomenon identified in the course of the study.

The quantitative research method entails the gathering of data from a large population of participants through the application of a survey instrument. Researchers then use inferential and descriptive statistics to summarize and derive meaningful interpretation to the data (Ali & Bhaskar, 2016; Rowley, 2014). I opted against using the quantitative method because I concluded that survey instrument results would not have

provided a deep understanding of the phenomenon under study. Mixed methods is a type of research approach whereby data collection, processing, analysis, and interpretation techniques associated with both qualitative and quantitative methods are used in a single study. A researcher requires a longer time period and more funding to conduct mixed-method research compared to applying either the qualitative or the quantitative approach (Antwi & Hamza, 2015; Long, 2014; Sefotho, 2015). For these reasons, I decided not to use the mixed-methods approach to conduct this study.

The research design that I applied for this study was the case study approach. Using the case study design, I was able to explore in detail the project overrun phenomenon and related issues within the context of utility business organizations. Creswell and Poth (2018) indicated that use of a case study approach enables a researcher to explore the complexities of a phenomenon within the contextual boundaries in which it exists. The phenomenological design involves conducting in-depth interviews with a small number of participants to identify and understand in depth the phenomenon experienced by the participants (Heale & Twycross, 2018; Korstjens & Moser, 2017). This design was not applied as it does not align closely with my intent to evaluate the phenomenon in the context in which it was happening. Researchers use an ethnography design for research that has to do with describing a culture and then deriving an understanding of human behaviors within the context of that particular culture (Heale & Twycross, 2018; Korstjens & Moser, 2017). The objectives of ethnography design were not aligned with the objective of this study, so the ethnography design was not applied.

Research Question

What strategies do successful project executives in utility organizations employ to deliver infrastructure construction projects on-budget and on-schedule?

Interview Questions

1. What criteria did you use to assess project performance of your construction projects?
2. What strategies did you implement to improve project performance rate of your construction projects?
3. What strategies did you implement to reduce cost overrun and how did you implement these strategies?
4. What strategies did you implement to reduce time overruns and how did you implement these strategies?
5. What challenges did you experience in implementing the strategies that you employed to reduce cost and time overruns?
6. How did you address the challenges that you faced during implementation of strategies to reduce cost and time overruns?
7. How are management or project management software tools relevant to improving project performance of construction projects?
8. What advice would you give to a utility organization that is currently experiencing poor project performance of its construction projects and wants to improve performance?
9. What other information regarding strategies to deliver infrastructure construction

projects on-budget and on-schedule do you wish to share that I have not asked you about?

Conceptual Framework

The conceptual framework is a model constituting pieces of constructs that already exist somewhere else that a researcher can apply to a research study (Tamene, 2017). Contingency theory was the conceptual framework applied to this research study. The concept of the contingency theory, as stated by Betts (2003), is that there is "no one best way to organize" and "any way of organizing is not equally effective" (Betts, 2003, p.123). One of the earliest works on contingency theory was conducted by Woodward (1965), who established that there are relationships between technology, organization structure, and performance. Fiedler established in 1967 that there is a contingent relationship between the environment, style of leadership, and effectiveness.

Islam and Hu (2012) presented a new approach to contingency theory, Islam and Hu postulated that the fit or match between certain contingent factors in an organization influences that organizational outcomes. Islam and Hu linked their perspective to the works of Khandwalla (1977), who found that there is more correlation between organizational factors like organizational structure, sophistication of control systems, and technology in effective than in ineffective organizations. Islam and Hu also noted that there is no best method to choose, interact with, and fashion an approach to fit. The effectiveness of a project, like that of an organization, is related to the contingent effect of some factors in its environment (Badara, 2017).

The contingency theory was the framework through which I explored and

analyzed the construction project overruns phenomenon. The contingency theory was an appropriate conceptual framework for this study because the theory relative to other major management theories was more aligned to achieving the goal of this study. Project management researchers have recently found that comprehensive study of a project-related issue can only be achieved by considering the relationship between the project and external contingencies that may impact the effective operations of the project (Hanisch & Wald, 2012). Sauser, Reilly, and Shenhar (2009) noted that application of contingency theory can enable a project management researcher to gain new insight for a deeper understanding of project success and failure beyond applying the traditional success factors.

Operational Definitions

Descriptive statistics: The type of statistical analysis that involves describing or summarizing data collected in the field into an organized form of information, presented in the form of tables and charts (Omair, 2014).

Inferential statistics: The type of statistical analysis used to compare results between different subgroups of data to make inferences about a certain population (Omair, 2014).

Project overrun: A situation that occurs when there is a gap between the actual project cost and estimated cost and/or when the time duration of a project extends beyond the agreed date of project delivery (Larsen, Shen, Lindhard, & Brunoe, 2015).

Schedule complexity: Organization complexity that arises due to the number or size of project activities and the extent of the interdependence or interconnectedness of

such activities (Akanni et al., 2015; Mirza & Ehsan, 2017).

Scope complexity: Organization complexity that arises due to the number of additional features, functionalities, or structure made to the project which was not part of the original project plan, either as a response to the project owner's request or due to the effect of external factors, which include market conditions, exchange rates, and price of construction materials (Akanni et al., 2015; Mirza & Ehsan, 2017).

Resource complexity: Organization complexity that arises due to the size of capital expenditures and the number and variety of financial resources required to implement a project (Akanni et al., 2015; Mirza & Ehsan, 2017).

Target population: A specific group of individuals among a general population of people who have particular attributes of interest and relevance to the research study (Asiamah, Mensah, & Oteng-Abayie, 2017).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are details about the nature of the phenomenon or methodology applied that a qualitative study researcher considers to be true without verification (Mohammed, Guillet, & Law, 2015; Nenty, 2009). For this qualitative case study, I made the following basic assumptions: (a) participants would have sufficient knowledge of the phenomenon under focus to provide detailed answers; (b) participants would provide a thorough and honest reflection of the state of their project process, methodologies, and performance; (c) project records (minutes of meetings, record of schedules and costs, planning and execution procedures reports, procurement management reports, progress

reports, etc.) presented by the three organizations for review would be an accurate representation of events, issues, and actions that had taken place during their project implementation processes; (d) project records would corroborate the interview statements of the participants; and (e) data collected from both the project records and participants' interviews would be adequate in answering the research question.

Limitations

Research limitations are potential weaknesses in a research study that are out of the researcher's control (Nenty, 2009; Preston & Barnes, 2017). These weaknesses may be in terms of type of databases or literature available for review, source or types of the data collection, sampling population or size, or data analysis process (Levitt et al., 2018; Nenty, 2009; Preston & Barnes, 2017). The limitations of this study are that the interview data were collected from only three participants drawn from three organizations. This limitation in the sample source and the number of case studies made the results of the study difficult to generalize to a larger population (Kharuddin et al., 2015; Preston & Barnes, 2017; Snelson, 2016). Furthermore, as Sutton and Austin (2015) stated, unintentional personal biases of the researcher may limit the objectivity of a qualitative research study. Sutton and Austin indicated negative impact of biases can be limited if the researcher's worldview and perspectives are articulated up-front in a clear and coherent fashion. In order to limit the impact of my biases and avoid misinterpretation of research findings by readers, I discuss aspects of my worldview that underlay the research process including development of research questions, data collection and analysis, and derivation of the findings in Section 3.

Delimitations

Delimitations are restrictions imposed on the study by the researcher; they may be in terms of geographical and conceptual scope, area of interest, or aspects of the problem (Dagar & Mathur, 2016; Nenty, 2009). In this research study, I focused on the project management effort of utility organizations in the northeastern United States to deliver infrastructure construction projects on-budget and on-schedule. In essence, utility organizations outside this region and projects that were not infrastructure construction projects and for public utility purposes were eliminated. I collected research data from project executives who had managed and completed one or more infrastructure construction projects in the past 5 years and who had successfully reduced project cost overruns and schedule overruns. The study data were not collected from project executives who had not managed and completed one or more infrastructure construction project in the past 5 years or who did not have a record of delivering infrastructure construction projects on-budget and on-schedule.

Significance of the Study

Contribution to Business Practice

Despite significant investments in construction to achieve strategic business objectives, many business organizations struggle to deliver construction projects on-budget and on-schedule (Güngör & Gözlü, 2016). The results of this research study could provide business leaders and project executives with information and strategies that can be used to improve their project management process to reduce project overruns. With project management being a key business process (Awwal, 2014), effective project

management strategies may positively impact business processes. In organizations where project management is at the core of organizational goals or business activity, business leaders may be able to build upon project management initiatives to increase the effectiveness of the organization's project investments, gain competitive advantage, and drive the organizational business success (Chaudhry, 2015; Cunningham, 2017).

Implications for Social Change

Project management is one of the key ways in which organizational leaders implement corporate social responsibility (CSR) initiatives, a strategy to ensure longtime sustainable development and survival of an organization (da Silveira & Petrini, 2018; Wang, Tong, Takeuchi, & George, 2016). An improvement in project management performance may lead to an improvement in the CSR initiatives of an organization. The findings from this study could also promote positive social change because improvement in project management performance may enable an organization to save funds. These saved funds can potentially be used by the organization to create and sustain employment and positively impact the general economy of the community by increasing tax revenues that can be used for improving infrastructure and expanding social programs (Flyvbjerg, 2014).

A Review of the Professional and Academic Literature

The purpose of this qualitative multiple case study was to explore the strategies that successful project executives in utility organizations use to deliver infrastructure construction projects on-budget and on-schedule. I carried out a comprehensive review of the professional and academic literature to explore the literature pertaining to budget and

schedule overruns in relation to the construction of infrastructure projects. The professional and academic literature review provided the background details on contingency theory, the theoretical lens which was used to view the problem; the impact of the problem on construction project management and project success; and major causative factors of budget and schedule overruns associated with construction projects.

I used Walden University Library resources, including ProQuest, EBSCOhost, and Elsevier databases, to search the literature. Specific databases included ProQuest Dissertations & Theses, Emerald Insight, Taylor & Francis Online, and JSTOR. I also used the search engine Google Scholar and the research site ResearchGate to find relevant literature. The key words used in searching the databases for references relevant to the objectives of the study included *contingency theory*, *contingency project management theory*, *construction project management*, *project management*, *project management governance*, *project success*, and *construction project failure*.

I achieved the Walden University requirements that 85% of the references be (a) peer reviewed and (b) have a publication date within 5 years of my expected graduation date. The total number of books and articles used as references for the literature review was 136. Out of the 136 references, 125 were peer-reviewed representing 92% of the total references, and 119 were published within 5 years of my expected graduation date, which was 2019, representing 88% of the total references.

Contingency Theory

The contingency theory is based on the observation that an organization's success is dependent on prevailing situational conditions (Longenecker & Pringle, 1978), that

there is “no one best way to organize,” and that “any way of organizing is not equally effective” (Betts, 2003, p. 123). Classic contingency theory emanated from the works of Burns and Stalker (1961), Woodward (1958, 1965), and Lawrence and Lorsch (1967); these researchers developed the idea that there is no single best way of managing and organizing any entity. Contrary to previous universalistic works on management, these researchers recognized and adopted situational aspects into their works. Burns and Stalker, who researched the impact an organization’s environment had on its structure, established that in a stable environment the hierarchical and bureaucratic form of organization structure (*mechanistic*) is the most appropriate, whereas in an unstable environment or environment with changing conditions, a decentralized form of organization structure (*organic*) is best. Woodward established that there is a relationship between technology, organization structure, and performance. Lawrence and Lorsch established that the degree to which an organization’s differentiation and integration align with the organization’s environment impacts the performance of the organization.

Fiedler (1967), a seminal contingency theorist, established that there is a contingent relationship between the environment, style of leadership, and effectiveness of an organization. Wooton (1977) established the importance of contingency theory to achieving organizational change. Wooton noted it is pertinent for an organization to imbibe constant change into the organization’s managerial process in order to appropriately respond to persistent instability associated with modern organizational environments.

Building on past research on contingency theory, Islam and Hu (2012) postulated

that an organization that wants to survive or perform effectively has to adopt certain organizational factors to fit the characteristics of the environment in which the organization exists. Islam and Hu noted the works of Khandwalla (1977), who indicated that there is more correlation between organizational factors such as organizational structure, the sophistication of control systems, and technology in effective organizations than in ineffective organizations. Islam and Hu also noted that another way to view the contingency theory in regard to fit is the systems approach. Islam and Hu indicated that there is no best method for choosing, interacting with, and fashioning an approach to fit.

Betts (2003) stated that contingency theory promotes the notion that the environment in which an organization exists should determine the best way to organize an organization. Betts mentioned that an organization will experience higher performance when there is a fit between the organization's characteristics and the environment of the organization. The better the fit, the higher the performance of the organization will be. Betts concluded for organizations that are looking to improve their performance, contingency theory would be a powerful organizing tool to consider.

Another researcher, however, noted some fundamental flaws with contingency theory. Schoonhoven (1981) stated that the major issue with contingency theory is that contingency is not a theory in the conventional sense of the term *theory*, but more like a strategy or approach that can be used to explain a phenomenon. Schoonhoven noted that the theory emphasizes that an organization's structure needs to fit the work performed and also be aligned to its environmental conditions in order to be a very effective organization. Schoonhoven mentioned that although the idea presented in the theory

seems clear, the substance of the theory lacks clarity. Schoonhoven also indicated that the assumptions presented by the contingency theory are rather simplistic, and that relationships between structure, technology, and organizational effectiveness are quite complicated. In its place, Schoonhoven suggested the development of the contingency theory of organizational effectiveness, which encompasses interactive, nonmonotonic, and symmetrical arguments (Schoonhoven, 1981).

Longenecker and Pringle (1978) argued that contingency theory may contain some truth; fundamentally it contrasts with what is known about management theories. Theories are normally developed around variables, the selection process of which is based upon explicit and precise principles. Longenecker and Pringle explained that contingency theory depends upon every imaginable variable and not any specific guiding principle. Longenecker and Pringle stated the contingency theory also indicated that the structure and practice of an organizational system is dependent on how the environment interacts with the organization. Longenecker and Pringle argued this perspective on the environment interaction with the organization does not consider a reverse situation, whereby the system also influences the workings of the environment. Longenecker and Pringle opined that the theory needs to have an allowance for the interdependence of system and environment, rather than the strict unilateral influence process.

Despite the several criticisms, the contingency theory is widely accepted as a major management theory, and at the structural level of analysis in organization theory, it is recognized as the dominant theoretical model (Betts, 2003; Longenecker & Pringle, 1978). The concept of contingency theory, which began as an approach to leadership, has

since extended into other management and professional fields including accounting, production, and project management (McAdam, Miller, & McSorley, 2019; Otley, 2016; Shenhar, 2001).

Contingency Theory Applications

Application to organizational leadership. The seminal works by Woodward (1958, 1965), Burns and Stalker (1961), Lawrence and Lorsch (1967), and Fiedler (1967) were the earliest to establish the contingency theory tenet that there is no single best way of managing and organizing an entity. Since then, contingency theory researchers have focused on a variety of additional topics and applications of the theory. Applying Fiedler's leadership perspective on contingency theory, Houghton and Yoho (2005) conducted research to determine whether self-leadership is a contingency theory that is best applicable to certain situations, or whether it is a concept that can be applied to all employees in an organization in any circumstance. The result of Houghton and Yoho's study indicates that the application of self-leadership should be considered in situations where tasks are not structured, the potential for crisis is low, and follower development is high. Houghton and Yoho determined that the optimal leadership approach for any situation will depend on the following contingent factors: (a) follower development, (b) situational urgency, and (c) task structure.

Investigating the contingency leadership through another framework, da Cruz, Nunes, and Pinheiro (2011) used the least preferred coworker (LPC) scale to measure leadership styles and validated the applicability and relevance of the theory as advocated by Fiedler (1967). In their study, da Cruz et al. found that low LPC will be more

applicable for conditions that are unfavorable, whereas a high LPC applies to conditions that are more favorable. These findings align with Fiedler's perception that in acute situations task-oriented leaders are more effective, whereas in favorable situations relationship-oriented leaders are more effective, and that a leader's success depends on applying the best leadership style.

Vidal, Campdesun, Rodrıguez, and Vivar (2017) indicated that the leadership of an organization is about the process of exerting influences on a group of people in order to achieve the goals of the organization. Vidal et al. observed that it has become more challenging to exercise leadership due to increasing complexities of modern work environments. Organizational leaders are finding it more difficult to align followers' interests with the organization's vision, mission, and values. Vidal et al. agreed in principle with Fiedler and other scholars who have suggested that there is no specific leadership style that is better or worse than others and that the approach to leadership needs to vary contingent on the prevailing situation or context. Vidal et al. indicated that their study on contingency theory did not provide conclusive evidence of the relationship between leadership and particular situations. The researchers noted that there are some ambiguities existing in the leadership contingency theory, which has in effect limited its validation (Vidal et al., 2017).

Popp and Harwich (2018) conducted a study on the effects of employees' behavior and leadership contingency theory in the context of the service sector, the results of the study also confirmed the fundamentals of contingency leadership theory though they differ from Fiedler's (1967) perspective on contingency leadership theory.

The results of Popp and Harwich's study showed that relationship-oriented behavior offers a more effective way for employees to attain success than task-oriented behavior, irrespective of the type of service situation. This finding contrasts with Fiedler's finding that task-oriented leaders were more effective.

Application to organizational management and accounting. K. Ismail, Zainuddin, and Sapiei (2010) mentioned that since the contingency theory was developed from organization theory in the early to mid-1960s, the acceptability, application and significance of the concepts to accounting and management practice have increased. K. Ismail et al. stated that, per the management contingency perspective, the most appropriate managerial techniques or system applicable to an organization will be contingent on certain factors in the organization's internal and external environment. K. Ismail et al. found that in the same perspective that no single accounting system would be appropriate for all organizations investigated because certain contextual factors differ from one organization to another. K. Ismail et al. presented the contextual factors that they believe should be given careful considerations when designing an organization's accounting information or system, includes the organizational technology, structure, culture, size, and strategies.

McAdam et al.'s (2019) study on contingency management not only validated Burns and Stalker (1961) perspective on the theory but extends and presents new understanding on the application of contingency to the field of quality management. McAdam et al. concluded from their research findings that in a stable and predictable environment organizations tend to adopt an organizational structure that is more

mechanistic in nature and quality management practices that are simple and standardized. In contrast, in an uncertain and complex environment, organizations are inclined to adopt an organizational structure that is more organic in nature and quality management practices that are more complex and capability to adapt to prevailing context (McAdam et al., 2019). McAdam et al. suggested that organizations, especially small to medium enterprises (SMEs), that operate in a turbulent business environment consider applying the contingency theory approach to investigate their quality management practices towards developing a better strategic alignment with the organization.

Application to construction and infrastructure development projects. Puddicombe (2011) found that in part the poor project performance experienced in architectural, engineering, and construction (AEC) industries can be explained by the higher acceptance of the deterministic approach to project management in the industries than the contingency approach. Puddicombe stated that in these industries contingency is perceived mostly in terms of the resources reserved to address certain events that may occur, the specific number of which is uncertain. The less defined the project is, the higher will be the contingency requirement reserved for the project (Puddicombe, 2011; Touran & Liu, 2015). Puddicombe submitted that AEC organizations need to shift to adoption of the contingency theory into the organizations' project management approach, a concept which has a much wider purview than management of contingency budget. Puddicombe indicated that the adoption of the contingency concept by an organization entails executing a project from concept to completion based on project management governance, technique, or strategy aligned with the characteristics and the complexity of

of the environmental conditions of the project.

Suda, Rani, Rahman and Chen (2015) indicated that contingency theory is about deriving a fit between an organization and environmental conditions, while also considering internal contingencies which comprises of (a) organizational structure, (b) specialization, and (c) technologies. The whole essence of deriving a fit is to ensure improved performance of the organization. Suda et al. mentioned that contingency theory should be used for complex managerial and project management decision-making that involves large infrastructure projects, especially during preplanning stages (including planning stages), instead of the utility theory, reliability theory, or resource-based theory that are normally used. Suda et al. cited the incident of NASA's Mars climate orbiter loss and stated that the results of the study to investigate the loss showed the failure occurred not due to technical problems but due to issues relating to project management. The failure occurred due to the adoption by the management of the wrong project management approach to the specific project (Sauser, Reily, & Shenhar, 2009; Suda et al., 2015).

Application to project management. Shenhar (2001) stated that the popular notion in project management practice to characterize all projects to be fundamentally similar by the application of a "one size fits all" project management system (p. 394) is flawed. In the research carried out, Shenhar found that project management styles with which projects are managed seem to cluster in line with technological uncertainty and system complexity of the project. Shenhar surmised using the classical contingency theory that technological projects are affected by different environmental conditions, and

in effect warrants different project management style.

Shenhar (2001) developed and proposed a two-dimensional theoretical model consisting of technological uncertainty dimension (first dimension) and system complexity dimension (second dimension) for the classification of technical projects. The technological uncertainty dimension is composed of the following four categories: (a) low-tech-projects (rely on readily available and mature technologies); (b) medium-tech projects (rely mostly on existing and mature technologies, and a small amount of new technology); (c) high-tech projects (rely on the development of at least 50% of new technologies); and (d) super high-tech projects (rely on the development of completely new technologies). The system complexity dimension (second dimension) is composed of the following three categories: (a) an assembly-level -project (performance of one of two types of functions to achieve a single product); (b) a system-level project (performance of a wide range of activities and functions to meet an organization need or mission); and (c) an array-level project (collection of different systems located in different geographical areas functioning together to make a particular objective). Shenhar submitted that the application of a project-specific contingency approach to project management in organizations would promote better project performance.

Sauser et al. (2009) built on works done by classic contingency theorists, especially Woodward's (1958, 1965) perspective. Sauser et al. found that the product, the task, and the environment need to be aligned in order to achieve optimum project management effectiveness within a project management organizational environment. In essence, Sauser et al. argued the effectiveness of project management is dependent on

on how well it can adjust to its environment.

Howell, Windahl, and Seidel (2010) investigated the application of contingency theory to project management. Howell et al. indicated that the traditional methods presented by various project management professional associations are often narrowly focused, not logically linked to objectives, and not quite sensitive to the impact of contingency factors on the project. Howell et al. found aside from uncertainty indicated in literature that complexity, urgency, team empowerment, and criticality are other important contingency factors that significantly impact a project. Howell et al. used these factors and other information derived from the research to develop a project contingency framework. The graphical representation of the framework (see Figure 1) indicates uncertainty on x-axis and consequences on the y-axis, and also show the location of three management models (plan-driven, problem structuring, and agile) relative to uncertainty and complexity. Howell et al. proposed organizations should adopt the framework to determine the best management process for a specific project or project phase. The framework can also be applied by organizations to improve their project selection, project implementation processes, and project risk assessment (Howell et al., 2010).

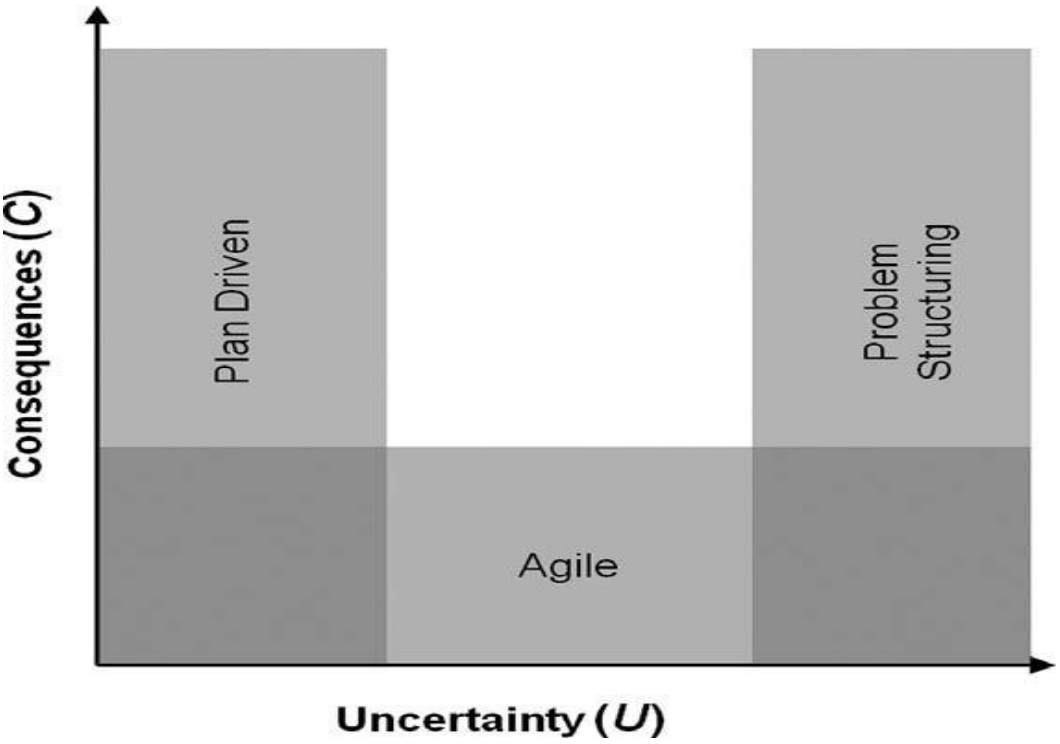

Figure 1: Process models and the uncertainty-consequences (UC) framework. Adapted from "A Project Contingency Framework Based on Uncertainty and Its Consequences," by D. Howell, C. Windahl, and R. Seidel, 2010, *International Journal of Project Management, 28*, p. 260. Copyright 2010 by Elsevier Ltd. Adapted with permission.

Kureshi (2013) investigated the link between project performance and contingency theory. Kureshi found that as a project progress passed 25% completion the application of the project management knowledge areas and practice tools becomes 30% or less useful to the project manager for the successful implementation of the project. Kureshi found that project managers tend to rely less and less on project management knowledge areas and practice tools and respond more to situations in line with their experience or innovative ideas as the project progresses. Kureshi stated the project performance tools were found to be more useful to the project managers in the area of communication, stakeholder management and integration. Kureshi submitted that in the

industries investigated, construction, consulting, and technical, the way project managers perform tasks are more situationally dependent than previously realized.

Zheng and Carvalho (2016) indicated a flexible approach to project management is required due to the increasing complexity and uncertainty in the environment in which many projects are now being executed. Zheng and Carvalho presented an uncertainty management framework that can be applied for project management, developed in part from the characteristics of the uncertainties discovered, which include market uncertainties, technological uncertainties, organizational uncertainties, resource uncertainties, and communication uncertainties. Cole (2017) indicated that the organization's project management approach to infrastructure projects should not focus only on the uncertainty and complexity surrounding the project but should extend same to the project phases. Cole elaborated that organization project management needs to have the capability to determine and apply the most appropriate methodologies to each phase in the project lifecycle. The most appropriate methodology will be contingent on the methodology that best fits the project structure, complexity, and task at each project phase.

Project Success

Project success criteria and critical success factors. The concept of project success is a not only a broad and multidimensional concept in project management, but also entails certain complexities and vagueness in its application relating to the construction industry (Ha & Tran, 2018). Ha and Tran (2018) stated project success is the meeting of predetermined project objectives or project success criteria, as measured at the

completion of the project. Similar to other research in the past, the outcome of the research conducted by Serrador and Turner (2015) supported and confirmed that traditional project success criteria can be used as a project success measure. Serrador and Turner found that traditional project success criteria have a moderately high correlation to the general success of a project. Despite the application of the traditional project success criteria, also known as the triple constraint (time, quality, and cost), by practitioners for several years as project success measurement, project performance or success rates are still failing to meet expectations at a very high rate (Berssaneti & Carvalho, 2015; Joslin & Müller, 2016b).

Ha and Tran (2018), Joslin and Müller (2016b), and Ramlee et al. (2016) indicated that critical success factor more than the traditional project success criteria should be the focus for determining project success. Ha and Tran, Joslin and Müller, and Ramlee et al. found that the traditional project success criteria are inadequate to determine project success in today's project environment. The concept of critical success factors presents a much wider scope and more flexibility in the determinant of project success than traditional project success criteria. The proponents of the critical success factors believe there should be less focus on any generalized way of measurement and more focus on the factors in the environment in which a project operates and the impact those factors have on project success (Ha & Tran, 2018; Joslin & Müller, 2016b).

Ramlee et al. (2016) found that beyond cost, time, and quality, that management, technology, customer satisfaction, safety, organization and environment are elements that that significantly impacts construction project success. Ramlee et al. suggests that these

factors should be considered as critical success factors for construction projects. Using contingency theory as a theoretical lens, Joslin and Müller (2016b) found that application of the stakeholder-orientated project governance framework can positively impact the project environment and invariably impact project success. Joslin and Müller also found that application of a comprehensive project management methodology by a project manager can have positive impact on project effectiveness and increase chances of success. Joslin and Müller proposed that stakeholder and project management methodology should be applied as a success factor. In another notable study, Du Randt, van Waveren, and Chan (2014) found that a competent project manager, a person that has good leadership skills and commitment, learns from past experiences, and is critical to achieving project success. Du Randt et al. suggested that a competent project manager should be considered as the most important critical success factor.

Williams (2016) advocated application of both project success criteria and critical success factors, instead of applying only one concept for construction project success determination. Williams noted in a construction project there are significant interconnections and interrelationships among elements associated with both concepts and surmised that the differences among project success criteria and success factor concepts are minimal. Nubuor, Hongyi, and Frimpong (2017) presented a similar opinion, which indicated support for application of both concepts for determination of construction project success. Nubuor et al. noted the two concepts; project success criteria and critical success factors have clear distinctions, and the distinctions should be identified, and the concepts applied separately. Nubuor et al. indicated that project

success criteria are geared towards achieving project management success, whereas project critical success factors are geared towards achieving the project objective set by the organization, an objective often influenced by the project or the industry environment. In essence, the critical success factors determined for a particular project environment may not be directly applicable to another project as every project has its unique nature or environment (Nubuor et al., 2017).

Project benefits realization management approach. Starting from the early 2000s, as the importance of using project investment as organizational business strategy to respond to fast changes in the global business environment increased, this phenomenon prompted some practitioners to advocate for less emphasis on measuring project success using the traditional project management approach, which is product output-oriented (Chih & Zwikael, 2015; Drabiková & Svetlík, 2016; Mossalam & Arafa, 2016). Instead practitioners suggested that the more business-oriented approach, known as the application of benefits realization approach, receive more consideration (Badewi, 2016; Drabiková & Svetlík, 2016; Serrador & Turner, 2015). Serra and Kunc (2015) described benefits realization management as the process of planning, organizing, and measuring that ensures strategy planning and project execution are in synchronization, thereby increasing the potential for the realization of the actual value of the project.

Gomes and Romão (2016) mentioned that a successful project is one that on completion enables an organization to realize the desired business goals. Gomes and Romão indicated to ensure project success, from initiation to completion continuous alignment must exist among project management implementation processes, project

governance, and the general organizational business strategies. Musawir, Serra, Zwikael, and Ali (2017) investigated application and interrelationships between the concepts of project governance, benefits management, and project success. Musawir et al. found that application of benefits realization management, one of the effective project governance processes, impacts the three dimensions of project success and project management performance, and also supports organizational strategy. Musawir et al. noted that the relationship is not a direct cause-and-effect relationship but is more reflective of a complex interaction (Musawir et al., 2017; Serra & Kunc, 2015).

Badewi and Shehab (2014) investigated whether the application of benefits management practice in project management is more effective in achieving project benefit than traditional project management practices. Badewi and Shehab found that contrary to what some of the extant literature indicated, benefits realization management does not have a significant impact on project benefit realization. On the contrary, the use of traditional project management practices has significant influence on project success and results in business benefits that include on time delivery and no cost overrun. In essence, the traditional project management approach has more effect on measurement and achieving project success than the benefits realization approach. Badewi and Shehab also found that combining both project management and benefit management practices to manage a single project significantly increases the probability of achieving project success instead of applying either of the two approaches independently.

The quest to achieve consensus on the definition, identification, and measurement of project success will continue to remain elusive in project management practice

(Berssaneti & Carvatlho 2015; Nubuor et al., 2017). Berssaneti and Carvalho (2015) mentioned this situation persists because the internal and external environment contexts in which projects are implemented differ from one organization to another. Berssaneti and Carvalho stated in effect what constitutes project management success or project success of a construction project depends primarily on the perspective of those individuals entrusted with evaluating the success of the project.

Project Overruns in Construction Project Management

Project budget overruns can be described as the difference between the estimated construction project cost and the actual cost to complete the project (Niazi & Painting, 2017), or as the unexpected additional cost incurred by a project owner or contractor to complete an infrastructure project (Al-Hazim, Salem, & Ahmad, 2017; Shete & Kothawade, 2016). A project schedule overrun is the delay in time beyond the expected construction completion date or the project time extension beyond the contractually agreed deadline due to certain difficulties (Larsen et al., 2015; Shete & Kothawade, 2016). A project that experiences budget or schedule overruns has the potential of becoming a failed project, a situation that may negatively impact an organization's strategic business objectives, financial wellbeing, project stakeholders' interests, and the relationship of project owners and contractors in a profound manner (Aljohani et al., 2017). Project overruns can in particular lead to critical situations for organizations in construction or infrastructure development business projects, as they mostly operate within constraints of limited budgets (Aljohani et al., 2017; Ramabhadran, 2018).

Project budget and schedule overrun phenomena are happening and the problem

appears to be growing in the construction industry for various reasons. Durdyev, Omarov, Ismail, and Lim (2017) and Mulla and Waghmare (2015) suggested project overruns occur due to inadequate monitoring and control, frequent design changes, lack of proper communication on the project site, lack of proper site management and poor relations between the contractor and management. Niazi and Painting (2017) and Vaardini, Karthiyayini, and Ezhilmathi (2016) suggested potential causes include ineffective project leadership, weak financial capabilities of the contractor, sudden escalation in material prices, and poor support to the contractor.

The major causes of project overruns were discovered to occur or start at the preconstruction stages, prominent among these factors are ineffective contract awarding strategy and inaccurate estimation of project costs and schedule (Prater, Kirytopoulos, & Ma, 2017; Shete & Kothawade, 2016). Many organizations tend to use a traditional contract awarding strategy in which the construction contract is awarded to the lowest bidder (Shete & Kothawade, 2016). The traditional contract awarding process does not enable high consideration to the project characteristics, contract type, and contractor capabilities as factors in selecting a contractor. Often the bid-winning contractor ends up lacking the proper contractual, technical and site management experience necessary to complete a construction project of a certain size and complexity within required budget, schedule, and quality (Matin, 2016; Mulla & Waghmare, 2015; Shete & Kothawade, 2016).

The basis for poor project performance has been found to be intricately linked to underestimation or inaccurate estimation, which develops as an outcome of optimism bias

or strategic misrepresentation (Prater et al., 2017). Optimism bias is the tendency of a decision-maker to be too optimistic about the outcome of a planned future event; not given adequate consideration to the history of such event or unforeseen circumstances that may occur (Prater et al., 2017). Strategic misrepresentation is the actions by a decision-maker to deliberately overestimating or underestimating the outcome of a project activity to ensure the projects proceeds (Prater et al., 2017; Saidu, Shakantu, Adamu, & Anugwo, 2017). It is cogent that the budget and schedule are accurately estimated, and the complexity is not underestimated as unrealistic contract duration or cost estimation often leads to project time delays and cost increases (Famiyeh, Amoatey, Adaku, & Agbenohevi, 2017; Ramabhadran, 2018).

Some other reasons or factors that have been found to significantly contribute or lead to the development of the project overrun phenomenon in the construction industry, are also receiving increasing attention. For example, Saidu et al. (2017) found that significant relationship exists between causative factors for material waste and those of cost overruns at the pre-construction, construction, and post-construction phases of a project. Saidu et al. deduced that non-implementation of an effective construction material waste management process during all construction stages can lead to the occurrence of project cost overrun. Akanni et al. (2015) and Mulla and Waghmare (2015) mentioned that many organizations have yet to embrace the paradigm shift from the application of traditional project management and performance measurement systems to dynamic project management systems. Akanni et al. (2015) and Mulla and Waghmare (2015) suggested that as the traditional project performance control is less flexible to deal

with serious external complexities, which include rapid changes in political and economic realities, and internal complexities, which include managing varied interests of many stakeholders, that project cost and schedule is being impacted (Akanni et al., 2015; Mulla & Waghmare, 2015).

Ahiaga-Dagbui, Love, Smith, and Ackermann (2017) and Sohi, Hertogh, Bosch-Rekveldt, and Blom (2016) argued that there is no particular cause or causes that are generally accepted to affect project overrun the most. What is apparent is that the causes for project overrun are found to be intricately related and dependent on the dynamic interaction among several variables within a specific project environment. The focus of practitioners goes beyond understanding any specific cause or causes to understand the specific and complex environmental project context that underlies the cause or causes (Ahiaga-Dagbui et al., 2017; Rathi & Khandve, 2016; Sohi et al., 2016).

Contractor-Related Factors

Contractor-related factors and causes of delay and cost overrun. Contractor-related factors are one of the important causes of delay and cost overrun in construction projects (Alamri, Amoudi, & Njie, 2017; Kumar, Sharma, & Trivedi, 2017). Alamri et al. (2017) found out that delays in construction project completion tended to emanate from poor planning and scheduling of work, poor construction estimation, and poor site management by the contractor. Poor site management results from a contractor's inability to effectively manage a site; for example, a contractor displays poor site management if a conflict arises on site and the contractor does not respond in a timely manner to mitigate the issue.

Aljohani et al. (2017) mentioned that delay and cost overrun occur when a contractor does not have access to sufficient funds and undertakes a construction project or lacks a strong project financial management structure to control cost and cash flow while executing the construction project. For instance, if the contractor is unable to pre-finance the projects prior to receiving the periodical reimbursement from the client the contractor will struggle to keep up with the project schedule which will in turn impact the project cost (Abidali & Alli, 2018; Aljohani et al., 2017). Other causes of contractor-related delays include a shortage of construction materials, use of inefficient equipment, engaging inexperienced subcontractors, payment delay to subcontractors, disputes with the client and consultant, and lack of highly qualified and experienced staff on the project team (Alamri et al., 2017; Lessing, Thurnell, & Durdyev, 2017).

Contractor competence and contractor selection process. Ling and Ma (2014) investigated the competency of contractors and consultants, and communication among members of the project team in reference to project outcome. Ling and Ma found that contractor competence has a more significant relationship with project outcomes than consultant competence. Ling and Ma elaborated that a contractor's superior market or industry knowledge fosters timely project completion and quality performance in comparison to similar results for a consultant with only industry knowledge. Ling and Ma mentioned that it is essential for an organization to concentrate more effort to the contractor evaluation and selection process, because engaging a competent contractor instead of a consultant can lead to expected project outcomes. The result of a recent study on the relationship between construction performance evaluation and contractor

characteristics conducted by Konno (2018) closely aligns with Ling and Ma's submission on the relationship between contractor competence and project outcomes. Konno found that contractors with more years of experience in the construction business and higher net sales tended to have significantly better construction performance.

Kumar et al. (2017) emphasized that an important factor, which underlies most of the other contractor-related factors, is the hiring of the contractor for a project in a field that the contractor has limited experience or lacks competencies. For instance, a lack of project-specific technical expertise may lead to rework of components of a project, resulting in project delays and increased project costs (Aljohani et al., 2017). This situation exists because selecting a contractor based on the history of previous projects and knowledge of construction methodology does not usually takes priority in the selection process of many organizations (Rashvand, Majid, & Pinto, 2015). The external social, economic, and political factors, which include local laws and regulations' hiring protocols, are significant in their influence on the selection process (Samarghandi, Tabatabaei, Taabayan, Hashemi, & Willoughby, 2016).

Strategies for managing contractor related factors. A high level of threats or risks is prevalent in the construction industry (Ortiz, Pellicer, & Molenaar, 2018). These threats or risks have the potential to seriously jeopardize the project completion period, the fulfillment of scope, and the targeted project cost. Ortiz et al. (2018) found that using a time and cost contingencies management tool is effective in managing threats or risks and in effect increases the probability of achieving higher project performance. Ortiz et al. further stated that the most common strategy used in contingencies management is the

acceptance strategy. The strategy entails building into a contract or construction process a certain amount for contingency reserves, i.e., time, money, or other resources, to deal with the potential risks depending on magnitude of the risk assessed (Ortiz et al., 2018; Salah & Moselhi, 2015).

Khanzadi, Eshtehardian, and Chalekaee (2016) mentioned that due to dynamic changes in the construction project environment, contractor and owner interests often conflict which invariably raises the probability of delays in project completion. Khanzadi et al. noted that both parties should try to avoid delays for different reasons. Khanzadi et al. stated if a project is delayed, the owner will not only lose operational profit but may have to pay a contractor additional fees for increased overhead costs. For the contractor, if a project is delayed, contractor may have to pay delay penalty fees if stipulated in the contract and may lose the chance to qualify for a new contract. Khanzadi et al. proposed the adoption of a conflict management tool to better manage and deal with the problem of the dispute between the owner and the contractor. Through the application of the tool a deeper understanding of the situation and possible resolution strategies are possible, thereby leading to conflict resolutions within a short time frame. When clients and contractors resolve issues in a timely manner, the potential for project overruns to occur decreases significantly (Khanzadi et al., 2016).

Construction Project Leadership Factor

Project leadership. The project manager is the person that oversees the project execution process and has the responsibility of leading the project team to achieve the project objectives in a given situation (Ahmed & Anantatmula, 2017; DuBois, Hanlon,

Koch, Nyatuga, & Kerr, 2015). The project manager also has the responsibility to ensure the support of senior management and manage stakeholders' expectations (Anand, Seetharaman, & Vaidya, 2016; Cole, 2017). The project manager is expected to possess technical expertise, management skills, and necessary leadership competencies (Ha & Tran, 2018; Sousa, Dias, Moço, Saldanha, & Caracol, 2017).

Lategan and Fore (2015) reported that a project manager having management skills without having leadership skills could lead to underperformance of a project or even project failure. Lategan and Fore noted that organizations find it hard to differentiate between characteristics of a manager and a leader. Lategan and Fore mentioned that there is a significant difference between a manager and a leader; a manager tends to be concerned about how to execute a task, while a leader usually more concerned about how to achieve a vision. A manager tends to be adaptive to change, while a leader seeks ways to inspire a change. A leader relatively is more sensitive, demonstrates a high level of interpersonal skills, enhances the team capabilities, and avoids using control or coercion as the main method for ensuring authoritative acceptance (James, 2018; Lategan & Fore, 2015).

Developing and applying effective project leadership skills is ever so important in the construction industry now than before. Potter, Egbelakin, Phipps, and Balaei (2018) indicated that because of globalization, people employed in construction industry come from diverse backgrounds and professional cultures and are tasked to accomplish short-term project goals in a varied and uncertain operating environment. This situation has made the construction industry one of the most difficult environments for a project leader

to successfully lead people to effectively achieve organizational objectives (Potter et al., 2018).

Project leadership and project success. Redick, Reyna, Schaffer, and Toomey (2014) developed and applied the four-factor leadership model of effective project leadership to study leadership effectiveness in project-based organizations. The four-factor model of effective project leadership consists of these elements: (a) self-leadership, (b) managing others, (c) psychological factors, and (d) environmental factors. Redick et al. showed that those project leaders that demonstrated interpersonal and intrapersonal skills were more effective in managing project teams.

Ha and Tran (2018) reported that the competence of the project manager has relevance to the success of the project. Ha and Tran indicated that a competent project manager would have above average intelligence and good problem-solving ability, among other behavioral or motivational characteristics associated with intelligence quotient. Tabassi, Argyropoulou, Roufechaei, and Argyropoulou (2016) reported that project success is found to have significant relationship with a manager's leadership style and competences. Tabassi et al. also mentioned that project leadership competencies could be evaluated using the intellectual, managerial, and emotional and social dimensions.

Zuo, Zhao, Nguyen, Ma, and Gao (2018) examined the effect that soft skills may have on project critical success factors. Zuo et al. found that the soft skills of project managers are a key contributor to project success. In the construction project context, the soft skills Zuo et al. found to be applicable include effective communication, teamwork

and collaboration, conflict management, and achievement motivation. In another study conducted to determine project manager's leadership competence role in project performance, Ahmed and Anantatmula (2017) discovered that people-related factors of leadership competence have a significant effect on project performance in respect of cost, schedule, quality and also stakeholder satisfaction.

Project leadership styles and models. Aga, Noorderhaven, and Vallejo (2016) submitted that within the context of the developmental project, transformational leadership tends to have significant direct and indirect effect on the project. Project managers who are transformational leaders tend to have the power to persuade and motivate followers to perform beyond their normal capabilities, facilitate team cohesion and mutual understanding, encourage an open exchange of ideas and analytical approach to resolving issues, and promote certain set of core values in team members (Aga et al., 2016; Anand et al., 2016). The exhibition of such traits by a project manager contributes to creating an atmosphere whereby team members can continue to put in their best to realize project success. Aga et al. submitted that project-oriented organizations need to promote transformational leadership style among their project managers, as such leadership style will positively impact their project outcome.

Potter et al. (2018) conducted a research on transformational leadership behaviors of construction project managers. Potter et al. found that transformational leaders tend to have a high level of emotional intelligence, a characteristic that enables them to control better and understand their own emotions and thereby able to resolve disputes and manage relationships. Potter et al. proposed individuals that naturally use

transformational leadership style should be considered for project manager position. Potter et al noted possessing transformational leadership style will be quite valuable in a situation whereby the leadership role requires interacting extensively with people from diverse backgrounds and on a variety of levels. Similarly, in a research study of project manager's perceptions on effective leadership styles, Sousa et al. (2017) found that transformational leadership style is quite more efficient in project management than other styles. A project manager that uses transformational leadership tends to be better at making a decision and motivating the team to make the extra effort, skills that are fundamental to achieving project management success (Qubaisi, Elanain, Badri, & Ajmal, 2015; Sousa et al., 2017).

Raziq, Borini, Malik, Ahmad, and Shabaz (2018) in their research study on leadership styles, goal clarity, and project success confirmed that transformational leadership style has a high positive association with project success. In divergence from the submissions of Potter et al. (2018) and Sousa et al. (2017) on project leadership, Raziq et al. (2018) also found that another leadership style, transactional leadership, could strongly impact project success, especially in terms of its contingent reward aspect. Raziq et al. suggested that organizations need to consider adopting a dynamic or multiple leadership style approaches instead of focusing on a particular approach. Applicable project leadership style should be contingent on the stage of the project life cycle or project situation (Raziq et al., 2018). Kariuki (2018) found that aspects of both transformational and transactional leadership styles should be adopted as appropriate for a complicated project situation, which supports the contingency theory on leadership.

Pretorius, Steyn, and Bond-Barnard (2017) in their study on leadership styles and their effect on project performance explored the importance of the vertical, shared, and horizontal styles of leadership in the project management team. Pretorius et al. (2017) found that the more appropriate balance a project management team can achieve between vertical and shared leadership styles the higher the probability of achieving their project management targets. Pretorius et al. noted that organizations must strive to achieve an appropriate balance between these leadership styles in order to meet the unique leadership demands of an uncertain and complex project environment. Pretorius et al. stated the factors that inform an appropriate balance include project type, stage in the project life cycle, and level of organizational project management maturity. The concept of balanced leadership from the perspective of Yu, Vaagaasar, Müller, Wang, and Zhu (2018) is based on the premise that vertical leadership can be supplemented by horizontal leadership. Balanced leadership involves transitioning leadership authority between the vertical leader (project manager) and the horizontal leaders (team members) back and forth for specific tasks during a project and is dependent on the nature of the task and project situation (Pilkienė, Alonderienė, Chmieliauskas, Šimkonis, & Müller, 2018; Yu et al., 2018).

Understanding the sort of leadership qualities or leadership approach that needed to be encouraged is of great interest to organizations that want to improve project performance (DuBois et al., 2015). The traditional leadership approach centered on using power and authority to get individuals to implement tasks and processes required by the leaders has become less effective in managing project in complex project environments

(Ha & Tran, 2018; Tabassi et al., 2016). Researchers have proposed the application of several types of leadership styles and models, including situational leadership, transactional leadership, for project implementation (Qubaisi, Elanain, Badri, & Ajmal, 2015; Sousa et al., 2017). Conversely, DuBois et al. (2015) stated organizations should not focus on selecting a project leader based on any specific leadership theory or style, but rather based on possessing traits and leadership skills necessary or adaptable to the organizations' particular project environment and project management practices.

Construction Project Stakeholder Factor

Project stakeholder in project management. The construction project stakeholder is a person, group, or entity that may be directly or indirectly affected by a construction project implementation activity or eventual outcome of the project (Aragonés-Beltrán, García-Melón, & Montesinos-Valera, 2017). The stakeholder's interest or activity may negatively or positively impact the performance or the completion of the project (Yang, Wang, & Jin, 2014). The project stakeholders are categorized mainly into two groups: the internal stakeholders and the external stakeholders (Chan & Oppong, 2017). The internal stakeholder is often the project owner or individuals within an organization that have some managerial or financial authority over the project. The internal stakeholders may also be an organization or individuals that have some contractual relationship with the owner of the project, which may be the project leaders, project financiers, project designers, suppliers, contractors, and subcontractors (Chan & Oppong, 2017; Kazbekov, Wegerich, Yakubov, Musayev, & Akramova, 2015).

The external stakeholders are usually external institutions, groups, or individuals

not directly involved in the project but will be impacted by the project in a certain way. These external stakeholders can include the local community, potential customers or users, local government authorities, regulatory agencies, trade union, and environmental protection organizations (Chan & Oppong, 2017; Kazbekov et al., 2015). Meeting the demands, requirements, or interests of stakeholders could be difficult to understand or manage (Wu & Eisner, 2018). The demands of the stakeholders may be fuzzy, i.e., no clear boundaries (Haixin, Houli, & Zuhe, 2015). The demands may be varied and random, coming from different stakeholders at different times. The demands may be dynamic, changing at different stages of the project. The demands may even be contradictory to other demands from the same stakeholder or another stakeholder (Haixin, Houli, & Zuhe, 2015).

The significance of stakeholders in project management, contribution to construction project performance, impact on project success or failure, and realization of the organization's business strategic objectives cannot be understated (T. H. D. Nguyen, Chileshe, Rameezdeen, & Wood, 2019; Rajablu, Marthandan, & Yusoff, 2015). Srdić and Šelih (2015) reported a project owner, a major stakeholder, can significantly cause schedule delay and affect project outcome by having financing difficulties, not appointing a project manager on time, using inadequate operational plans, poor management of the contractor, and inability to effectively manage conflict between the engineer and the the contractor, and among major stakeholders.

Emphasizing the importance of project stakeholder and its proper management, Wegerich, Yakubov, Musayev, and Akramova (2015) cited the complex project situation

of water infrastructure projects owned by some water users' associations. Wegerich et al. found that a change in the membership composition of the water users' associations (project owners) with the attendant realignment of coalitions and interests, coupled with lack of proper knowledge management of project experiences, led to poor project performance and eventually project failure.

Mok, Shen, and Yang (2015) investigation into an infrastructure project in a rural community revealed that while the government interest is about ensuring the maximum potential economic benefit of the project is realized. The local community interest is about the sustainability of the land use, and the interest of persons directly affected by the project is about collecting the maximum potential compensations for the impact the project will have on their land (Mok et al., 2015). These differences or contradictory stakeholder's interests significantly impacted the project decision-making process and project implementation process, which in turn resulted in the project delay (Mok et al., 2015). Mok et al. noted that it is essential that a project manager seeks to understand project stakeholder's relationships, understand how to network and build relationships with stakeholders, and develop skills on how to effectively manage the major stakeholders in order to achieve project success (Kazbekov et al., 2015).

Project stakeholders' models and management. Aaltonen and Kujala (2016) developed and applied framework that comprised four key dimensions that related to the complexities and challenges the project manager face in managing project stakeholders. The frameworks' four key dimensions included: (a) stakeholder complexity (related to the number of project stakeholders and their varied interests and interrelationships), (b)

uncertainty (pertains to the vagueness in information from the stakeholder and the stakeholder environment), (c) dynamism (pertains to changes that happen to stakeholders' attributes and their influence strategies), and (d) institutional context (related to the project stakeholder's connection to other persons within the institution though not in direct control of the project but may also influence the project implementation process) (Aaltonen & Kujala, 2016). Using this framework developed based on the contingency perspective that different projects confront different stakeholder landscapes, Aaltonen and Kujala surmised that stakeholder management should be fashioned to fit the peculiar characteristics of that stakeholder landscape. The framework developed by Aaltonen and Kujala focused on the planning stages more than other stages to advance understandings of stakeholder challenges (Aaltonen & Kujala, 2016; T. S. Nguyen, Mohamed, & Panuwatwanich, 2018).

Mok et al. (2015) proposed the application of the stakeholder management framework to manage different interests of stakeholders. Unlike the focus of framework developed by Aaltonen and Kujala (2016) on the planning stages, Mok et al. focused the application of the stakeholder management framework to the implementation of construction projects, due to significant complexity and uncertainty associated with construction implementation. Mok et al. noted the stakeholder management framework process entails four steps: (a) stakeholder identification, (b) classification, (c) analysis, and (d) strategy development. Mok et al. presented five strategies that a project management team can potentially use to respond to stakeholder interest claims: (a) adaption, (b) compromise, (c) avoidance, (d) dismissal, and (e) influence. Mok et al.

indicated that the essence of application of the stakeholder management framework is to enable the project management team to better manage and gain the support of the stakeholder necessary to effectively implement a project (Mok et al., 2015).

Liang, Yu, and Guo (2017) indicated that past research on stakeholder's management had been mostly about identification and prioritization of stakeholders, and less focus on stakeholders' influence on the success of a project. Liang et al. indicated that this old perspective of stakeholder management would be suitable where the project involves relatively simple stakeholder relationships. Liang et al. noted the old perspective that focused less on stakeholders' influence cannot appropriately address complex problems that now exist in the project environment where there are complex stakeholder relationships. Liang et al. developed a model to evaluate the interrelation that exists between stakeholders and critical success factors in a complex and uncertain project environment. The results of the study indicated there is a significant relationship between the two elements, and that stakeholders exert influence on the success of complex projects. Liang et al. submitted that it is pertinent to understand stakeholders influence in order to effectively and efficiently manage a project in a complex project environment.

Nauman and Piracha (2016) conducted a study to investigate the impact of stakeholder management on effective management of construction projects, using critical success factors approach. The result of the research study indicates that the most important project stakeholders are the project owners and the end consumers. Nauman and Piracha revealed that aside from the project management triple constraints, i.e., cost, time, and quality, effective stakeholder management influences construction project

management success. Nauman and Piracha submitted that a project manager needs to develop effective stakeholder management strategies after the identification and assessment of the stakeholders. Project managers need to evaluate the stakeholder influence attributes and relationship of stakeholders in order to derive an in-depth understanding of the complexity of the project. The project manager should use such information deduced from the stakeholder assessment to develop effective communication to aid the decision-making process (Nauman & Piracha, 2016)

Alqaisi (2018) proposed the use of the stakeholder engagement assessment matrix framework to evaluate the relative influence of project stakeholders on a project. The stakeholder engagement assessment matrix is used by the project manager to identify the present status and the desired status. Alqaisi indicated that the stakeholder engagement assessment matrix (see Figure 2) consists of six columns which include the unaware column (stakeholder has no knowledge of the project and expected project outcome), the resistant column (stakeholder antithetical to the project or the project manager), and the neutral column (stakeholder neither resistant nor supportive to the project), the supportive column (stakeholder accedes to project objectives and expected project outcome), the leading column (stakeholders actively embrace the project), and the stakeholder name column. Alqaisi further indicated that the framework is especially suitable for developing plans for appropriate communications in situations where some members are from different geographical locations or not colocated.

Stakeholder Name	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder	C			D	
Stakeholder			C	D	
Stakeholder				D C	

Figure 2: Stakeholder engagement assessment matrix. Adapted from "The Effects of Stakeholder's Engagement and Communication Management on Projects Success," by F. Alqaisi, 2017, *MATEC Web of Conferences, 162*, p. 2. Copyright 2017 by F. Alqaisi. CC BY 4.0.

Oppong, Chan, and Dansoh (2017) presented a conceptual model of a construction stakeholders' management framework that is different from and more comprehensive than most other frameworks in its application to the construction industry. The construction stakeholder management framework encompasses attributes from project success factors, project performance indicators, project performance objectives selected based on the fit with the nature, type, and stage of the construction project. Oppong et al. established that due to the capability of the framework to objectively and subjectively evaluate the level of stakeholder and organizational satisfaction, the framework provides better means of measuring project success in the construction industry.

Applying a stakeholder management related framework is important in construction project management. The stakeholder management framework enhances the project managers' ability to strategically align and promote activities that will produce

value for all stakeholders (Uribe, Ortiz-Marcos, & Uruburu, 2018; Voropaev, Gelrud, & Klimenko, 2016). Uribe et al. (2018) indicated that a project manager should consider adopting a relevant stakeholder management framework to manage the complex relationships with stakeholders often inherent in a dynamic and uncertain organizational environment. Uribe et al. noted the stakeholder management framework must have the flexibility to adjust to new circumstances. A feature essential for matching the stakeholder situation as the project progresses through the project phases (conceptual, planning, execution and termination phases), which have dramatically different characteristics (Uribe et al., 2108).

Construction Project Communication Factor

Project communication skills. Project communication is essential for successful project management in the construction industry. Project managers use communication to integrate, coordinate, and harmonize project-related activities and processes to attain project targets (Taleb, Ismail, Wahab, Rani, & Amat, 2017). Project managers spend 90% of their time communicating with project team members and project stakeholders (Taleb el al., 2017). A project manager requires strong communication skills to manage and lead the team members for successful project completion (Ejohwomu, Oshodi, & Lam, 2017). A project manager's ability to communicate effectively is essential for decision making, reducing conflicts, minimizing misunderstandings between the parties, and to address technical and contractual challenges (Lessing et al., 2017; Tran, Nguyen, & Faught, 2017).

Proper communication explicitly helps team members to understand their rights,

responsibilities, and promote teamwork (Wu, Liu, Zhao, & Zuo, 2017). Effective communication is essential to manage project stakeholders who come from different organizational backgrounds and have different socio-cultural perspectives, professional expertise, and interests (Muszynska, 2018; Senaratne & Ruwanpura, 2016). Communication barriers could significantly increase project expenditure, unforeseen errors, and personality conflicts, leading to high staff turnover and reduction in project productivity (Kwofie, Adinyira, & Fuga, 2015; Senaratne & Ruwanpura, 2016). Project managers need to use proper communication skills to mitigate communication barriers resulting from organizational idiosyncrasies.

Project communication models and project coordination. The project communication model could affect project success. Alaloul, Liew, and Zawawi (2017) stated medium of communication, frequency of communication, and response time are essential during the life cycle of the construction project for proper coordination and execution. A properly managed construction management process has a tripartite linkage between communication, coordination, and cooperation to integrate and harmonize stakeholders' interest (Alaloul et al., 2017). Alaloul et al. found organizations are effective in achieving shared objectives of successful project execution only when managers put an equal effort in communication, coordination, and cooperation through the project timeline. In a related study, Fernandes, Spring, and Tarafdar (2018) found coordination, cooperation, and communication are interdependent. Fernandes et al. noted the frequency of communication, degree of coordination, and level of cooperation are contingent upon the project complexity and project environment. Project managers'

knowledge and experience in project coordination, cooperation, and communication are important to understanding the project complexity during various execution phases to achieve expected results.

Project communication and organizational structure. Martin, Lewis, and Fifi (2014) found that project management structure significantly impacts the effectiveness of communication. An inappropriate management structure often leads to various obstacles and communication resistance, impeding the flow of information among team members. Martin et al. indicated support for the adoption of the decentralized organizational structure for project management. Martin et al. stated that a decentralized project management structure, a system that allows individuals at a lower level to have more decision-making responsibilities, produces less communication resistance than a centralized project management structure. Senaratne and Ruwanpura (2016) argued that due to the complex nature of construction projects, the communication requirements should be flexible and adaptable to project needs. Senaratne and Ruwanpura indicated effective communication could only be achieved if the project manager can communicate down, up, and across management structure, and at the same time overcoming any obstacles that project and team complexities may create.

Project communication plan, models, and modes. Taleb et al.'s (2017) exploration of project communication management in various construction project environments revealed that during the dissemination of project information, some obstacles occur that hinder the process. These obstacles that tend to impede effective communication may be verbal (communication tone), environmental (cultural bias),

interpersonal (language differences), or emotional reactions (lack of trust). Taleb et al. indicated that it is essential the organization adopts a communication plan that enables the project manager to properly define the individuals and parties involved in the project, their information needs and determine applicable information sharing approach.

Butt, Naaranoja, and Savolainen (2016) indicated the traditional push communication and pull communication system are inadequate for achieving the level of effective communication routine required for uncertain and complex project environs. Push communication is about sending specific information to the targeted individuals or groups of stakeholders, using mediums in the form of (a) letters, (b) memos, or (c) e-mails. Pull communication is about project stakeholder's retrieving information from information repositories as needed. These approaches do not provide sufficient communication nor adequately integrate the stakeholder interest into the communication system. Butt et al. indicated to achieve an effective communication routine the project communication system should encompass an interactive communication system complementing the push communication and pull communication systems. The interactive communication system enables multidirectional information exchange between stakeholders, allowing real-time information access and continuous updates throughout the project life cycle (Butt et al., 2016). The interactive communication system is more sensitive to changes to stakeholder's information needs, stakeholder involvement, and expectations as the project progresses (Butt et al., 2016).

Rimmington, Dickens, and Pasquire (2015) have a different perception in relation to communication among the project team. Rimmington et al. indicated when great

quantities of information at a fast rate is available to stakeholders, it potentially can lead to information overload, a situation often cited as a reason for errors and misunderstandings. Rimmington et al. stated the use of advanced communication does not ensure that the recipient will have a better understanding of the message. Rimmington et al. suggested that an advanced communication system should not be used at the expense of soft system communication, and project teams should be encouraged to enhance and use the face-to-face communication mode as much as possible.

Forcada, Serrat, Rodríguez, and Bortolini (2017) indicated many people in the construction sector believe the use of email communication has enhanced project performance more than informal communication. Forcada et al. indicated that the adoption and application of new advanced communication systems and techniques in form of mobile apps and intranet platform fashioned specifically for construction project communication, will produce even better outcomes. In a related study, Wu et al. (2017) found that informal communication negatively affects project success, whereas formal communication has a positive association with project success. Wu et al. surmised that it is necessary to enhance the formal communication among project team members to improve the transparency of information and make work content, task processes, and rules more explicit. Wu et al. mentioned transparency of information will enable the project leadership to better unify the project concept and project teams' ideas, invariably contributing to team cohesion to ensure the realization of project success.

Turkulainen, Aaltonen, and Lohikoski (2015) argued that formal communication is not necessarily more important than informal communication and vice versa.

Turkulainen et al. conducted a study on project stakeholder communication over the lifecycle of a project. Turkulainen et al. found that the stakeholder communication changes with the project progress depending on the perceived salience of the focal stakeholder at each phase of the project, confirming the contingency approach to project management communication. Turkulainen et al. noted the less salient stakeholders tend to respond more to informal communication modes, and highly salient stakeholders tend to respond to more formal communication modes.

Construction Project Complexity Factor

Complexity is a situation whereby a large number of parts of a system interact in a nonsimple way (Bjorvatn & Wald, 2018). Construction projects are increasingly becoming an inherently more complex system and operating in a complex and uncertain project environment, which is having an impact on the project implementation process (Pitsis, Sankaran, Gudergan, & Clegg, 2014). Makui, Zadeh, Bagherpour, and Jabbarzadeh (2018) found that construction projects in complex situation relatively are more susceptible to not being completed within approved cost and schedule, and have difficulty in achieving the strategic goal of the business for implementing the project. In essence as the complexity of projects increases so do the project's risks, and in effect increasingly project complexity has become a major project management challenge facing project management practitioners in the current project environment (Bjorvatn & Wald, 2018; Makui et al., 2018; Zhu & Mostafavi, 2017).

Sources of construction project complexity. An extensive review of the literatures indicated there are several sources or indicators that researchers have found to

be associated with complexity, although researchers tend to categorize the sources under different, broader factors, depending on the intent of the research (Abdou, Yong, & Othman, 2016; Kermanshachi, Dao, Shane, & Anderson, 2016). A major source of project complexity is organizational complexity, as mentioned by Abdou et al. (2016) and Mirza and Ehsan (2017). Organizational complexity emanates from the involvement of several distinct and separate external organizations and stakeholders, which include suppliers, engineering consultants, and contractors, in the implementation of a project. Organizational complexity also relates to the depth of the organizational hierarchical structure (vertical differentiation) and number of organizational units and task structure (horizontal differentiation) involved in management and implementation of the construction project (Abdou et al., 2016; Akanni et al., 2015; Mirza & Ehsan, 2017).

Mirza and Ehsan stated project team complexity is a major source of organizational complexity, the type of complexity that emanates as an outcome of having diversity of professions, culture, and responsibilities of individuals involved within a project team or across project teams cooperating to implement a project. Other sources of complexity include schedule complexity, scope complexity, and cost and resource complexity (Akanni et al., 2015; Mirza & Ehsan, 2017).

The trend in project complexity research. In project management research**,** Qazi, Quigley, Dickson, and Kirytopoulos (2016) indicated there is a view that regards risk as an element of complexity, while another view regards project risk and project complexity as two distinctly different concepts. Qazi et al. stated the former school of thought, which seems to be gaining acceptance, believes viewing risk and project

complexity as two distinctly different concepts will give rise to a silo effect, which will separate the known knowledge of complexity attributes (drivers) and complexity induced risks. This may lead project practitioners to adopt less than adequate project risk mitigation strategies. Evaluating project complexity along with complexity-induced risks enables the practitioner to effectively determine and prioritize critical risks, and select the most appropriate risk mitigation strategies (Qazi et al., 2016).

Another emerging school of thought among project complexity researchers is that complexity also has a positive side to it, a contrast to the existing belief that the impact of complexity is potentially negative to the project (Floricel, Michela, & Piperca, 2016). Floricel et al. (2016) found that notwithstanding project complexity related to reduction in completion performance, project complexity has some association with an increase in innovation performance. For instance, the perceptions of a high complexity situation may prompt an organization to develop a more intense representation and appropriate response efforts, in essence, generate more creative strategies and plans to deal with complex challenges (Floricel et al., 2016).

Management of project complexity. Kermanshachi, Dao, Shane, and Anderson (2016) argued that a complex project situation requires an organization to have an exceptional level of management and the application of a project management system more advanced than the traditional methodology approach. Johansen, Eik-Andresen, Landmark, Ekambaram, and Rolstadås (2016) and Sohi, Hertogh, Bosch-Rekveldt, and Blom (2016) agreed that the traditional project management methodology approach is basically designed to manage ordinary projects, focusing mainly on maintaining and

ensuring the triple constraints of cost, schedule, and quality. The traditional project management methodology approach is less focused and incapable of capturing and effectively addressing the increasing dynamism and uncertainties in project environment that end up impacting the triple constraints (Johansen et al., 2016; Sohi et al., 2016).

The agile project management system and the project management maturity model are two prominent project management approaches found to be quite sensitive and have the flexibility to respond appropriately to changes and complexities in the internal and external project environment (Chapman, 2015; Sohi et al., 2016; Tahri & Drissi-Kaitouni, 2015). Tahri and Drissi-Kaitouni (2015) indicated that organizations can use these prominent project management approaches to consistently evaluate and improve effectiveness of the organization's project management governance and execution of specific project processes. Kiridena and Sense (2016) argued that no particular project management approach or methodology was found or regarded to be widely accepted for project management in organizations in uncertain and dynamic environments. Bakhshi, Ireland, and Gorod (2016) and Špundak (2014) submitted what is established is that organizations need to adopt an advanced form of project management approach applicable to the peculiarity of the industry and tailor such approach to suit the immediate environmental context of the project.

Transition

Section 1 comprised the background of the problem, the problem statement, purpose statement, nature of the study, research question and interview questions of the research study. Section 1 also consisted of the conceptual framework, operational

definitions, assumptions, limitations, and delimitations, the significance of the study, and a review of the professional and academic literature. I presented in the review of the academic literature details on the contingency theory, the conceptual framework chosen for the study, including its history and applicability to project management. Also presented in the review of the academic literature are the following subsections: (a) project success, (b) project overruns in construction project management, (c) contractor-related factors, (d) construction project leadership factor, (e) construction project stakeholder factor, (f) construction project communication factor, and (g) construction project complexity factor. The findings from this literature review provided a sound background upon which the study of project overrun phenomenon in the utility organizations can be explored.

Section 2 provides detail discussion and validation of the research process and procedures that I applied to the study. I discussed the role of the researcher, criteria for selection of participants for the study, research method and design, and population and sampling. I explained the data collection instrument, data collection technique, data organization technique, data analysis, reliability and validity strategies employed for the study. Section 3 contain the results of the field research, analysis and discussion of the findings, and conclusions derived from the process. I discussed how the research conclusions apply to the project management practice and the implications for social change, recommendations for future research and conclusions.

Section 2: The Project

The purpose of Section 2 is to provide details of the research process, methods, and techniques that I employed to achieve the objectives of this multiple case study research. Key subsections include the purpose statement, the role of the researcher, participants, research method and design, population and sampling, data collection instrument, data collection technique, data organization technique, data analysis, and reliability and validity.

Purpose Statement

The purpose of this qualitative multiple case study was to explore the strategies that successful project executives in utility organizations use to deliver infrastructure construction projects on-budget and on-schedule. The targeted population for this study were three project executives from three different utility organizations located in the northeastern United States who have implemented strategies that have led to a reduction in budget and schedule overruns. Applying strategies to reduce overruns allows utilities to save funds that can then be applied to preventive maintenance and expansion of utilities, resulting in improved quality of service and improving the well-being of the people served by the utilities. Preventive maintenance and expansion of utilities may lead to creation or sustenance of more jobs, and potential income from such jobs may be spent in the local economy, positively impacting the local community and its residents.

Role of the Researcher

Description of the Role

My role in this research was to carry out a qualitative multiple case study of three

utility organizations to understand the strategies and processes their leaders employed to reduce project overrun phenomena in the construction project management of their infrastructure projects. Pezalla, Pettigrew, and Miller-Day (2012) stated that in a qualitative research study the researcher is the instrument of data collection. I was the primary data collection instrument. Yilmaz (2013) indicated in a qualitative multiple case study process a researcher needs to be entrenched for a substantial period in the system under focus to test a model or understand of what occurred. During the data collection process, I observed behavior and asked interview participants a set of interview questions in a face-to-face interview session. Conducting the semistructured interviews entailed establishing personal interactions and relationships with participants to build up mutual trust and respect (Antwi & Hamza, 2015; Yilmaz, 2013). I used an interview protocol to guide the semistructured interview process. Bolderston (2012) stated that the application of an interview protocol enables a qualitative researcher to thoroughly think through the interview process prior the interview, ask questions that are relevant to achieving the study objectives, and implement necessary ethical requirements during the interview.

In the application of a qualitative case study, a researcher should complement the data derived from interviews with a review of organizational records (Antwi & Hamza, 2015; Yin, 2014). I reviewed relevant project records provided by the participants and from the organization's website to collect secondary data. The project records included record of schedules and costs, planning, and execution procedures reports.

Antwi and Hamza (2015) indicated that a researcher needs to conduct research applying the most appropriate research design for the study. I collected, handled,

analyzed, and interpreted the research data using appropriate qualitative research methods and techniques recognized in the literature. Miracle (2016) and Sutton and Austin (2015) mentioned that a researcher needs to conduct research observing relevant ethical principles and standards. I followed the ethical mitigation measures approved by Walden University's Institutional Review Board (IRB) and all applicable provisions in the *Belmont Report* (Miracle, 2016) on the protection of human participants during the research process.

A worldview is an underlying perception through which a person views realities in his or her environment. A worldview is derived from a person's collection of beliefs, values, and characteristics that shape assumptions and provide the foundation for how the person lives and interacts with others (Auxier, 2015; Rich, 2014). My worldview was an integral part of the process of this qualitative multiple case study, and separation from this reality was neither possible nor can be ignored as it impacts the conclusions of the study. Galdas (2017) and Sutton and Austin (2015) indicated that the bias and subjectivity that may be created by virtue of a researcher's values and opinions could be mitigated or even turned into a positive attribute. Sutton (2015) stated that researchers can limit the effect of their bias by being transparent and reflective about the way research data were collected, analyzed, and presented. Reflectivity requires the researcher to critically assess his or her preconceptions, assumptions, feelings, and values as they relate to the research with the goal to devise a way to see past them in drawing conclusions (Galdas, 2017).

Relationship to the Topic

My work experience on construction of infrastructure projects for more than 25 years as a project manager or in other related capacities has enabled me to have strong background knowledge of the research topic and the research context that is under focus. Ross (2017) indicated that a researcher's relationship with, or experience of, the research topic will be useful in identifying the most appropriate participants for the study, building a meaningful researcher-participant relationship, and interpreting and understanding of the research data. Al-Natour (2011) cautioned, however, that having an "insider" perspective can become a challenge as the researcher can inadvertently become biased towards a certain research outcome. Sanjari, Bahramnezhad, Fomani, Shoghi, and Cheraghi (2014) indicated that a qualitative researcher can avoid such ethical challenges by developing and stringently implementing the research guidelines and protocols as applicable in all stages of the qualitative study.

Participants

Sergeant (2012) indicated a researcher needed to select participants for a qualitative research study considering the research questions, and knowledge of important aspects and perspectives related to the phenomenon being studied. I sought to understand the strategies that successful project executives in utility organizations use to deliver infrastructure construction projects on-budget and on-schedule. In line with this focus, I selected three participating utility organizations that were located in the northeastern United States and that used in-house project management teams to manage construction of infrastructure projects.

I also used specific eligibility criteria to select one participating project executive from each of the three participating utility organizations for the qualitative multiple case study. A project executive is a person with direct project management responsibility or substantial oversight duties over project execution and management of the project team (Jung, Jeong, & Mills, 2014). The first eligibility criterion was that project executive must have 10 years minimum of experience in direct project management or management oversight responsibility over construction projects. The second criterion was the project executive must have managed and delivered one or more infrastructure construction projects on-budget and on-schedule for the utility organization under focus in the past 5 years. By applying these criteria, I was able to select three project executives with in-depth project management experience, rich information, and experience with the phenomenon of interest (Asiamah et al., 2017; Palinkas et al., 2015).

I searched the Internet to identify and locate the three different utility organizations that participated in the study. The three participants selected for the study, one participant from each of the organizations, were contacted via e-mail or phone call to confirm eligibility, availability, and the willingness to participate in the research study (Archibald, 2015; Rahi, 2017). There is not a specific number of a sample size that is considered most appropriate for a multiple case study; the sample size depends on what the researcher wants to know and the purpose of the research (Vohra, 2014). The three participants selected from the three different utility organizations provided enough information richness needed to understand the phenomenon under study and draw credible conclusions. Vohra (2014) stated in the event data saturation is not reached with

the selected number of participants, additional participants should be interviewed until data saturation is achieved. Data saturation was reached with the three selected participants, interviewing of additional participants was not required.

Establishing a cordial working relationship with the participants was quite essential to achieving the purpose of the research. After the initial contact, I implemented follow-up discussions with the participants via e-mail and phone calls to constantly sell the research. These discussions entailed providing adequate information to the participants that make it clear that their particular experience is relevant to addressing the research questions (Archibald, 2015; Coyne, Grafton, & Reid, 2016). The participants were provided with information on the value the research results can bring to the project management practice and the public in general. The participants were informed of all the necessary documentations pertaining to the protection of their rights and confidentiality of the information they will provide for the research (Archibald, 2015; Coyne et al., 2016).

Research Method and Design

Research Method

The research method that I used in implementing this study is the qualitative research method. The qualitative research method presents the most appropriate and efficient process to explore and ultimately answer the research question, opposed to quantitative research method or mixed method. The qualitative research method is anchored on constructivism paradigm, a philosophy that supports the notion that a researcher needs to view and explore issues in its various complexities, because meanings

to an issue can be varied and multiple (Adom, Yeboah, & Ankrah, 2016; Creswell & Creswell, 2018; Mogashoa, 2014). The qualitative research method enables the researcher to collect data from direct observation and interview questions to understand the participants' viewpoint from an "insider" perspective rather than using a standardized questionnaire that evaluates from an "outsider" position (Antwi & Hamza, 2015; Barnham, 2015; Creswell & Creswell, 2018). Mohajan (2018) stated that the qualitative research method is useful for the researcher to explore and understand possible relationships, causes, effects, and dynamic processes relating to an issue or phenomena. Mohajan also stated qualitative research method provides the researcher a basis upon which new concepts and theories can be developed from the phenomena (Creswell & Creswell, 2018; Mohajan, 2018).

Researchers use the quantitative research method by applying a structured process and standard questionnaire to collect large data from a large number of participants (Creswell & Creswell, 2018; Rahman, 2016). The quantitative research method is used by the researcher when the goal of the researcher is to find relationships between two or more different variables (Khalid, Hilman, & Kumar, 2012; Rahi, 2017). The quantitative research method is equally employed when the researcher is looking to generalize the results of the research to a larger population (Khalid et al., 2012; Rahi, 2017). Marnewick (2014) and Salvador (2018) mentioned researchers use the quantitative method to test hypotheses and provide numeric data that can give general meaning or put events in certain perspectives. I did not select the quantitative method because I did not intend testing hypotheses. Queirós, Faria, and Almeida (2017) stated unlike the qualitative

research method, the findings of quantitative research do not capture emotions, behavior, and changes of emotions of participants. Rahman (2016) mentioned quantitative research presents only a snapshot of a phenomenon at a specific moment in time, disregarding other variables that might have been impacting the phenomenon over a long period.

The mixed method is described as a type of research where a researcher combines or mixes qualitative and quantitative methods or techniques into a single study. The mixed method enables the researcher to use both numeric and narrative data to seek a solution to a problem (Bentahar & Cameron, 2015). The mixed method is most advantageous when a researcher is seeking to explore a multifaceted phenomenon, where the application of either qualitative method or quantitative individually will be inadequate (Bentahar & Cameron, 2015; Cameron, Sankaran, & Scales, 2015). I did not apply the mixed method due to the limitation of time and resources. Almalki (2016) and Cameron et al. (2015) noted the mixed method usually requires a significant amount of time and resources to pull together all the information and integrate the results from both qualitative and quantitative methods. Almalki (2016) noted applying mixed method involves the risk that participants may be unwilling or unable to participate in both the qualitative and quantitative research phases of the study.

Research Design

A research design is an overarching strategy a researcher intends to apply to execute a research study. Researchers use a research design to set the direction and procedures that will be followed by the researcher to achieve the goals of the research (Khalid et al., 2012; C. Williams, 2008). A case study is a research approach used to

explore in depth activities of an individual, group of people, individual institutions, or explore a phenomenon, process or problem within a specific system or context (Starman, 2013). In a case study research approach both the research problem and the research context or boundary need to be well defined by the researcher (Starman, 2013; VanWynsberghe & Khan, 2007). Hyett, Kenny, and Dickson-Swift (2014) stated case study research offers a higher level of flexibility than other types of qualitative approaches. Hyett et al. further stated that the application of a case study approach allows the researcher to design the study to suit the peculiarity of the case and research question.

Gaikwad (2017) indicated that a case study research approach can either be a single case study or a multiple case study. The single case study is applied by researchers to explore and understand a phenomenon using a unique or extreme case of interest. The multiple case study is used by researchers to explore and understand the similarities or dissimilarities of the phenomenon that occur at different places (Baxter & Jack, 2008; Gaikwad, 2017). I chose to apply the multiple case study approach for this qualitative research study. The multiple case study is more robust and will help to understand better the phenomenon being investigated than a single case study (Baxter & Jack, 2008; VanWynsberghe & Khan, 2007).

The phenomenological research approach is described as a study that seeks to explore and analyze the phenomenon which a person or group of persons experience in their everyday life (Eddles-Hirsch, 2015; C. Williams, 2008). The phenomenological research approach is used by researchers to understand the relationship that exists between the phenomenon and the person experiencing the phenomenon. Application of

phenomenological research approach normally involves writing research questions, administering the questions in an in-depth interview session, and thereafter analyzing the data to find the clusters of meanings (Eddles-Hirsch, 2015; C. Williams, 2008). The phenomenological research approach was not be appropriate for this study. The phenomenological approach emphasizes the viewpoint of participants about a phenomenon and less focus on the context of the phenomenon (Rahman, 2016). I considered understanding the phenomenon in the context which it is happening to be important to realizing the objectives of this study.

The ethnography research approach is noted as a study that involves observing a group of people that shares a common culture to collect observational data (Creswell & Creswell, 2018; MacLeod, 2016). Ethnography research approach entails the researcher interacting extensively with participants in their natural setting for a considerable length of time in order to identify and understand their norms, beliefs, and social structures (Creswell & Creswell, 2018; C. Williams, 2008). The ethnography research approach is not appropriate for this study.

In conducting this multiple case study, I was guided by the concept of data saturation. The data saturation was the point where no new codes or themes emerged during the data analysis process (Squires, 2018). I interviewed only the three selected participants to achieve saturation. Achieving data saturation in qualitative research is quite essential to ensuring the validity and reliability of the research (Fusch & Ness, 2015).

Population and Sampling

Defining the Population

Utilities organizations are enterprises that provide essential services like telecommunications, energy, or water services to the public, and they are either publicly owned or privately owned (Beecher, 2013). The focus of this multiple case study was on privately owned utility organization operating in the northeastern United States. The general population for this study was project executives involved in construction project management of infrastructures that utility organizations use to deliver services to the public. The targeted population consisted of project executives that have managed one or more infrastructure construction project to successful completion in the past 5 years (Martínez-Mesa, González-Chica, Bastos, Bonamigo, & Duquia, 2014). The project executive that were selected were in charge of the day to day underlying project technical details. The project executive had an understanding of the general project strategic goals, responsible for making important project execution decisions, interact with the contractor and other stakeholders, and management of project team (Desmond, 2018; Hodgson & Paton, 2016).

Sampling

Gogtay and Thatte (2016) mentioned that there are generally two ways of sampling; probability sampling, and non-probability sampling. Gogtay and Thatte stated probability sampling is the process of randomly selecting a representative number of participants from a population for a study; every individual in the population has an equal chance of being selected. Gogtay and Thatte indicated that the non-probability sampling

is a process of using a nonrandom technique to derive a certain number of participants from a population for a study; in this population, individuals do not have the same chance of being selected for the study. I applied the purposive sampling method, type of non-probability sampling to determine the participants for this study. The non-probability sampling is appropriate because relatively non-probability sampling consumes less time and resources, and importantly it aligns more with objectives of this study than probability sampling technique (Gogtay & Thatte, 2016; Palinkas, et al., 2015). The major disadvantage of non-probability sampling is that the result derived through application of the technique is not generalizable (Gogtay & Thatte, 2016; Palinkas, et al., 2015).

The purposive sampling method (a type of nonprobability sampling) is used by qualitative researchers to identify and select individuals for a study based on the specific knowledge or experience the individuals have about the phenomenon of interest (Palinkas, et al., 2015). I used the purposive sampling method to identify and select one project executive from each of the three utility organizations under focus in this study. The three project executives were selected based on their in-depth experience on project management, and implementation of strategies that have helped to successfully deliver one or more projects on-budget and on-schedule in the past 5 years.

Data Saturation and Sampling

Saunders et al. (2018) indicated that data saturation is reached when no new theme or codes are produced from gathering additional data samples. Fusch and Ness (2015) noted that no particular sample size could guarantee a researcher will reach data

saturation; rather it is the constituents of the sample size. I interviewed the three project executives drawn from three the utility organizations and analyzed the data to identify common codes, categories, and themes to attain data saturation. The project executives were recruited based on their in-depth experience in construction project management and knowledge of the project overrun phenomenon in the context of the utility industry. Moser and Korstjens (2018) noted engaging individuals with specialized and expert knowledge for a study provides the opportunity to gain information that is rich, thick, and adequately covers the scope of the study and reaching data saturation. The three project executives that were recruited for this research study were able to provide significant information that is rich in quality and thick in quantity and ensure data saturation is attained. Additional interviews were not conducted because data saturation was reached with the data collected from the three project executives.

Ethical Research

Observing ethical norms and processes in research study help counteract inherent research bias or errors, while enhancing the reporting, repeatability, believability, and credibility of the study (Akaranga & Makau, 2016). It is imperative for a qualitative researcher to consider, plan, and ensure the principle of ethical research during the selection of participants, application of instrument, collection, and storage of data (Khalid et al., 2012; Sanjari et al., 2014). I completed the National Institutes of Health (NIH) training and received Walden University's IRB approval before the interview process. Part of the requirement for the Walden University's IRB approval (approval # 09-25-19-0623319) is that the researcher makes available to potential participants the informed

consent form for their review and signature indicating their agreement to take part in the research study. The consent form was presented and agreement was received from the three project executives that participated in this study before the interview process.

A researcher needs to explain to each potential participant the basic ethical guidelines to address ethical issues indicated in the consent form and stipulated in *the Belmont Report* to ensure each potential participant make an informed decision about the study (Grady, 2015; Miracle, 2016). I explained to the participants the purpose of the research, the expected duration, and procedures to be undertaken to achieve the purpose of the research. Participants were informed that participation in the research is voluntary and that they can withdraw from the interview session at any point without any reason and such action will not attract any penalty or repercussions (Nijhawan et al., 2013). To withdraw from the study, participants only need to send an email to or communicate verbally with me.

The potential benefits of the study to the participants, their organizations and professional institutions was discussed with each potential participant. I informed the participants that the research findings and key conclusions will be made available to them on completion of the study. The participants were briefed that no payment, gifts, or reimbursements will be provided to them for participating in the research study. I discussed with each potential participant strategies that will be employed to ensure privacy of their personal identity and location of the study. For example, in the report pseudonym participant 1 and organization A will be used instead of the actual names of the participants and the organizations they represent, respectively (Saunders, Kitzinger, &

Kitzinger, 2015). All documents pertaining to the research were scanned into electronic format and saved in my password-protected computer, including interview data, audio recordings, consent form, and notes, and will be maintained for 5 years. After 5 years, all the research documents will be destroyed by erasing the information from the computer.

Data Collection Instruments

The role of a researcher in a qualitative research study is normally to access the experiences that the study participants have had about a phenomenon that occurred in the past or is ongoing. This is done by using the interview process to ask the participants a series of questions to explore their thoughts, feelings, and understanding of the phenomenon (Sutton & Austin, 2015). Qualitative researchers also gather research data using direct observation, review of past studies, content analysis of organizational documents and archival documents (Jamshed, 2014; Paradis, O'Brien, Nimmon, Bandiera, & Martimianakis, 2016). I was the primary data collection instrument for this qualitative study. I used the semistructured interview technique and complemented by organizational document analysis to explore and collect data relevant to the phenomenon under focus.

The semistructured interview method is midway between the structured interview method and unstructured interview method (Alsaawi, 2014). Ramabhadran (2018) used the semistructured interview method to investigate the causes of cost overrun in construction projects. Yap, Abdul-Rahman, and Wang (2018) applied the semistructured interview technique in determining the impact of project communication management and project learning as a preventive measure to time-cost overruns. Brunet and Forgues

(2019) found out that using a semistructured interview process is useful for determining and understanding major project success factors of a construction project. Khan (2014) mentioned that during the interview process, beyond asking the predetermined interview questions, a researcher could explore other relevant or tangential issues to the phenomena under study. I explored other management practices, processes, or issues that are impacting project management performance or project success during each semistructured interview session. Bowen (2009) indicated document analysis could be used by a researcher to gain background knowledge of a phenomenon under study. I reviewed the organizational document of the utility organizations to gain an understanding of the historical and current context within which the project overruns are happening.

I used an interview protocol (see Appendix A) as a guideline to conduct the semistructured interview for the research study. Castillo-Montoya (2016) mentioned that application of an interview protocol to a qualitative research interview helps ensure the interview is conducted in an ethical manner and enhances the quality of data collected from the research interviews. After receiving IRB approval for the study, I made contact through phone calls and email with the potential participants for the study. The consent form was made available to the potential participants for their review and for signifying their agreement to take part in the research study by signing the consent form. A day, time, and location of convenience for the participants was scheduled for the interview. On the scheduled day the interview protocol was applied to conduct the semistructured interview in this process: (a) introductions, (b) review of consent form, (c) assurance of

the confidentiality, (d) consent to audio record interview, (e) ask the interview and follow up questions, (f) collect secondary documents, (g) seek participation in member checking, and (h) thank participant for participating in the study.

Schutz (2012) noted validity is considered the extent to which a measurement measures what it is supposed to, and reliability is the consistency of a measurement or process to achieve a certain result. Akaranga and Makau (2016) noted it is important that a researcher implement techniques that will ensure validity and reliability of the research process. In order to ensure validity and reliability of the data collection process I adhered to the research interview protocol developed (see Appendix A) for the study. Yeong, Ismail, Ismail, and Hamzah (2018) described the interview research protocol as a step-by-step process developed by a researcher to guide implementation of the research interview. Yeong et al. emphasized that implementing a well-developed interview research protocol is the key to obtaining a quality interview and makes it easier for researchers to replicate study and validate the outcomes.

I applied the methodological triangulation method in this study to evaluate data from the semistructured interviews (see Appendix B) against data from the organization's project documents. Yin (2014) mentioned that applying the methodological triangulation method will help achieve better synthesis of the results to derive composite and meaningful final results and ensure the validity of the research process. Member checking is the practice of sharing summary or the whole of the findings with the research participants for checking of the accuracy of the interpretation of their statements (Birt, Scott, Cavers, Campbell, & Walter, 2016). Thomas (2017) noted the application of the

member checking technique will help reduce potential for researcher bias and enhance the trustworthiness and credibility of the qualitative results. I emailed my interpretations of the interview answers entailing themes in development to the three participants. Two of the participants responded accepting my interpretations, whereas one of the participants indicated that a certain paragraph did not fully reflect the participant's experience. The affected paragraph was revised accordingly to the observation of the participant.

Data Collection Technique

The objective of this qualitative case study research was to determine what strategies successful project executives in utility organizations employ to deliver infrastructure construction projects on-budget and on-schedule. A pilot test is a precursor small-scale study conducted to the main study to determine the feasibility of using a particular recruitment or data collection process (Fraser, Fahlman, Arscott, & 2018). A pilot test is commonly used by researchers for quantitative research studies than for qualitative research studies (N. Ismail, Kinchin, & Edwards, 2018). I did not conduct a pilot test to determine recruitment or data collection process. This study was conducted using the semistructured interviewing method, face-to-face interview technique type, and organizational documents review method to collect relevant data to achieve the objectives of the study. The semistructured interview involves a researcher asking a set of predetermined open-ended questions. The semistructured interview method enables a researcher to ask questions that are specific to the research topic and also have the opportunity to explore other issues that may be relevant to the research (Alsaawi, 2014;

Khan, 2014). Gomes and Romão (2016) collected data for a similar study using the semistructured interview method and document analysis method. In their study, Gomes and Romãro selected and interviewed 23 participants from various organizations who performed different roles in project execution. In other project management research, Marnewick (2014) also employed the semistructured interview for data collection, after carrying out an extensive review of the literature to develop interview questions (Gomes & Romão, 2016; Marnewick, 2014).

Applying the semistructured interview method, I asked the initial probing questions and follow-up explorative questions to the participants to derive an in-depth understanding of the project executive's experience of the phenomenon under study. The advantage of a semistructured interview over structured interview is that the semistructured method enables a researcher to explore the experience participants have on a phenomenon moving back and forth in time to gain an understanding of the problem (Cypress, 2018). Researchers use the semistructured interview method to review and reflect on the explanations of participants, observations, and context of the situation, and on the researcher's personal views as the interview progresses (Yin, 2014). The duration of time for the face-to-face interview sessions was between 30 to 45 minutes, depending on the responses of the participants. The face-to-face semistructured interview session was audio-recorded and later transcribed, with the consent of the participant. Khan (2014) noted, with permission from the participant researchers needed to audio-record the interviews session to ensure an accurate account of the interview is collected and preserved for future analytic purposes.

Denzin (2006) indicated triangulation is the strategy whereby researchers use data derived from one source to compare data derived from another source to develop a deeper understating of the research phenomenon. Denzin identified theoretical triangulation, data triangulation, investigator triangulation, and methodological triangulation as the four triangulation types mostly applied in qualitative studies. Denzin mentioned that applying triangulation methods especially in a combination will limit observer bias and increase confidence in the research study findings. Methodological triangulation was applied to develop a deeper understating of the phenomenon under study and ensure the validity and reliability of the research outcomes.

Aside from the semistructured interview session, data were collected from organization's project documents and organization's website, in order to apply methodological triangulation strategy. I collected organization's project documents (e.g., record of schedules and costs, planning and execution procedures reports) relevant to achieving the study objective from the three participating project executives. I reviewed and analyzed such documents to extract the required secondary data for the study. Creswell and Poth (2018) stated the review and analysis of the organizations' documents will enable a qualitative researcher to validate critical information and or fill in any omissions in information derived during the interview. Bowen (2009) indicated that document review and analysis provides a researcher with the background information and historical insight into a phenomenon, and also enables the researcher to understand the context within which the participants that are taking part in the research operates.

Bolderston (2012) indicated that an interview protocol presents the steps which a

qualitative researcher intends to follow to achieve the purpose of the interview. Castillo-Montoya (2016) stated an interview protocol is a sequential procedure that a researcher intends to follow to conduct the interview; this procedure normally includes providing pertinent information to participants, asking vetted interview questions, and receiving feedback. Castillo-Montoya noted a well-prepared interview protocol would strengthen the quality of data gathered throughout the research study. On approval of the interview process by the IRB, I contacted the participants for the semistructured interview session to set up a time and location convenient for each participant for the interview. On the day of the interview participants were informed of the purpose of the research and major provisions in the informed consent form, and received assurance of the confidentiality of their identity and information provided. The participants were also informed of their right to withdraw from the interview at any time**.** The participants consent was sought and received to audio record the interview.

I asked each participant predetermined, open-ended questions and asked follow-up questions as applicable during the interview session. Wang and Zhu (2015) noted asking follow-up questions enables a researcher to collect more in-depth details on any idea, event, or context relevant to the study. Field notes were taken as the interview progressed to document behaviors and nonverbal cues from the participants. Sutton and Austin (2015) mentioned that a researcher needs to take field notes during interview session to document the behaviors of the participants and the environmental context of the study that audio-recording cannot adequately capture. At the end of the interview session, I thanked each of the participants for participating in the study.

Implementing member checking is important for ensuring credibility of the research (Korstjens & Moser, 2018). I applied member checking with each participant to validate the accuracy of my understanding and interpretations of the answers the participants provided to the interview questions. Applying member checking enables a researcher to guard against misinterpretation and misconstruction of the participant experience of a phenomenon and at same time provides opportunity for the participant to clarify or provide additional perspective, if necessary (Korstjens & Moser, 2018; Thomas, 2017).

Data Organization Technique

Qualitative researchers gather and accumulate a large number of qualitative data materials in the course of carrying out a research study (Creswell & Poth, 2018). Qualitative researchers need to specify the process that will be used to organize and secure qualitative data to ensure participants' identity are protected, information can easily be located and identified, and to establish the trustworthiness of the study (Creswell & Poth, 2018; White, Oelke, & Friesen, 2012). I collated my field notes, audio recordings, and transcripts of the interviews, organizational documents and the NVivo 12 software analysis into file folders.

I scanned and uploaded the research documents in the file into an electronic format and saved into my password-protected computer. The electronic format of the research documents was saved into folders and subfolders in the computer using predetermine titles to facilitate easy retrievals. The research documents in electronic format will be maintained for 5 years after which the research documents will be

discarded.

Data Analysis

Qualitative data analysis is a process whereby qualitative researchers systematically search for and compare pattern observed in a qualitative data to derive an understanding about a phenomenon under focus (Creswell & Poth, 2018; Sutton & Austin, 2015). Pezalla, Pettigrew, and Miller-Day (2012) noted a researcher conducting a qualitative interview or qualitative data analysis needs to provide greater interviewer reflectivity and acknowledge self as the instrument of data collection. Researchers normally acknowledge their role as the data collection instrument because of the need to inform readers that their unique personal attributes potentially can impact the collection and analysis of the study material (Bahrami, Soleimani, Yaghoobzadeh, & Ranjbar, 2016; Pezalla et al., 2012). I was the data collection instrument and collected data from the semistructured interview conducted on the participants and review of organizational documents presented by the participating project executives.

Moon and Wolf (2019) mentioned that the application of the triangulation method can enable a researcher to mitigate biases in the study process and increases the credibility, dependability, confirmability, and transferability of research study results. Denzin (2006) mentioned that there are different types of triangulation strategies, out of which four types are the most prominently used in qualitative studies. The four triangulation types; (a) theoretical triangulation which entails analyzing a particular set of research data by employing several different theoretical perspectives, (b) data triangulation which involves collecting data through variety of sources including social

situations, persons, and time, to validate a theory, (c) investigator triangulation which entails engaging two or more observers for the same study in order derive as many differing views on the research phenomenon as possible, and (d) methodological triangulation which involves the application of more than one research method to collect and analyze research data. I used the methodological triangulation approach. I collected, analyzed, and compared data derived from the semistructured interview method and data derived from the organizations document review method. Wilson (2016) stated that the application of the methodological triangulation method helps to validate the scope, depth, and consistency in methodological proceedings of the research. Joslin and Muller (2016a) stated the application of methodological triangulation method is useful to conduct in-depth studies on project management related phenomena.

Creswell and Poth (2018) and Hoover and Koerber (2011) described qualitative data analysis software as tools employed by qualitative researchers to organize, analyze, and to understand complex relations among research data. Jones (2007) indicated that after uploading a transcript or recording into a computer, the qualitative data analysis program would locate keywords and phrases typically using a Boolean interface. Jones mentioned that these extracted pieces of data are tagged with codes, and the codes are accumulated into categories or themes. These categories that are created can be compared, changed, or refocused to fit an emerging framework as new data are added (Jones, 2007; Paulusa, Woods, Atkins, & Macklin, 2015). I used NVivo 12, one of the prominent qualitative data analysis software currently available to analyze transcripts of the qualitative interview. Hoover and Koerber stated that the application of NVivo is far

more efficient than using manual processes or even Microsoft Word or Excel which are digital processes to derive codes or themes. Hoover and Koerber concluded that in general application of NVivo enhances the efficiency, multiplicity, and transparency of the research process.

Yin (2011) stated the processes that qualitative researchers use to implement data analysis, in general, can be expressed into the following 5 steps: (1) compiling and organizing phase (involves the researcher sorting through the notes and data gathered on the fieldwork and then compiling and putting the information into some order); (2) disassembling phase (involves breaking down the assembled data into small units of meaningful information and a label or code is assigned to each unit); (3) reassembling phase (involves identifying and recombining the fragments of identified meaningful information or code clusters to form a substantive meaning or theme relating to the research focus); (4) interpreting phase (involves using the themes developed from the preceding stage in consonance with the relevant graphs and tables to develop a narration about the research phenomenon); and (5) concluding phase (involves drawing a conclusion for the entire study from the interpretations made in the preceding phase and understanding derived from all the other phases of analysis). Durodola, Fusch, and Tippins (2017) stated the 5 step data analysis procedure presented by Yin provides a well-structured approach to data analysis, and that the 5 step data analysis procedure is a widely accepted data analysis method for case study research by qualitative researchers. Nowell, Norris, White, and Modules (2017) mentioned applying the 5 step process, a widely acceptable and respected data analysis process, is used by researchers to ensure

the trustworthiness and credibility of a qualitative research.

For this multiple case study, I applied the 5 step process for the data analysis. For step 1 (compiling and organizing phase), the interview and document research data were collated and compiled into a useable and understandable arrangement. The compiling and organizing phase involves transcribing the interview, reading and rereading the data, and familiarizing with the terms, phrasings, and contexts in the data (Castleberry & Nolen, 2018).

Step 2 (disassembling phase), I disassembled the compiled data and group together words or phrases that characterize different aspects of the issue under focus to form emergent codes. Sutton and Austin (2015) described coding as a way of identifying similarities or differences in topics or issues that are perceived or identified by a qualitative researcher during the interview of research participants. Qualitative researchers normally apply any of the following three coding techniques during data analysis process; (a) a priori coding (codes developed beforehand based on what the researcher believes is important in reference to the research problem), (b) emergent coding (codes that are words or phrases in participant's statements), and (c) combination of a priori coding and emergent coding (Bengtsson, 2016; Blair, 2015). During step 2, disassembling phase emergent codes were used to validate, realigned to, or combined with priori codes to form new codes. The priori codes were developed prior interview based on my experience and relevant literature on the phenomenon and used for initial analysis during the semistructured interview process.

Step 3 (reassembling phase), I analyzed and examined the ways with which the

identified codes were linked to consolidate and create coherent categories or themes. Castleberry and Nolen (2018) mentioned that themes represent a pattern of meaning within the codes that captures something important relating to the research questions. Yin (2011) mentioned a method a qualitative researcher can use to facilitate the reassembling procedure is the depiction of the research data in a graphical and or tabular form.

Step 4 (interpreting phase), the interrelationships and connections within the constructs of the themes were used to discuss and interpret the reassembled data in relation to the research phenomenon. Castleberry and Nolen (2018) noted that interpretations are about discussing how themes relate to each other and findings deduced in general from the context of all codes. Castleberry and Nolen mentioned that it is common for qualitative researchers to make some preliminary interpretations during the first three steps (compiling, disassembling, and reassembling phases), and building upon those interpretations to derive the final interpretation. Castleberry and Nolen also mentioned that qualitative data analysis software is a tool that a quality researcher can use for qualitative data analysis and interpretations. Qualitative researchers find qualitative data analysis software especially useful when determining relationships and connections among constructs that are not easily recognizable.

Step 5 (concluding phase), I compared and related the key themes and interpretations that emerged from research data with the review of recent studies on project overrun and the major constructs of the contingency theory. The overlapping meaning deduced from correlating the key themes and interpretations with the review from the recent study on project overrun and the contingency theory frameworks was

used to create a coherent narration about the research results and draw conclusions (Green et al., 2007; Sutton & Austin, 2015). Adom, Hussein, and Agyem (2018) mentioned a researcher needs to examine, relate, and explain the research findings through the purview of the conceptual framework of the study. This process will help make the research findings to be more meaningful and acceptable to the theorists in the research field of study.

Reliability and Validity

A qualitative researcher needs to present in a concise yet precise manner the reliability and validity process that will be followed for a qualitative research study. A qualitative researcher needs to address the reliability and validity issues during the data collection, data analysis, and result presentation processes (Mohajan, 2017). Grossoehme (2014) indicated that addressing reliability and validity issues enables a qualitative researcher to reduce the effect of researcher bias, increase transparency, and assure reviewers of the qualitative manuscripts of the integrity and quality of the research study.

Reliability

Reliability is the ability of other researchers to achieve the same results of a study by repeating the data collection, interpretation, and analysis process implemented during the study (Morse, 2015). Leung (2015) noted that a small measure of the variability of results is tolerable provided the methodology and epistemological structures of the research study consistently produce data that are ontologically similar. Grossoehme (2014) described reliability as the process qualitative researchers undertake to check and ensure the dependability of the research results.

Dependability. Application of the research interview protocol is one of the important processes that can be used to demonstrate dependability of a research study (Korstjens & Moser, 2018). Yeong et al. (2018) detailed research interview protocol as a step-by-step process researchers develop and apply to guide the execution of a research study process. To ensure the dependability of this research study, I applied an interview protocol (see Appendix A) to guide the implementation of the semistructured interview process. Morse (2015) stated that beyond creating a pathway that others can use to replicate the study with different group and context, application of the research interview protocol enables other researchers to understand and follow the rationale and logic underlying the researcher's decisions leading to the final submissions.

Dependability of a research study is established through a series of steps taking by a researcher that increases the trustworthiness and reliability of the research interview data (Morse, 2015). I ensured the dependability of the research study by applying the member checking technique to assess the accuracy of the interpretation of the interview data as suggested by Anney (2014). Member checking, which is basically a feedback process, not only enables the researcher to determine any inaccuracies in the reconstruction of the participant’s experience, the process will provide the participants the opportunity to reflect on the information they have earlier delivered and self-correct if necessary (Livari, 2018; Morse, 2015). I emailed each participant my interpretations of their responses to the interview questions. Two of the participants responded accepting my interpretations, whereas the third confirmed my interpretations after minor revisions revisions were made.

I enhanced the dependability of the study by establishing an audit trail of documentation that a different researcher can follow to examine the study's inquiry process and reestablish the study conclusions as suggested by Elo et al. (2014). A researcher can establish audit trail by keeping rich records on sampling, research materials adopted, interview protocol, interview data, and observation notes, field notes, categorization process and emergence of findings, and data management procedures (Forero et al., 2018; Korstjens & Moser, 2018).

Validity

Validity of a research study is a process that qualitative researchers use to assess the extent to which the research was able to determine what was supposed to be determined or simply a process used for measuring the truthfulness of a research study (Grossoehme, 2014; Leung, 2015). Elo et al. (2014) mentioned that to establish the validity of the process a qualitative researcher needed to report in detail how the results were created and the final conclusions that were deduced by the researcher.

Credibility. Credibility is about demonstrating that the research findings are a truthful and faithful description of the phenomenon experienced by the participants and the context of the inquiry (El Hussein, Jakubec, & Osuji, 2015). El Hussein et al. (2015) suggested that a researcher can increase credibility by generating rich descriptions of the process and engaging with data reflectively. Darawsheh (2014) noted that engaging in reflection enables researchers to provide a rationale for their research decisions and process of emergence of relevant findings. I kept a reflective journal where events that happened during the study were recorded. The reflective journal also included an

evaluation of the influence of my personal background, conceptual lens, explicit and implicit assumptions that affected decisions taking at all phases of the qualitative study (Anney, 2014; Korstjens & Moser, 2018). Keeping a reflective journal enables a researcher to bring analytic attention to the researcher's subjective role in qualitative research and by so doing increases transparency of the research process and mitigates the bias of researcher (Darawsheh, 2014; Palaganas, Sanchez, Molintas, & Caricativo, 2017).

Sutton and Austin (2015) noted that coding refers to the identification of topics, issues, similarities, and differences that emerged from the researcher's interpretation of interview data collected from the study's participants. Sutton and Austin also noted a researcher needed to begin coding immediately after interviewing as a gap in time between an interview, transcribing, and coding can result in memory bias and affect the interpretation of the interview data. I commenced the coding process immediately after the interview to reduce the possibility of personal bias affecting the interview data interpretation and increase credibility of research findings. Vaismoradi, Jones, Turunen, and Snelgrove (2016) mentioned a researcher needs to continually compare attributes of a code to that of the category to ensure the code remain aligned to the assigned category during the thematic analysis of the qualitative data. I constantly compared the underlying characteristics of the codes against that of the category to ensure the meaning attributed to the codes remains a fit to the assigned category throughout the data analysis process. The code-recode strategy referred to as code agreement was also applied (Anney, 2014; Forero et al., 2018). The code-recode is a process whereby a researcher codes the same data twice, allowing one- or two- weeks' lapse period between the two coding activities,

and the results of the codings are checked for similarities or dissimilarities (Anney, 2014).

Anney (2014) mentioned that available techniques researchers can use to demonstrate research rigor included member checking, thick description, reflection, and peer debriefer. Liao and Hitchcock (2018) stated especially the use of peer debriefer technique for a qualitative research study is an indicator of a strong qualitative inquiry and establishing of credibility. The peer debriefer will examine the study process and ask pertinent questions about the study to detect any problem that may be inherent in the research process (McMahon & Winch, 2018). I asked a member of my Walden doctoral study group to be the peer debriefer for the research study. The person thoroughly reviewed the study process and documentations and no inherent errors were found.

Transferability. Transferability is the extent to which the results of a qualitative study can be transferred or applied to other contexts or situation (El Hussein et al., 2015; Forero et al., 2018). The major technique I employed to establish the transferability for this multiple case study's findings is the application of purposeful sampling method as recommended by Yelena, Thompson, Aroian, McQuaid, and Deatrick (2016). I used the technique to identify and select three participants from the three organizations that are the focus of the study. Detailed information on the three participants' professional background, experiences of the project overrun phenomenon, and project management environmental context of the three organizations were considered. Palinkas et al. (2015) affirmed that application of purposeful sampling method by a researcher to identify and select individuals with specialized experience about a phenomenon of interest for a study

increases the transferability of the research study's outcome to other populations by other researchers. Moon, Brewer, Januchowski-Hartley, Adams, and Blackman (2016) noted combining purpose sampling with the provision of thick description of the context and culture, selection and the characteristics of the participants increases transferability to overcome possible concerns about situational uniqueness.

Confirmability. Confirmability is the level of confidence that other researchers can confirm that a research study's findings are an accurate representation of the information collected from the participants and not based on the imaginations, biases, or interest of the researcher (Elo et al., 2014; Ibiamke & Ajekwe, 2017). Moon et al. (2016) mentioned that a qualitative researcher could demonstrate confirmability by keeping a reflective journal showing the linkage between the data generation and conclusions that others can follow to replicate the process. To assure confirmability of the qualitative research study, I kept a reflective journal where events that happened during the study were recorded. The reflective journal shows how the data, constructs and theories emerging from it, were linked to the research findings (Anney, 2014; Moon et al., 2016). The journal includes an evaluation of the influence of my worldview, interests, and perceptions have on the study process (Anney, 2014). The journal included descriptions of multiple ways that I used to ensure that the findings are presented objectively and the actions that were taking during the research process to minimize bias (Squires, 2018).

Methodological triangulation is another strategy that I employed to ensure the confirmability of the research study, as suggested by Mabuza, Govender, Ogunbanjo, and Mash (2019). Methodological triangulation involved a researcher using information

derived from one data collection method to corroborate information obtained from another data collection method, and using the outcome to answer the research question (Kihn & Ihantola, 2015; Morse, 2015). I triangulated the data derived from the semistructured interview with the data obtained from examining relevant organizational project documents and organizational website to enhance the confirmability of the research data. Methodological triangulation enables a qualitative researcher to reduce personal bias and verify the truthfulness of participants' responses resulting in a more in-depth understanding of and faithful description of the phenomenon of interest (Anney, 2014; Carter, 2014).

Data saturation. Fusch and Ness (2015) indicated a qualitative researcher needed to achieve data saturation during a research study as failure to reach saturation would have a negative impact on the validity of the research. Data saturation is the point during an investigation that no new codes or information is derived from additional interview from study participants (El Hussein et al., 2015; Squires, 2018). I conducted semistructured interviews on the three participants selected for the qualitative research study and data saturation was assumed when no new codes or themes emerge at the end of the third interview. Having established data saturation was reached, conducting additional interviews on more participants was not required as recommended by Vasileiou, Barnett, Thorpe, and Young (2018).

Transition and Summary

In Section 2 I discussed the approaches and justification for each of the

approaches that I used to explore the project overrun phenomenon and answer the research question. I discussed the purpose statement, my role as the researcher, the participants, research method and design, and the target population and sampling method that I used for the research. I explained the data collection instrument, data collection technique, data organization technique, data analysis techniques, and process to ensure the reliability and validity of the research. Section 3 consists of these subsections: presentation of findings, application to professional practice, implications for social change, recommendations for action, recommendations for further research, and conclusion.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this qualitative multiple case study was to explore the strategies that successful project executives in utility organizations use to deliver infrastructure construction projects on-budget and on-schedule. The participants for this multiple case study comprised three project executives from different utility organizations located in the northeastern United States who had 10 years of project management experience minimum and had managed one or more infrastructure construction projects to successful completion in the past 5 years. I collected the data for this study primarily using the semistructured interview technique and complemented with a review of the organizational documents shared by the three project executives who volunteered their participation for the study.

In this section, I discuss the results derived from the application of the design process, identifying key themes and conclusions deduced from the analysis, and offer recommendations to utility organization leaders, project management practitioners and project management researchers. The major themes derived from the analysis were (a) develop detailed project scope, (b) apply relevant project management tools, (c) apply effective project management skills, (d) customize project management processes and procedures, and (e) capture knowledge and share lessons learned.

Presentation of the Findings

The objective of this research was to seek an answer to the research question: What strategies do successful project executives in utility organizations employ to deliver

infrastructure construction projects on-budget and on-schedule? To answer this research question, I conducted semistructured interviews and reviewed organizational records shared by the three project executives selected from three utility organizations located in the northeastern United States. I used an interview protocol as a guide to conduct the semistructured interview process. Applying an interview protocol enables a researcher to ensure the interview is conducted in an ethical manner and enhances the quality of data collected from the process (Castillo-Montoya, 2016). The interview protocol included the introduction of the study objectives, a review of the consent form, an assurance of the confidentiality of information provided, and approval to audio record the interview. As part of the protocol, I also asked the prepared nine interview questions and follow-up questions, collected necessary documents, and sought participation in member checking. The interview with each of the three participants lasted an average of 35 minutes and occurred at locations chosen by each of the participants. I ensured the privacy of the participants by identifying the three participants in the study data with pseudonyms PT1, PT2, and PT3, and their respective organizations with pseudonyms A, B, and C.

I shared the summary of the research findings with the three participants after the interviews to confirm the accuracy of my interpretation of their statements. Yin's (2011) five step approach was the overarching technique employed to guide the qualitative data analysis process. Yin's five step approach consists of five phases: (1) compiling and organizing phase, (2) disassembling phase, (3) reassembling phase, (4) interpreting phase, and (5) concluding phase. Applying the methodological triangulation approach, I used the documents obtained from the organizations to compare and confirm data collected from

the semistrucured interview method at the initial stages of the data analysis process.

I used the NVivo 12 software tool to organize, sort, and analyze the interview data. Using the NVivo 12 software, I identified certain sentences and phrases that were of significance to the phenomenon being investigated and attached different labels (codes) to them. These codes were later grouped into categories based on similarities in meaning. The categories were in turn grouped or merged to form themes based on patterns in meaning or overarching ideas identified across the categories. The key themes that emerged from the analysis of the interview data were (a) developing a detailed project scope, (b) applying relevant project management tools, (c) applying effective project management skills, (c) customizing project management processes and procedures, and (e) capturing knowledge and sharing lessons learned. Table 1 shows the frequency of the key themes.

Table 1

Frequency of Emergent Themes

	Frequency		
Emergent theme	Participant 1	Participant 2	Participant 3
Develop detailed project scope	1	3	2
Apply relevant project management tools	3	2	3
Apply effective project management skills	3	4	3
Customize project management processes and procedures	4	3	3
Capture knowledge and share lessons learned	3	2	2

Theme 1: Develop Detailed Project Scope

The first theme that emerged from the analysis of the interview data collected from the participants is to develop a detailed project scope. Banda and Pretorius (2016) indicated that the essence of developing a project scope is to provide enough details about a project to emphasize the tasks that need to be performed to meet the set of deliverables required by the project owner. A well thought out project scope will contain details on planned time, budget, and quality parameters required to complete the tasks successfully. Banda and Pretorius stated that the project scope should also contain information on potential risks identified and strategies that can be deployed to reduce the likelihood of the occurrence of the risk or reduce the impact if it does occur. All three participants (PT1, PT2, and PT3) mentioned that it is quite important during project planning that the project executive develops a detailed project scope which, among other information, should include a detailed description of the project complemented with a target schedule and target budget before the project is approved and commenced. The project scope measures indicated in the project scope by the participants were used by them to implement scope management, which was, in turn, was applied to guide and monitor the project to achieve expected project performance.

Shirazia, Kazemipoor, and Tavakkoli-Moghaddam (2017) noted that it is important to develop a proper project scope at the onset of a project. Shirazia et al. mentioned that details from the project scope provide the parameters that can be used to control changes and which will be used in measuring the project performance. The project scope developed by the participants normally contains information on the specific

service problem the organization is trying to solve or avert and an outline of technical details that confirm implementing the scope will address the problem. PT1 noted if the problem the organization (Organization A) is trying to resolve is an inadequate level of supply to a section of the public during the summer, then the goal detailed in the scope will be to ensure completion of the project to provide the required supply level during the summer is attainable. PT2 noted that if an infrastructure is critical to the organization (Organization B) for maintaining a much higher winter load than in the summer, the goal emphasized in the scope will be to ensure that the infrastructure project is completed before winter.

PT3 indicated they provide information on conditions of an underground facility to be replaced, risks of unknown locations of crossing utilities, and quality expectations from upgrades. PT3 said "users' expectation and satisfaction and commercial value is the goal." Implementing a project to address service problems is a major part of an organization's strategy of responding to complexities and changes in its business environment, which includes ever-growing demand of customers, aging facilities, and the threat of competitors (Itegi, 2015; Kiehne et al., 2017).

Amoatey and Anson (2017) mentioned the assumptions, requirements, and endpoint for a project must be robustly but concisely detailed in the project definition to ensure everyone obtains a clear and noncontradictory understanding of the intent of the project. PT2 and PT3 inferred that in the project scope, it is important to list out the assumptions used to establish the baseline for the schedule and budget, which can then be updated with lessons learned as project progresses. PT2 and PT3's review of the changes

in the assumptions provided valuable information that was used to determine issues that were causing a project to overrun.

Theme 1: Correlation with recent studies. Participants' experience on the importance of developing detailed project scope to project performance confirms the research findings presented by Samset and Volden (2016) and Banda and Pretorius (2016). Samset and Volden found the fundamental problem that lead to major public investment projects not achieving the intended purpose can be traced back to deficiencies in the written project scope or lack of written project scope at the earliest preparatory phases. Samset and Volden asserted that front-end planning and detailing of scope is crucial to improving project performance and ensuring project success. Banda and Pretorius implemented extensive research on performance of some select infrastructure projects implemented by some public and private agencies. Banda and Pretorius discovered applying a detailed and concise project scope definition positively impacts performance of infrastructure projects.

Participants emphasized project management implementation built out from a clear and detailed scope ensures that the right work necessary to achieve the organization's goals and objectives is implemented. The participants demonstrated that the project scope details the organization's response to the specific technical, environmental or business challenge. Derenskaya (2018) indicated that justification and information used in developing the scope are normally based on the organization's project purpose, impacts of the environment, and the organization's internal dynamics in relation to the project. Cristóbal, Carral, Diaz, Fraguela, and Iglesias (2019) in their findings on

complexity in project management stated that project scope provides a window to defining and understanding the uncertainties and complexities associated with a project. Cristóbal et al. indicated that understanding the uncertainties and complexities enables the project manager to match the project implementation plan that best fit the complexities identified and can produce the best outcome.

Theme 1: Correlation with contingency theory. The participants' concept of developing a detailed project scope that adequately responds to the organization's complexities correlates to the perspective of Lawrence and Lorsch (1967) on contingency theory. Lawrence and Lorsch viewed an organization as an active system existing in an uncertain and dynamic environment, with a tendency to reach out to bring order to its complex environment. Lawrence and Lorsch indicated that the effectiveness of the organization would be contingent on the extent to which its system structures fit environmental conditions. Shenhar (1998) extended the contingency theory into project management. Shenhar found that during the project planning and scope stage, the project manager must set practices to fit project uncertainty and complexity to increase the chances of success.

The participants emphasized the need for a project executive to evaluate and ensure the various technical and management complexities surrounding the organization and project reflect in defining the scope, setting the target schedule, target budget, and in the implementation process to achieve the set objectives. Suda et al. (2015) mentioned that contingency theory should be used for complex managerial and project management decision making that involves large infrastructure projects, especially during project

definition stages, instead of other concepts that are usually employed for project planning. Suda et al. cautioned that the adoption of the wrong project management approach to a major infrastructure project might lead to problems.

Theme 2: Apply Relevant Project Management Tools

Applying relevant project management software tools was the second theme that emerged from the analysis of the data collected from the three participants. Pellerin, Perriera, Guillota, and Léger (2013) indicated that a project management software package is an information technology program developed to provide users with complete and documented information on project performance. The participants expressed that after establishing clear and detailed project scope, the next essential step is applying a project management software tool capable of pulling together information, process it, and provide actionable results. Wali and Othman (2019) noted the huge amount of information and varied considerations is required now for pre-construction planning to develop and schedule the activities sequence, defining work tasks and responsibilities, determine applicable construction methods, and allocation of resources.

The participants cited they typically use project scheduling software as against writing down what is to be done day by day. The participants mentioned the software is applied to list out in detail all the activities that are going to take place, which is linked to estimates, and then some logic is applied to chart the project execution path. PT1 said "I use excel sheet to plan critical paths milestones for the months, permitting applications, vetting and contract awards processing and overall budget." Using this particular tool enabled PT 1 to present a concise picture of the state of each project to the top executives

at any moment. PT1 indicated mistakes of the past were avoided where people assume tangential tasks without understanding the effect on project target. PT1 said "they now know when to say no or when they should say we will address that at the end of the project if the project is on time and budget."

PT3 said "depending on the contract, I use either Microsoft Project or Primavera to forecast resource demand, scheduling, costing and budgeting, and contract valuation." PT2 demonstrated a preference for primavera. PT2 said "primavera is a great tool to set an overall schedule and expectations." PT2 and PT3 demonstrated that using a tool enabled them to plan and document project information effectively and monitor the implementation of project tasks. Desmond (2017) and Valenko and Klanšek (2017) inferred that no particular project management software is found to be most effective across the board, in choosing project management software an organization needs to consider the industry, adaptable to organizations functions, project management needs, project type, and tasks.

All participants mentioned that the application of the project management tool enables them to effectively document and incorporate information sorted and contributed from different stakeholders, especially those directly involved in the project management into the schedule. The participants indicated adopting contributions from different stakeholders into the schedule enables the project team members to understand better the responsibilities and accountabilities expected from each individual during the project implementation process. PT2 emphasized that a project executive does not have to cajole anyone into implementing what they are required to implement once you have received

their initial "agreement "during the development of the project schedule. PT2 indicated that the use of a project management tool enables a project manager to reinforce accountability without it becoming a personal issue. PT2 said "let the project schedule be the bad guy."

Pellerin et al. (2013) stated project leaders use project management software to facilitate the flow of information from one subsystem to another, integrate various data from multiple sources into a more manageable data file, and depict the interaction and interrelation of roles and enterprise systems within an organization. PT3 mentioned using the project management tool. I was able to detail the complex integrations and overlaps between the engineering tasks to the project team and the contractor, thereby reducing ambiguities in the understanding of expected project deliverables. PT2 made a similar assertion on importance of project management tool. PT2 mentioned adopting the Primavera tool, a versatile software, enables the project manager to accurately and graphically illustrate the roles, interdependence of roles, and impact of each individual's role on meeting the overall project objective. PT1 mentioned routinely reviewing with the contractor the project schedules generated using a project management tool enables the team to determine overlapping or conflicting work schedules, unrealistic schedules, and works on the verge of slippage. Wali and Othman (2019) noted the relevance of project management tools has increased in the field of construction project management because of the number of interacting elements in the environment and strength of its impact that are now needed to be considered in managing a project.

Theme 2: Correlation with recent studies. The application of relevant project

management tools strategy to improve project planning, scheduling, costing, and implementation of project management processes expressed by the participants correlates with the findings of the study implemented by Radujkovića and Sjekavica (2017). Radujkovića and Sjekavica performed a case study research of three public water projects to determine the contribution of project knowledge and practices in the area of construction management. Radujkovića and Sjekavica found the application of relevant project management software to be a key enabler or influencer of project management success. Radujkovića and Sjekavica buttressed that project management software can enable an organization to enhance its project planning, monitoring, and control process better.

PT1 said "normally we use the scheduling tool to access the progress of the project" on regular bases. PT2 and PT3 highlighted that using a management tool enables the project leadership to aggregate and integrate project related information and deliver a consistent message across to field operations and other stakeholders. Bor and Kiptum (2017) stated project management software typically contains functions that enable organizations to implement multidimensional information integration, access comprehensive project information, and facilitate information distribution and communication and visualization of the projects. Bor and Kiptum found that persistent use of an efficient project management software tool has a significant positive impact on engineering project performance. Bor and Kiptum asserted organization leaders that want to implement a meaningful project plan and maintain the motivation of projects' stakeholders need to employ a system that can effectively review and relate information

on the project to the broader organizational context.

Theme 2: Correlation with contingency theory. Theme 2 correlates with Wooton's (1977) perspective on contingency theory. Wooton postulated that an organization has to continually evolve its systems to respond appropriately to the persistent instability in the organization's environment. Islam and Hu (2012) indicated an organization where the organization's internal characteristics, including control systems, technology, and structure, are aligned with the complexity in its environment would experience higher performance. The participants on realizing the perceived inefficiency or need for improvement in their project implementation process started emphasizing the use of specific applicable capabilities in the existing software application or adopted the use of completely different software applications to respond to the changing realities in their environment.

The participants used different software tools for managing projects, software they believed is most appropriate to their particular situation. PT1 employed a simple project management software tool, Excel, to monitor schedule and financials, especially of several different types of construction projects being implemented at the same time at a high level. PT1's focus is detecting contracts at risks of slippage, facilitating issues to be resolved at the project level or project executive level, and ultimately ensuring the projects are completed within overall budget goals. PT1's focus was aligning the project to complexities in the immediate and broader environment of the project. PT2 used robust project management software, Primavera, and PT3 preference is for either Primavera or Microsoft Project to manage each of the projects that they have oversights responsibility

over. PT2 and PT3 used the project management information software to communicate project tasks, derive stakeholder's input, determine and demonstrate the impact of potential risks, and reinforce accountability. PT2 and PT3 focus was the project at the process level and task level aligning to complexities in the environment. Zheng and Carvalho (2016) indicated that a flexible project management approach is required to manage a project existing in an increasingly complex environment. Cole (2017) noted for a project in uncertain and complex surroundings, the project management approach should not only focus on the project process but should extend the same to the project tasks.

Theme 3: Apply Effective Project Management Skills

Applying effective project management skills is the third theme that emerged from the study. The participants demonstrated that having strong project management skills is essential to successfully managing engineering projects. Alias, Zawawi, and Aris (2014) indicated that to be successful at project management, a project manager must demonstrate hard and soft skills and competences in many areas. Alias et al. noted specifically for the management of a construction project, a project manager is required to have knowledge of traditional modern management in conjunction with an understanding of the design and construction process. All the participants stressed that a project executive must have the ability to carefully review the configurations of an engineering project and deduce the most realistic contract time and cost for the project. PT1 mentioned in the past many projects were failingly because some project managers in the organization (organization A) lack in-depth technical skills and experience to set

realistic contract times for projects. PT1 said "you have to start with the right expectation at the right place if you are going to succeed."

PT2 provided details of the tactic that was employed in determining contract time for projects in organization B, which encompass using both technical and interpersonal skills. PT2 mentioned project executive breaks down the project into tasks and seeks contribution and agreement of the engineer and field operations to develop the time estimates. PT2 used the opportunity to forge a sense of collaboration and cooperation among stakeholders. PT3 mentioned a background in engineering and learning from experience was tremendously beneficial in planning and implementing contracts. PT3 noted the technical skill was relevant in understanding and interpreting complex engineering designs, determining risks, developing workable timelines, assigning tasks, and setting up attainable milestones.

The participants demonstrated the importance of having soft skills in leading a technical project team. PT2 facilitated acceptance of a new set of project management practices against the existing methods, which was deemed insensitive to stakeholder's contributions and complexities. PT2 introduced a communication perspective that strongly encourages field operations to provide feedback on their new roles as opposed to not just agreeing and going about doing their job the way they have always done. PT2 used the feedback opportunity to focus and provide information specific to an individual and increase the individual's understanding of the individual's new role. Tabassi et al. (2016) mentioned that engaging communication and empowering subordinates are major leadership skills that are deemed to influence productivity in the construction industry

directly.

PT3 commented that a project executive should avoid presenting an attitude that the only way of implementing a process is the way proffered by the project executive. PT3 stressed project executives need to listen and pay attention to team member's concerns, encourage their contributions, and regularly communicate with them. PT3 said "I often hold meetings with my construction managers, and listen carefully to understand the reason a project is about to overrun, and how best to move forward to do what we needed to be done and still meet our targets?' Carvalho (2015) asserted that when a project fails, it is often assumed to be evidence of deficient management, an issue that can be fixed by better management, hard skills. Carvalho highlighted that focus should rather be on both hard skills and soft skills of the project manager. Carvalho stated a project manager that possesses a high level of both hard skills and soft skills and applies both skills complementing each other increases the potential of implementing a project successfully. Carvalho suggested that education, retraining, learning, and knowledge sharing on performance are methods that project manager could use to improve project management skills.

Theme 3: Correlation with recent studies. The participants' use of hard skills, gained through a background knowledge of construction projects and experience on project management process, aligns with the outcome of Cole (2017) study on improving project management success in infrastructure projects. Cole noted that project managers of public and private infrastructure needed to be trained to have required skills set to implement the standard scope, cost, quality and customer management, and ability to

recognize and implement other appropriate project management methodologies at each stage in the project lifecycle.

The participants' emphasized the importance of project manager's communication soft skills in getting the support of the team or buy-in in planning project implementation process confirms conclusions stated in the works of Awan, Ahmed, and Zulqarnain (2015). Awan et al. study on project managers' critical success factors (CSFs) highlighted the importance and impact of project managers' soft skills on a project's performance. Awan et al. remarked that the application of CSFs of communication and coordination skills and in synchronization with some other elements in the project management practice would positively impact the delivery time of a construction project. Musembi, Guyo, and Mbuthia (2018) study of project supervisors that lead project teams working on projects in the energy sector shows that the utilization of soft skills in projects increases the potential that a project would be completed on-time and on-budget.

Smith, Jitpaiboon, Yang, and Gu (2018) found a project manager needed some measure of non-cognitive skills, soft skills, which includes leadership, communication, and performance behavior, alongside the known predominant cognitive skills, technical skills, to successfully manage individuals and teams to produce the required project management success. Abou-Hafs, Boutora, and Smaili (2019) in another study came to partly the same conclusions as Smith et al. Abou-Hafs et al. established that in implementations of a project that project leader's behavioral competence, soft skills, and technical competence have more impact on eventual project outcome. Abou-Hafs et al. found that demonstrating a high level of both technical competence and behavioral

competence have a far significant effect on project success than demonstrating a a high level of either technical competence or behavioral competence.

Theme 3: Correlation with contingency theory. Theme 3 correlates with the seminal works of Fiedler (1967) on contingency theory. Fiedler established that there is a contingent relationship between the environment, style of leadership, and effectiveness of an organization. Fiedler mentioned that no particular leadership style is better or worse than others that the approach to leadership should be contingent on the prevailing situation or context. All the participants seem to possess high technical competence or hard skills, which is dictated by the context of the organization and project being technical oriented. The participants, despite possessing high competence each seems to demonstrate a different degree of a mix of both hard skill and soft skills at different stages of the project implementation process. PT1 seems to demonstrate more of technical skills at the initial stages of the project, and more of soft skills as the project progresses. PT2 seems to demonstrate more of soft skills throughout the project management stages, and PT3 demonstrate more of soft skills during execution and completion stages.

The application of soft skills alongside and probably more than hard skills by the participants can be linked to the increasing complexity associated with the construction of technical projects (Mirza & Ehsan, 2017). Vidal et al.'s (2017) study on contingency theory approach to leadership revealed that to manage projects effectively the traditional leadership approach based on using technical skill and authority within an organization needed to be well complimented with people skills to get people to implement certain

tasks and processes required by the leadership in complex project environments. DuBois et al. (2015) indicated that organizations should select project managers that possess traits and leadership skills necessary or adaptable to the organizations' specific project environment and project management practices. DuBois et al. indicated possessing the leadership qualities that are quite aligned to the organizations' environment enables a project manager to manage a construction project more smoothly and efficiently.

Theme 4: Customize Project Management Processes and Procedures

Customization of project implementation processes and procedures to suit the specific project implementation requirements of each organization was the fourth theme that emerged from the analysis of the data collected from the three participants. All the participants' organizations have existing standard project management processes, but based on past experience of project performance, participants adopted or adapted some new strategies or steps into their standard project management process to improve its effectiveness. Kononenko and Lutsenko (2018) indicated that there are several project management processes and procedures developed over the years by professional institutions for application in different industries and project management needs. Kononenko and Lutsenko stated it is imperative for the project management team to apply the best existing standard process or create adaption to guide the project implementation and address problems as both the project parameters and the quality of its product will depend on it.

PT3 demonstrated establishing a standardized step-by-step project inspection procedure to provide details and guide the construction execution phase of the project

management process. PT3 stated the "construction managers follow the format in starting, inspecting tasks and ensuring the quality, communication, documenting, handing over of each deliverable." PT1 asserted that the project management process entails formalizing and breaking the design review procedure into a 3-step review process to increase the extent of operations input into the design prior construction phase. PT1's new process involved sending the engineering design to the operations for review and feedback at the initial stage, foundations, next when the design is in an advanced stage, superstructures, and finally, at the completion of the design. PT1's new procedure was implemented within the project planning phase of the project management process, whereas PT3's project execution procedure was implemented within the construction execution phase.

PT2 explained instituting a new project management process whereby the project manager coordinates the project from beginning to the end, and a supportive process was created for engineering and design activities, and another supportive process for construction and operations activities. PT2 indicated that the new procedure ensures that engineering focuses on engineering and operations focus on construction and operations. PT2 indicated that the new system increased contributions and representation from other stakeholders into the project planning. PT2 mentioned "in the past engineering just run their project from the inception to completion," and that engineering permitted limited contributions from other stakeholders. Joslin and Mulller (2015) asserted customized processes in combination with standardized methodology needed to be employed for project management. Joslin and Muller noted that the combination of both customized

processes and standardized methodology presents a comprehensive process that enhances project effectiveness and increases the chance of project success. The participants affirmed that the new customized processes provide better structure, flexibility, and a more inclusiveness approach to project implementation. The new process ensured that project stakeholders' interests are considered early in the engineering phase resulting in potential issues or disputes being identified and resolved before execution and loss of project time avoided. PT3 remarked "unlike in the past the inspection team and contractor now have a clear and concise understanding of the project manager's expectations, especially in terms scope of each specific task."

Karaman and Kurt (2015) expressed that an organization needs to choose a process and supportive processes or procedures that best fit the organization's project management philosophy, stakeholder management, project execution, or risk perspective. Kononenko and Lutsenko (2018) highlighted that the application of appropriate procedures and templates assigned to selected processes enhances the implementation of the process. The participants discussed utilizing customized procedures or techniques to manage specific processes that have been found problematic in the recent past. PT3 mentioned establishing a procedure to better track requests for information (RFIs) and reduced incident of delay in response between the contractor and design engineer, and between contractor and organizations' operations during construction. PT3 mentioned the new RFI procedure involved using a new RFI form template, communication flow chart, and emailing distribution and notification protocol to necessary parties.

PT2 and PT1 adopted procedures similar to the process applied by PT3. PT2

narrated the introduction of a project schedule tracking documentation to track progress, identify and mitigate issues, project risks as early as possible through collaborative efforts. PT1 introduced a project procedure to track and manage change order requests during the project execution process, and the goal is to limit change orders to 5%. PT1 indicated the system involves project managers collecting the data on cause and source of the change order, documentation of the nature of the change orders, periodical review of change order requests, stakeholder inputs, and resolution of issues. All the participants indicated they were able to make a quicker and better decision over their construction projects by instituting the new process and procedures. PT1 indicated with the new system "I get informed and involved in finding solutions to an issue much faster, and avoid the issue having a serious negative impact on a task." PT3 asserted "improved process allowed us to more efficiently resolve minor gaps or differences in understanding of design drawings, technical specifications, or contract provisions on time." Cole (2017) noted that it is important to establish a project process that hastens decision making during project execution. Cole stated frequent delay or slow decision making often result in scope creep, rework, and contribute to project overruns.

Theme 4: Correlation with recent studies. The participants' perception on the importance of customization of project management processes and procedures on implementation of project aligns with the outcome of recent studies on the impact of project management methodologies on project success implemented by Abdulla and Al-Hashimi (2019). Abdulla and Al-Hashimi found that applying a combined standard process and procedure customized to fit the particular organizational or project situations

enables a project manager to efficiently and effectively manage critical infrastructure projects leading to an increase in project performance. Joslin and Mulller (2015) argued that an organization project management process is deemed incomplete or limited if the process does not encompass processes, procedures, and techniques that are appropriate to the organization and executing certain types of tasks or projects. Joslin and Mulller postulated that determining and applying an appropriate process requires understanding the organization's governance paradigm and industry context.

The participants' use of customized project management procedure enabled the project team to make better judgment and decisions in managing the project, especially at the task level, and respond more effectively to the existing challenges in the project environ. Pace (2019) asserted project manager experience, ability to work with people, understanding organization culture, and expressing of technical capabilities and tacit knowledge is maximized in the environment where the project process is conditioned to the assumptions and sensitivities in the environment which it exists. Radujkovića and Sjekavica (2017) noted that there is possibility for a right project to succeed without successful project management, but successful project management significantly enhances the possibility of project success. Radujkovića and Sjekavica asserted applying the right project procedure and practices is important for the integration of human interaction, management, and technical perspectives needed to achieve successful project management of technological and engineering projects.

Theme 4: Correlation with contingency theory. The participants' customization of project management processes and procedures correlates with Lawrence and Lorsch

(1967) perspective on contingency theory. Lawrence and Lorsch perceive an organization as an active system in which its environments can range from highly dynamic to extremely stable and tends to reach out to bring order to this complex environment to effectively cope with the situation. Lawrence and Lorsch indicated an organization is not a single system entity but consisting of various interrelated subsystems or sub task levels. Lawrence and Lorsch postulated that similar to an organization's need to cope with the surrounding environment, the subsystems need to cope with the characteristics of their respective segments of the total external environment. All the participants demonstrated that the new procedures adopted were targeted and applied to manage either at the process level or task levels specific challenges in the project's environment impacting the performance of their projects. The challenges in the participant's project's environment include concern about the contractor's competence, procurement issues, communication issues, and construction and technical complexities.

Beach and Mitchell (1978) stated that decision making entails making a rational appraisal of an issue and following a process in deciding among alternative options of action required to solve the issue. Tarter and Hoy (1998) postulated that there is no particular best course of a solution to a problem best approach is the one that fits the circumstances. The participants on the evaluation of the issues, understanding the impact of the situation on effective implementation of the project, rationalized and decided on the particular course that they deemed best mitigates the issue within the context of the project (Beach & Mitchell, 1978; Tarter & Hoy, 1999).

Theme 5: Capture Knowledge and Share Lessons Learned

Capturing knowledge and implementing lessons learned is the fifth theme that emerged from the study. All the participants narrated the method that they used in capturing tacit and explicit project implementation knowledge from individual members or groups within their teams. The participants explained the impact of sharing and applying lessons learned from the project performance knowledge has on the implementation and performance of their projects. Du, Zhou, Yuan, and Liu (2019) indicated that project knowledge-sharing is an important part of knowledge management; it involves collection, processing, and sharing of lessons learned deemed critical to cooperation and overall performance.

PT3 stated that documenting and sharing lessons learned enabled the project team to initiate and execute projects more quickly as relevant information from one project can be transferred and applied to another project. PT3 said,

> When we start a project we don't start from scratch, we start from lessons learned and communicate what we have on contractor competence, affected community and other issues driving the performance, and process options to follow in the project context.

PT3 indicated the project team follows a process flow chart to implement the lessons learned for each project. PT3's process flow chart indicates these steps (a) end of project, (b) completion of questionnaire and identify issues, (c) team meets to discuss questionnaire, (d) document and save lessons learned to database, and (e) retrieve and communicate lessons learned for use in current project. McClory, Read, and Labib (2017)

noted organizations that actively facilitate and capture the lessons learned through a structured procedure as recommended by the professional bodies stand to benefit significantly from process improvement than organizations where personal experience and individual learning are shared on an informal basis.

PT1 mentioned holding regular project management meetings with the organization's project managers, where project managers discuss project progress, discuss pertinent project issues, and share project performance experience. PT1 demonstrated that lessons learned from past project experience enabled project management teams to become better at managing the schedule by being savvier with the submittals process and eventually improving project performance. PT1 stated project managers now at the beginning of the project identify all items on the contract that are going to take the longest time to arrive and ask the contractor to provide the submittals for those items first on the job. PT1 indicated early approval of these items means the contractor can place orders for the items and know exactly when the items will be delivered to the site and plan accordingly. PT1 mentioned in the past there have being situation where a contractor will make order for an item close to when the item is needed for construction thinking it will take the normal 4 to 6 weeks delivery period, but due to an unforeseen reason, the contractor's supplier took 14 months to supply the item to project site, resulting in serious schedule delay. Terzieva (2014) inferred that project manager should pay close attention to both failures and success stories experienced in any specific phase during the project implementation, as both stories can provide valuable information that can, in turn, be used for practice learning and shared with

project team member on future projects or pass on to other project managers.

PT2 demonstrated that capturing and sharing of project experience amongst project managers was also an important strategy used in reducing project overrun. PT2 discussed the method the organization used in implementing the strategy. PT2 indicated that the organization brought together people of the same position to develop a project management community of practice. PT2 stated that the focus of the community was to facilitate the learning and sharing of lessons learned amongst project managers and provide the necessary support to overcome any specific project challenges a project manager may be facing. Pyrko, Dörfler, and Eden (2017) explained that a community of practice is the bonding together of a group of people who faces similar types of problems in their professional practice to find solutions to such problems, and in the process, they share tacit knowledge and store knowledge. Du, Zhou, Yuan, and Liu (2019); Paver and Duffield (2019); and Tshuma, Steyn, and van Waveren (2018) inferred that beyond using procedures in the form of documentation, templates, and charts, that professional meetings and community promotes willingness to share knowledge among individuals in an organization and positively impacting knowledge management.

Theme 5: Correlation with recent studies. The participants' perspective on the importance of capturing knowledge and implementing lessons learned to achieve a reduction in project overrun correlates with the outcome of the study on project management and lessons learned process by Paver and Duffield (2019). Paver and Duffield found in their study that for the few organizations that ensured lessons learned are factored into the implementation of their project, program and portfolio management

were less likely to repeat mistakes of the past. Noranga and Nooshinb (2016) stated that it is important to record all positive and negative experiences derived from executing a task. Noranga and Nooshinb postulated that past experiences highly influence the success of any new project development. PT1 and PT3's lessons learned experience provided the bases they used to evaluate and understand the causes of gaps or inefficiency observed in the project implementation process, and to deriving appropriate method used to address the situation.

The participant's concept of the relevance of capturing and implementing lessons learned to improve the effectiveness of project process is corroborated by Lindhard and Larsen (2017). Lindhard and Larsen found organizations that improve their sharing of lessons learned experience are able to reduce their project deficiencies by improving competences and collaboration among the management team. Lindhard and Larsen inferred that improvement of the underlying factors of competences and collaboration tends to increase the performance parameters of time, cost, and quality of construction projects. Lindhard and Larsen also noted that an organization establishing a structured process of capturing experiences from the project environment enhances the communication process. Lindhard and Larsen mentioned that well-functioning communication, in turn, reduces the impact of the uncertainties and complexities in the project environment on the project.

The three participants discussed different types of methods their project team used to capture knowledge and lessons learned. PT1 and PT3's methods for capturing lessons learned is informed mostly by the contractor's competences, and project planning issues.

PT2's current methods for capturing lessons learned is informed by the organizational structure and new project implementation process. Terzieva and Morabito (2016) asserted that for an organization to manage knowledge successfully, the organization must adopt a knowledge reporting strategy that will suit the organization's nature. Aerts, Dooms, and Haezendonck (2017) confirm Terzieva and Morabito findings indicated that in large scale infrastructure development projects that it is pertinent for the knowledge management system to be of dynamic nature and adaptable to environmental change.

Theme 5: Correlation with contingency theory. Theme 5 correlates with Wooton's (1977) perspective on contingency theory. All the participants developed and employed the lessons learned methods to constantly collect feedback from the project process and use the information collected to avoid mistakes of the past and resolve related issues that developed in the course of a new project. Wooton noted it is pertinent for an organization to imbibe the notion of constantly scanning the environment, learning, and changing the organization to respond to persistent instability associated with modern organizational environments appropriately.

The participants emphasized different types of procedures for capturing and implementing lessons learned. PT3's procedure was focused on capturing knowledge from the process, and task levels and sharing lessons learned with the entire project team. PT1's procedure was focused on capturing knowledge and sharing lessons learned among project managers for managing at the process level. PT2's procedure was focused on capturing knowledge and sharing lessons learned among professional project managers and other professionals in senior positions in the organization that is involved in the

project implementation process. Zeithaml, Varadarajan, and Zeithaml (1988) report on contingency theory application indicated that it is important for organizations to choose the most suitable management systems for knowledge sharing based on the prevailing internal situations including strategy on structure, process, and project expectations. Becerra-Fernandez and Sabherwal (2001) study on contingency theory in relation to knowledge management made a similar conclusion but from a task focus perspective. Becerra-Fernandez and Sabherwal argued that a manager should understand the specific characteristics issues affecting their tasks, based on the task environment and orientation and focus on developing a particular knowledge reporting process.

Applications to Professional Practice

Despite the adoption and application of modern project management approaches, techniques and tools by many utility organizations and project management practitioners for project implementation, construction projects are still failing at an alarming rate (Aljohani et al., 2017; Richardson et al., 2015). The findings and recommendations presented in this study, anchored on the relevant extant body of knowledge, provide strategies that utility organization leaders, project executives, and practitioners may use to strengthen their project management practices, policies, and ultimately improve their project management performance. Improved project management performance potentially can enable a utility organization to achieve higher returns on investment, gain competitive advantage, and drive the organizational business success (Kiehne et al., 2017; Serra & Kunc, 2015).

The findings of this study indicate that project executives in utility organizations

need to (a) develop a detailed project scope, (b) apply relevant project management tools, (c) apply effective project management skills, (d) apply a customized project management processes and procedures, and (e) capture knowledge and share lessons learned to potentially improve their project management performance. Developing a detailed project scope enables a project executive to detail and emphasize factors that are pertinent to achieving project success required by the organization. Detailed project scope should include the scope of project and deliverables, planned time and budget, project implementation strategy, and project strategic goal. Project executives that implement detailed project scope are better able to align the project planning with project strategic goals and organization strategic business goals, and also improve the project benefit realization management. Implementing detailed project scope can enhance the capability of an organization to strategically integrate the new project into the functioning of the organization and its management system on completion of the project (Ferrer Romero, 2018).

Applying project management software enables project executives to develop and display information about the project to stakeholders, information such as the work breakdown structure, works schedule, task costs, resources, and financial expenses. Using project management software that is relevant and a best fit for the project context can enable the project executive to better determine the full cost of the project and enhance the accuracy of the costs, and improve collaboration and communication interaction among team members. Applying relevant project management software can increase an organization capability to detect weaknesses in the project process and capacity to

respond faster to such weaknesses. Applying relevant project management software increases the project management process agility in responding to specific issues in the project environment (Pellerin, Perriera, Guillota, & Léger, 2013).

Applying a high level of soft skills in appropriate combination with the hard skills enables a project executive to improve leadership effectiveness better and enhance the project team's productivity in the implementation of construction projects. Project executives with a high level of interpersonal soft skills can apply the skills to effectively communicate, relate, and motivate employees from a diverse professional backgrounds, cultures and values, and social interests and demographics; diversity is increasingly common in the field of construction today (Potter et al., 2018; Zuo, Zhao, Nguyen, Ma, & Gao, 2018).

Customizing project management processes and procedures to meet the specific challenges experienced in the implementation of certain tasks or by gaps in the system enable the project executive to manage the project implementation process better. Customized project management processes and procedures strategy can be employed to target and improve specific project task challenges such as delay in RFIs processing, a high number of change order requests, and poor project communication. Applying customized project management processes and procedures potentially can lead to an improvement in assessing the project team's responsibilities and accountabilities, project decision making process, and effectiveness in responding to challenges in the project environment (Cole, 2017; Kononenko & Lutsenko, 2018).

Capturing knowledge and sharing lessons learned of project performance

experience among project team members could have a profound impact on the project implementation process and meeting project goals. Capturing knowledge and sharing lessons learned enable a project executive to better assess the underlying causes of inefficiency in a past project implementation process, find appropriate solutions to such problems, avoid repeating past mistakes and contribute to organizational knowledge repositories and knowledge management systems.

A review of extant project management literatures reveals that there is an abundance of literature on IT project management related techniques or IT business industry related strategies that a business organization can use to manage or control overruns in technical project execution. There are quite limited studies focused on business organizations in different industries, that for instance, a utility business organization can use to successfully manage or control overruns in the execution of its technical projects. Using this research study to explore the project overrun phenomenon in utility organizations, I was able to derive some insight on the type of issues leading to project overrun of construction projects, the impact of the project overrun, and strategies and techniques that can be applied to successfully manage and reduce project overruns in the utility industry. The outcome of this study can potentially enhance the understanding of the project management professionals and the practice of project management in the utility industry.

Implications for Social Change

The implications for positive social change include the potential for utility organizations to adopt the findings of this study to improve the utility organizations'

project management performance and save funds. These saved funds can be used to enhance the maintenance and expansion of the utilities' infrastructures, resulting in improved quality of service, and improving the wellbeing of local communities' residents. Allen, Clark, Cotruvo, and Grigg (2018) indicated that adequate maintenance of water distribution infrastructure can enhance public health and increase the economic potential of a community.

Corporate social responsibility is a management concept part of an organization's corporate strategy indicating a commitment to managing the impact of its operations on the social, economic, and environment of the organization's stakeholders (Jeje, 2017; Tharp & Chadhury, 2008). The findings from this study could also be used to promote positive social change because an organization's corporate social responsibility initiative can potentially be enhanced by improvement to the organization's project implementation process. Tharp and Chadhury (2008) stated the project manager could determine the likelihood a social, environmental, or ethical issue may emerge in the project and the potential impact of the issue on the project, community, and society at large. Tharp and Chadhury noted that the information on the social, environmental, and ethical issues can then be incorporated by the project executive into the project definition plan and execution processes to potentially limit or mitigate the risks. Tharp and Chadhury asserted in situations the social, environmental, or ethical issue is beyond what can be managed at the project level; the project manager can escalate the issue to appropriate leadership on corporate social responsibility in the organization to ensure societal good is good is promoted.

The implementation of findings of this study can contribute to conservation of earth resources, thereby positively impacting the society. Utility organizations that consistently complete projects as set out in project scope, and meeting target budget and schedule avoid consuming additional natural resources that would have being required to correct or complete poor-performing project or replace a failed project. The earth's natural resources that are potentially conserved consist of both raw materials and processed materials that are typically used in the design, construction, and maintenance of infrastructures used in delivering utility services to customers.

Recommendations for Action

The findings from this study may benefit the utility organizations and project executives involved in the construction of utility infrastructure projects. Project executives experiencing poor project performance of construction projects would find these findings a useful starting point to understanding possible gaps, lack of details, or deficiencies in the system, and then develop a new project management path leading to improved performance of the organization’s projects. Based on the findings and conclusions of the study, I propose the following recommendations for action by project executives.

Project executives should consider developing a robust format or template for the project scope development prior to construction. The project scope should, at a minimum, cover details on project objectives, target cost and schedule, justifications for the project, key milestones and key deliverables, acceptance criteria, known constraints and assumptions, potential issues or risks, and organizational leadership requirements. Project

executives should ensure procedures are adapted to key issues at the project task level; this can be achieved by reviewing project historical data, lessons learned, and analysis of project environment using applicable management analysis tools. Project executives should develop a robust monitoring system for the change order process and setting acceptable change order limits above which a review of the project implementation process will be triggered to determine factors causing the change order, source of the change order, and means of addressing the increase in change order request.

Utility organizational leaders should encourage senior project team members to participate in soft skills training programs. When project managers and senior project team members participate in a formal soft skills training programs, they can potentially be able to improve their leadership, communication, listening, people management, and judgment and decision-making skills. These skills are critical to ensuring the smooth implementation of construction projects in a complex organizational or project environment. Utility organizational leaders should encourage senior project team members to participate in project management institute and similar professional institutions organized project scheduling and project budgeting training to improve construction estimating skills. Starting a project based on a realistic project cost and project schedule projection is essential for achieving project success. Utility organization leaders need to develop and ensure project management processes are agile and responsive to key issues in the organization's environment that may impact project implementation. Some of these issues include public concerns on project activities, conflict with other utilities, environmental pollution issues, local contractor's capabilities,

and changing construction methodologies and technologies.

The results of this study will be published via Walden University's scholarly works, thereby enabling scholars and students interested in studying project management practices in the utility industry to access my findings. I will share the results of this study with participants of this study and to other interested parties through trade publications, professional journals, scholarly literature, seminars, conferences, and training programs.

Recommendations for Further Research

The interview data of the qualitative multiple case study were limited to a small sample size of three participants drawn from three utilities located in the northeastern United States. This limitation in the sample size of the study constrains the transferability of the findings to other populations. In addressing limitations in sample size, future researchers could explore the research focus using more than one participant per organization and increasing the number of participating utility organizations to a much larger number than three organizations. The qualitative multiple case study can also be conducted on participants from utility organizations across geographic boundaries.

The project executives that participated in this research study are persons in senior management positions at their respective utility organizations with the responsibility of overseeing several project managers and managing multiple projects across the organization. In the future, researchers can conduct the research on project executives, field project managers or construction managers and project superintendents to collect data and compare the perspective of different project management levels on methods to reducing project overrun. The study can also be conducted using a different research

method. Future researchers could use the quantitative research method to assess whether any of the themes that emerged or specific techniques that were mentioned by participants in this study does or does not significantly influence project performance of construction projects in the utility industry.

Reflections

I originally intended to conduct a quantitative research study to understand the relationship between the application of advanced project management tools, project benefit management, and reducing project overrun by project executives in the utility industry. I found after conducting an extensive review of the project management literature that quite a few in-depth studies on project management practices in the utility industry are available. Most of the available studies used data collected through quantitative survey instruments or from secondary sources. On realizing this situation, I changed my approach to qualitative research, believing I can contribute more to the body of knowledge on project management by conducting qualitative research. Conducting qualitative research enabled me to explore the phenomenon under focus from another perspective gathering in-depth information from participants that have directly experienced the phenomenon.

My constructivism worldview and professional background in the utility industry are possible areas of bias in the study. I made a conscious effort to ensure the influence of any preconceived views and perceptions that I may hold based on these two factors, my worldview and utility industry experience, on the conduct of the interview and analysis of the interview responses is as limited as possible. I avoided asking leading questions in my

follow-up questions and asked for explanations on relevant industry terms or wordings to avoid making personal assumptions. I ensured the research guidelines and protocols were applied as planned at all stages of the study, implemented field notes and reflective journal, and member checking processes.

Implementing this study was quite challenging at times, notably was the difficulty faced in accessing participants that fit the study parameters at the initial stages, but the situation was later overcome with some persistence in communications and inquiry with the participating organizations on my part. This study has also been rewarding because the study deepened my understanding of the process of conducting a qualitative study, enhanced academic writing skills, and skills to critically analyze qualitative research data. Conducting the study enabled me to converse with project leaders in the utility industry, and by so doing, validated some issues that I suspected were important but also discovered new issues not aware of initially that are impacting the project management practice in the industry. Further, conducting the study enabled me to better appreciate the complexities of the utility project environment and broaden my perspective on the applicability and adaptability of standard project management methodologies to the project management of construction projects.

Conclusion

Project management researchers have implemented several studies to identify causes of project overrun phenomenon and postulated relevant solutions to the issue, but these studies and its findings are mostly not targeted at the utility industry. I set out to explore project overrun phenomenon in the context of the utility industry and answering

the research question “What strategies do successful project executives in utility organizations employ to deliver infrastructure construction projects on-budget and on-schedule?” Using data collected from the project executives that participated in this study, the research question was answered. I determined from the analysis of the interview data that project executives in utility organizations can improve project management performance of construction projects applying following five strategies (a) developing detailed project scope, (b) applying relevant project management tools, (c) applying effective project management skills, (c) customizing project management processes and procedures, and (e) capturing knowledge and sharing lessons learned.

The infrastructures that utility organizations use to produce and deliver utility services such as telecommunications, electric power, natural gas, or public water and wastewater services to the public are typically very expensive to design, construct and manage to project completion. The high cost of acquiring and owning these utility infrastructures makes it imperative for a utility organization wanting to achieve a high level of project management performance to ensure the organization avoids waste or expending resources more than is necessary and achieve adequate returns on its investments. The findings and recommendations presented in this study provide utility organizations with information that the organization can potentially apply to achieve high levels of project management performance of infrastructure construction projects.

References

Aaltonen, K., & Kujala, J. (2016). Towards an improved understanding of project stakeholder landscapes. *International Journal of Project Management, 34*, 1537-1552. doi:10.1016/j.ijproman.2016.08.009

Abdou, S. M., Yong, K., & Othman, M. (2016). Project complexity influence on project management performance: The Malaysian perspective. *MATEC Web of Conferences, 66*(2016), 1-10. doi:10.1051/matecconf/20166

Abdulla, H., & Al-Hashimi, M. (2019). The impact of project management methodologies on project success: A case study of the oil and gas industry. *Journal of Engineering, Project, and Production Management, 9*, 115-125. doi:10.2478/jeppm-2019-0013

Abidali, R., & Alli, Y. (2018). Factors affecting on the performance of contractors in construction project: Bagdad, Iraq. *Journal of University of Babylon for Engineering Sciences, 26*(6), 257-265. Retrieved from https://www.journalofbabylon.com/

Abou-Hafs, H., Boutora, F., & Smaili, N. (2019). Identification and classification of the key competencies for social project managers in Agadir, Morocco. *Archives of Business Research, 7*, 277-288. doi:10.14738/abr.75.6585

Abusafiya, H. A. M., & Suliman, S. M. A. (2017). Causes and effects of cost overrun on construction project in Bahrain: Part I (Ranking of cost overrun factors and risk mapping). *Modern Applied Science, 11*(7), 20-27. doi:10.5539/mas.v11n7p20

Adesina, O. T., Omoregbe, S., & Oyewole, O. M. (2015). An assessment of project

portfolio management techniques on product and service innovation: Evidence from Nigerian selected industries. *IOSR Journal of Economics and Finance (IOSR-JEF), 6*(4), 8-20. Retrieved from https://iosrjournals.org/

Adom, D., Hussein, E. K., & Agyem, J. A. (2018). Theoretical and conceptual framework: Mandatory ingredients of a quality research. *International Journal of Scientific Research, 7*, 438-441. Retrieved from https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/

Adom, D., Yeboah, A., & Ankrah, A. K. (2016). Constructivism philosophical paradigm: Implication for research, teaching and learning. *Global Journal of Arts Humanities and Social Sciences, 4*(10), 1-9. Retrieved from https://www.eajournals.org/

Aerts, G., Dooms, M., & Haezendonck, E. (2017). Knowledge transfers and project-based learning in large scale infrastructure development projects: An exploratory and comparative ex-post analysis. *International Journal of Project Management, 35*, 224-240. doi:10.1016/j.ijproman.2016.10.010

Aga, D. A., Noorderhaven, N., & Vallejo, B. (2016). Transformational leadership and project success: The mediating role of team-building. *International Journal of Project Management, 34*, 806-818. doi:10.1016/j.ijproman.2016.02.012

Ahiaga-Dagbui, D. D., Love, P. E. D., Smith, S., & Ackermann, F. (2017). Toward a systemic view to cost overrun causation in infrastructure projects: A review and implications for research. *Project Management Journal, 48*(2), 88-98. Retrieved

from https://www.pmi.org/PMJ

Ahmed, R., & Anantatmula, V. S. (2017). Empirical study of project managers leadership competence and project performance. *Engineering Management Journal, 29*, 189-205. doi:10.1080/10429247.2017.1343005

Akanni, P. O., Oke, A. E., & Akpomiemie, A. E. (2015). Impact of environmental factors on building project performance in Delta State, Nigeria. *Housing and Building National Research Center (HBRC) Journal, 11*, 91-97. doi:10.1016/j.hbrcj.2014.02.010

Akaranga, S. I., & Makau, B. K. (2016). Ethical considerations and their applications to research: A case of the University of Nairobi. *Journal of Educational Policy and Entrepreneurial Research, 3*(12), 1-9. Retrieved from https://www.zeetarz.com/

Alaloul, W. S., Liew, M. S., & Zawawi, N. A. W. (2017). Communication, coordination and cooperation in construction projects: Business environment and human behaviours. *IOP Conf. Series: Materials Science and Engineering, 291*(2017), 1-7. doi:10.1088/1757899X/291/1/012003

Alamri, N., Amoudi, O, & Njie, G. (2017). Analysis of construction delay causes in dams projects in Oman. *European Journal of Business and Social Sciences, 6*(2), 19-42. Retrieved from http://www.ejbss.com/recent.aspx-/

Al-Hazim, N., Salem, Z. A., & Ahmad, H. (2017). Delay and cost overrun in infrastructure projects in Jordan. *Procedia Engineering, 182*, 18-24. doi:10.1016/j.proeng.2017.03.105

Ali, Z., & Bhaskar, S. B. (2016). Basic statistical tools in research and data analysis.

Indian Journal of Anesthesia, 60, 662-669. doi:10.4103/0019-5049.190623

Alias, Z., Zawawi, E. M. A., & Aris, K. Y. (2014). Determining critical success factors of project management practice: A conceptual framework. *Procedia - Social and Behavioral Sciences, 53,* 61-69. doi:10.1016/j.sbspro.2014.10.041

Aljohani, A., Ahiaga-Dagbui, D., & Moore, D. (2017). Construction projects cost overrun: What does the literature tell us? *International Journal of Innovation, Management and Technology, 8*(2), 137-143. doi:10.18178/ijimt.2017.8.2.717

Allen, M., Clark, R., Cotruvo, J. A., & Grigg, N. (2018). Drinking water and public health in an era of aging distribution infrastructure. *Public Works Management & Policy, 23,* 301-309. doi:10.1177/1087724X18788368

Almalki, S. (2016). Integrating quantitative and qualitative data in mixed methods research: Challenges and benefits. *Journal of Education and Learning, 5*, 288-296. doi:10.5539/jel.v5n3p288

Amoatey, C. T., & Anson, B. A. (2017). Investigating the major causes of scope creep in real estate construction projects in Ghana. *Journal of Facilities Management, 15,* 393-408. doi:10.1108/JFM-11-2016-005

Al-Natour, R. J. (2011). The impact of the researcher on the researched. *A Journal of Media and Culture, 14*(6), 1-2. Retrieved from http://journal.media-culture.org.au/index.php/mcjournal

Alqaisi, I. F. (2018). The effects of stakeholder's engagement and communication management on projects success. *MATEC Web of Conferences, 162*(02037), 1-6. doi:10.1051/matecconf/201816202037

Alsaawi, A. (2014). A critical review of qualitative interviews. *European Journal of Business and Social Sciences, 3*(4), 149-156. doi:10.2139/ssrn.2819536

Anand, A., Seetharaman, P., & Vaidya, S. D. (2016). Role of project owner in e-government project sustainability. *Journal of Information Technology Case & Application Research, 18,* 200-219. doi:10.1080/15228053.2016.1255485

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*, 272-281. Retrieved from http://www.jeteraps.scholarlinkresearch.com/index.php

Antwi, S. K., & Hamza, K. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management, 7*(3), 217-225. Retrieved from http://www.iiste.org/Journals/index.php/EJBM

Aragonés-Beltrán, P., García-Melón, M., & Montesinos-Valera, J. (2017). How to assess stakeholders' influence in project management? A proposal based on the analytic network process. *International Journal of Project Management, 35*, 451-462. doi:10.1016/j.ijproman.2017.01.001

Archibald, M. M. (2015). Challenges and strategies in the recruitment of participants for qualitative research. *University of Alberta Health Sciences Journal, 11*(1), 34-37. Retrieved from https://www.ualberta.ca/medicine/programs/resources/uahsj

Asiamah, N., Mensah, H. K., & Oteng-Abayie, E. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative*

Report, 22, 1607-1621. Retrieved from http://nsuworks.nova.edu/tqr/vol22/iss6/

Auxier, W. R. (2015). A comparison of worldviews of business leaders from disparate geographic cultures. *The Journal of Values-Based Leadership, 8*(2), 1-8. Retrieved from http://scholar.valpo.edu/jvbl

Awan, M. H., Ahmed, K., & Zulqarnain, W. (2015). Impact of project manager's soft leadership skills on project success. *Journal of Poverty, Investment and Development, 8,* 27-46. Retrieved from https://www.iprjb.org/journals/

Awwal, M. I. (2014). Importance of strategic aspect in project Management: A literature critique. *Internal Journal of Supply Chain Management, 3*(4), 96-99. Retrieved from http://ojs.excelingtech.co.uk/

Badara, M. S. (2017). The relevant of contingency theory and stewardship theory on the internal audit research. *Journal of World Economic Research, 6,* 17-22. doi:10.11648/j.jwer.20170602.11

Badewi, A. (2015). The impact of project management (PM) and benefits management (BM) practices on project success: Towards developing a project benefits governance framework. *International Journal of Project Management, 34,* 761-778. doi:10.1016/j.ijproman.2015.05.005

Bahrami, N., Soleimani, M. A., Yaghoobzadeh, A., & Ranjbar, H. (2016). Researcher as an instrument in qualitative research: Challenges and opportunities. *Advances in Nursing & Midwifery, 25*(90), 1-11. doi:10.22037/anm.v25i90.11584

Bakhshi, J., Ireland, V., & Gorod, A. (2016). Clarifying the project complexity construct: Past, present and future. *International Journal of Project Management, 34,* 1199-

1213. doi:10.1016/j.ijproman.2016.06.002

Banda, R. K., & Pretorius, L. (2016). The effect of scope definition on infrastructure projects: A case in Malawi's public and private implementing agencies. *South African Journal of Industrial Engineering, 27*, 203-214. doi:10.7166/27-4-1562

Barnham, C. (2015). Quantitative and qualitative research: Perceptual foundations. *International Journal of Market Research, 57*, 837-854. doi:10.2501/IJMR-2015-070

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13,* 544-559. Retrieved from http://nsuworks.nova.edu/tqr/vol13/iss4/2

Beach, L., & Mitchell, T. (1978). A contingency model for the selection of decision strategies. *The Academy of Management Review, 3*, 439-449. doi:10.2307/257535

Becerra-Fernandez, I., & Sabherwal, R. (2001). Organizational knowledge management: A contingency perspective. *Journal of Management Information Systems, 18*, 23-55. doi:10.1080/07421222.2001.11045676

Beecher, J. A. (2013, May*). Economic regulation of utility infrastructure*. Proceedings of the 2012 Land Policy Conference (Infrastructure and Land Policies), Lincoln Institute, Cambridge, Massachusetts.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, *2*, 8-14. doi:10.1016/j.npls.2016.01.001

Bentahar, O., & Cameron, R. (2015). Design and implementation of a mixed method research study in project management. *Electronic Journal of Business Research*

Methods, 13(1), 3-15. Retrieved from http://www.ejbrm.com

Berssaneti, F. T., & Carvalho, M. M. (2015). Identification of variables that impact project success in Brazilian companies. *International Journal of Project Management, 33*, 638-649. doi:10.1016/j.ijproman.2014.07.002

Betts, S. C. (2003). Contingency theory: Science or technology? *Journal of Business & Economics Research, 1*(8), 123-130. Retrieved from http://clutejournals.com/index.php/JBER

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *Qualitative Health Research, 26*, 1802-1811. doi:10.1177/1049732316654870

Bjorvatn, T., & Wald, A. (2018). Project complexity and team-level absorptive capacity as drivers of project management performance. *International Journal of Project Management, 36*, 876-888. doi:10.1016/j.ijproman.2018.05.003

Blair, E. (2015). A reflexive exploration of two qualitative data coding techniques. *Journal of Methods and Measurement in the Social Sciences, 6*, 14-29. doi:10.2458/v6i1.18772

Boell, S. K., & Cecez-Kecmanovic, D. (2014). A hermeneutic approach for conducting literature reviews and literature searches. *Communications of the Association for Information Systems*, *34*(12), 257-286. Retrieved from http://aisel.aisnet.org/cais/vol34/iss1/12

Bolderston, A. (2012). Conducting a research interview. *Journal of Medical Imaging and Radiation Sciences, 43,* 66-76. doi:10.1016/j.jmir.2011.12.002

Bor, K. E., & Kiptum, D. K. (2017). Influence of integrated project management information systems on performance of construction projects in south rift construction companies, Kenya. *Journal of Business and Management, 19*(11), 17-28. doi:10.9790/487X-1911011728

Bowen. G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27-40. doi:10.3316/QRJ0902027

Brahm, F., & Tarziján, J. (2015). Does complexity and prior interactions affect project procurement? Evidence from mining mega-projects. *International Journal of Project Management, 33*, 1851-1862. doi:10.1016/j.ijproman.2015.08.005

Brunet, M., & Forgues, D. (2019). Investigating collective sensemaking of a major project success. *International Journal of Managing Projects in Business, 2019*, 1. doi:10.1108/IJMPB-08-2018-0167

Burns, T., & Stalker G. M. (1961). *The management of innovation*. London, United Kingdom: Tavistock.

Butt, A., Naaranoja, M., & Savolainen, J. (2016). Project change stakeholder communication. *International Journal of Project Management, 34*, 1579-1595. doi:10.1016/j.ijproman.2016.08.010

Cameron, R., Sankaran, S., & Scales, J. (2015). Mixed methods use in project management research. *Project Management Journal, 46*(2), 90-104. doi:10.1002/pmj.21484

Carter, N. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum, 41*, 545-547. doi:10.1188/14.ONF.545-547

Carvalho, M. M., Patah, L. A., & Bido, D. S. (2015). Project management and its effects on project success: Cross-country and cross-industry comparisons. *International Journal of Project Management, 33,* 1509-1522. doi:10.1016/j.ijproman.2015.04.004

Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol refinement framework. *The Qualitative Report, 21,* 811-831. Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss5/2

Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning, 10*, 807-815. doi:10.1016/j.cptl.2018.03.019

Chan, A. P. C., & Oppong, G. D. (2017). Managing the expectations of external stakeholders in construction projects. *Engineering, Construction and Architectural Management, 24*, 736-756. doi:10.1108/ECAM-07-2016-0159

Chapman, R. J. (2015). A framework for examining the dimensions and characteristics of complexity inherent within rail mega projects. *International Journal of Project Management, 34*, 937-956. doi:10.1016/j.ijproman.2016.05.001

Chaudhry, B. A. (2015). Alignment of project management with business strategy. *International Journal of Information Technology Project Management, 6*(4), 1-17. doi:10.4018/ijitpm.2015100104

Chih, Y., & Zwikael, O. (2015). Project benefit management: A conceptual framework of target benefit formulation. *International Journal of Project Management, 33*, 352-362. doi:10.1016/j.ijproman.2014.06.002

Cole, C. (2017). Project management evolution to improve success in infrastructure projects. *Management Dynamics in the Knowledge Economy, 5,* 619-640. doi:10.25019/MDKE/5.4.09

Coyne, E., Grafton, E., & Reid, A. (2016). Strategies to successfully recruit and engage clinical nurses as participants in qualitative clinical research. *Contemporary Nurse, 52,* 669-676. doi:10.1080/10376178.2016.1181979

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed method approaches* (5th ed.). Thousand Oaks, CA: Sage.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage.

Cristóbal, J. R. S., Carral, L., Diaz, E., Fraguela, J. A., & Iglesias, G. (2019). Complexity and project management: A general overview. *Complexity, 2018,* 1-10. doi:10.1155/2018/4891286.

Cunningham, T. (2015). Cost control during the pre-contract stage of a building project: An introduction. *Dublin Institute of Technology,* 1-26. Retrieved from http://arrow.dit.ie/beschreoth

Cypress, B. (2018). Qualitative research methods: A phenomenological focus. *Dimensions of Critical Care Nursing, 37,* 302-309. doi:10.1097/DCC.0000000000000322

da Cruz, M. R. P., Nunes, A. J. S., & Pinheiro, P. G. (2011). Fiedler's contingency theory: Practical application of the least preferred coworker (LPC) scale. *The IUP Journal of Organizational Behavior, 10*(4), 7-26. Retrieved from

https://iupindia.in/default.asp

Dagar, N., & Mathur, M. (2016). Mental health of school teachers in relation to their sex and type of school. *International Journal of Educational Planning & Administration, 6*(1), 49-53. Retrieved from http://www.ripublication.com

Darawsheh, W. (2014). Reflexivity in research: Promoting rigour, reliability and validity in qualitative research. *International Journal of Therapy & Rehabilitation, 2,* 560-568. doi:10.12968/ijtr.2014.21.12.560

da Silveira, L. M., & Petrini, M. (2018). Sustainable development and corporate social responsibility: A bibliometric analysis of international scientific production. *Gestão & Produção, 25*(1), 56-67. doi:10.1590/0104-530x3173-16

Derenskaya, Y. (2018). Project scope management process. *Baltic Journal of Economic Studies, 4,* 118-125. doi:10.30525/2256-0742/2018-4-1-118-125

Desmond, C. (2017). Project management tools-software tools. *IEEE Engineering Management Review, 45*, 24-25. doi10.1109/emr.2017.2765439

Desmond, C. (2018). What does the future hold for project managers? *IEEE Engineering Management Review, 46*(4), 14-15. doi:10.1109/EMR.2018.2885201

Denzin, N. K. (2006). *Sociological methods: A sourcebook* (1st ed.). Piscataway, NJ: Transaction Publishers.

Drabiková, E., & Svetlík, J. (2016). Project management under the aspect of benefits framework. *Grant Journal, 5*(2), 9-12. Retrieved from http://www.grantjournal.com/

Du, Y., Zhou, H., Yuan, Y., & Liu, X. (2019). Explore knowledge-sharing strategy and

evolutionary mechanism for integrated project team based on evolutionary game model. *Advances in Civil Engineering, 4365358,* 1-23. doi:10.1155/2019/4365358

DuBois, M., Hanlon, J., Koch, J., Nyatuga, B., & Kerr, N. (2015). Leadership styles of effective project managers: Techniques and traits to lead high performance teams. *Journal of Economic Development, Management, IT, Finance and Marketing, 7*(1), 30-46. Retrieved from https://www.prosandconrads.com

Durdyev, S., Omarov, M., Ismail, S., & Lim, M. (2017). Significant contributors to cost overruns construction projects of Cambodia. *Cogent Engineering, 4*(1), 1-10. doi:10.1080/23311916.2017.1383638

Du Randt, F. J., van Waveren, C. C., & Chan, K. Y. (2014). An empirical study on the critical success factors of small to medium-sized projects in a South African mining company. *The South African Journal of Industrial Engineering, 25*(2), 13-28. doi:10.7166/25-2-832

Durodola, O., Fusch, P., Tippins, S. (2017). A case-study of financial literacy and wellbeing of immigrants in Lloydminster, Canada. *International Journal of Business and Management, 12*(8), 37-50. doi:10.5539/ijbm.v12n8p37

Eddles-Hirsch, K. (2015). Phenomenology and educational research. *International Journal of Advanced Research, 3,* 251-260. Retrieved from http://www.journalijar.com

Ejohwomu, O. A., Oshodi, O. S., & Lam, K. C. (2017). Nigeria's construction industry: Barriers to effective communication. *Engineering, Construction and Architectural Management, 24,* 652-667. doi:10.1108/ECAM-01-2016-0003

El Hussein, M., Jakubec, S. L., & Osuji, J. (2015). Assessing the FACTS: A mnemonic for teaching and learning the rapid assessment of rigor in qualitative research studies. *The Qualitative Report, 20,* 1182-1184. Retrieved from http://nsuworks.nova.edu/tqr/vol20/iss8/3

Elo, S., Kaariainen, M., Kanste, O., Polkki, T., Utriainen, K., & Kyngas, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, 1-10. doi:10.1177/2158244014522633

Famiyeh, S., Amoatey, C. T., Adaku, E., & Agbenohevi, C. S. (2017). Major causes of construction time and cost overruns: A case of selected educational sector projects in Ghana. *Journal of Engineering, Design and Technology, 15* 181-198. doi:10.1108/JEDT-11-2015-0075

Fernandes, A., Spring, M., & Tarafdar, M. (2018). Coordination in temporary organizations: Formal and informal mechanisms at the 2016 Olympics. *International Journal of Operations & Production Management, 38*, 1340-1367. doi:10.1108/ IJOPM-02-2017-0097

Ferrer Romero, E. F. (2018). Strategic project management: A methodology for sustainable competitive advantage. *Revista EAN, 2018,* 15-31. doi:10.21158/01208160.n0.2018.2016

Fiedler, F. E. (1967). *A theory of leadership effectiveness*. New York, NY: McGraw-Hill.

Floricel, S., Michela, J. L., & Piperca, S. (2016). Complexity, uncertainty-reduction strategies, and project performance. *International Journal of Project Management, 34*, 1360-1383. doi:10.1016/j.ijproman.2015.11.007

Flyvbjerg, B. (2014). What you should know about megaprojects and why: An overview. *Project Management Journal, 45*, 6-19. doi:10.1002/pmj.21409

Forcada, N., Serrat, C., Rodríguez, S., & Bortolini, R. (2017). Communication key performance indicators for selecting construction project bidders. *Journal of Management in Engineering, 33*(6), 1-20. doi:10.1061/(ASCE)ME.1943-5479.0000552

Forero, R., Nahidi, S., De Costa, J., Mohsin, M., Fitzgerald, G., Gibson, N., & Aboagye-Sarfo, P. (2018). Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine. *BMC health services research, 18*(1), 120. doi:10.1186/s12913-018-2915-2

Fraser, J., Fahlman, D., Arscott, J., & Guillot, I. (2018). Pilot testing for feasibility in a study of student retention and attrition in online undergraduate programs. *International Review of Research in Open and Distributed Learning, 19,* 260-277. doi:10.19173/irrodl.v19i1.3326

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20,* 1408-1416. Retrieved from http://nsuworks.nova.edu/tqr/vol20/iss9/3

Gaikwad, P. (2017). Including rigor and artistry in case study as a strategic qualitative methodology. *The Qualitative Report, 22,* 3431-3446. Retrieved from https://nsuworks.nova.edu/tqr/vol22/iss13/4

Galdas, P. (2017). Revisiting bias in qualitative research: Reflections on its relationship with funding and impact. *International Journal of Qualitative Methods, 16*(1), 1-

2. doi:10.1177/1609406917748992

Gbahabo, P. T., & Ajuwon, O. S. (2017). Effects of project cost overruns and schedule delays in Sub-Saharan Africa. *European Journal of Interdisciplinary Studies, 3*(2), 46-58. doi:10.26417/ejis.v7i2.p46-59

Gogtay, N. J., & Thatte, U. M. (2016). Samples and their size: The bane of researchers (Part I). *Journal of the Association of Physicians of India, 64,* 66-69. Retrieved from https://www.japi.org/

Gomes, J., & Romão, M. (2016). Improving project success: A case study using benefits and project management. *Procedia Computer Science, 100,* 489-497. doi:10.1016/j.procs.2016.09.187

Grady, C. (2015). Institutional review boards: Purpose and challenges. *Chest, 148,* 1148-1155. doi:10.1378/chest.15-0706

Green, J., Willis, K., Hughes, E., Small, R., Welch, N., Gibbs, L., & Daly, J. (2007). Generating best evidence from qualitative research: The role of data analysis. *Australian and New Zealand Journal of Public Health, 31,* 545-550. doi:10.1111/j.1753-6405.2007.00141.x

Grossoehme, D. H. (2014). Research methodology overview of qualitative research. *Journal of Health Care Chaplaincy, 20,* 109-122. doi:10.1080/08854726.2014.925660

Güngör, D. O., & Gözlü, S. (2016). An analysis of the links between project success factors and project performance. *Sigma Journal of Engineering & Natural Science, 34*, 223-239. Retrieved from http://eds.yildiz.edu.tr/sigma/

Ha, T. P. T., & Tran, M. D. (2018). Review of impacts of leadership competence of project managers on construction project success. *International Journal of Emerging Trends in Social Sciences, 4*(1), 15-25. doi:10.20448/2001.41.15.25

Haixin, W., Houli, F., & Zuhe, W. (2015). The dynamic fuzzy clustering of the project stakeholders demands information. *The Open Cybernetics & Systemics Journal, 9*, 747-752. doi:10.2174/1874110x01509010747

Hanisch, B., & Wald, A. (2012). A bibliometric view on the use of contingency theory in project management research. *Project Management Journal, 43*(3), 4-23. doi:10.1002/pmj.21267

Heale, R., & Twycross, A. (2018). What is a case study? *Evidence Based Nursing, 21*, 7-8. doi:10.1136/eb-2017-102845

Hodgson, D. E., & Paton, S. (2016). Understanding the professional project manager: Cosmopolitans, locals and identity work. *International Journal of Project Management, 34*, 352-364. doi:10.1016/j.ijproman.2015.03.003 02

Hoover, R. S., & Koerber, A. L. (2011). Using NVivo to answer the challenges of qualitative research in professional communication: Benefits and best practices tutorial. *IEEE Transactions on Professional Communication, 54*(1), 68-82. doi:10.1109/TPC.2009.2036896

Houghton, J. D., & Yoho, S. K. (2005). Toward a contingency model of leadership and psychological empowerment: When should self-leadership be encouraged? *Journal of Leadership and Organizational Studies, 11*, 66-83. doi:10.1177/107179190501100406

Howell, D., Windahl, C., & Seidel, R. (2010). Project contingency framework based on uncertainty and its consequences. *International Journal of Project Management, 28,* 256-264. doi:10.1016/j.ijproman.2009.06.002

Hyett, N., Kenny, A., & Dickson-Swift, V. (2014). Methodology or method? A critical review of qualitative case study reports. *International Journal of Qualitative Studies on Health and Well-being, 9*(23606), 1-12. doi:10.3402/qhw.v9.23606

Ibiamke, A., & Ajekwe, C. C. M. (2017). On ensuring rigour in accounting research. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 7*(3), 157-170. doi:10.6007/IJARAFMS/v7-i3/3284

In, J. (2017). Introduction of a pilot study. *Korean Journal of Anesthesiology, 70,* 601-605. doi:10.4097/kjae.2017.70.6.601

Islam, J., & Hu, H. (2012). A review of literature on contingency theory in managerial accounting. *African Journal of Business Management, 6,* 5159-5164. doi:10.5897/AJBM11.2764

Ismail, N., Kinchin, G., & Edwards, J. (2018). Pilot study, does it really matter? Learning lessons from conducting a pilot study for a qualitative PhD thesis. *International Journal of Social Science Research, 6*(1), 1-17. doi:10.5296/ijssr.v6i1.11720

Ismail, K., Zainuddin, S., & Sapiei, N. S. (2010). The use of contingency theory in management and accounting research. *Asian Journal of Accounting Perspectives, 3*(1), 22-37. Retrieved from https://ajap.um.edu.my/

Itegi, F. M. (2015). Improving organization performance: Project management approach sustainable development in face of globalization. *Journal of Entrepreneurship &*

Organization Management, 4, 1-6. doi:10.4172/2169-026X.1000155

James, P. (2018). Project management toxic leadership: Implications for managing a road-tunnel project in Bangladesh. *Journal of Management Research, 10*(2), 4. doi:10.5296/jmr.v10i2.12779

Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of basic and clinical pharmacy, 5*(4), 87-88. doi:10.4103/0976-0105.141942

Jatarona, N. A., Yusuf, A. M., Ismail, S., & Saar, C. C. (2016). Public construction projects performance in Malaysia. *Journal of Southeast Asian Research, 2016,* 1-7. doi:10.5171/2016.940838

Jeje, K. (2017). An overview of corporate social responsibility. *The International Journal of Humanities & Social Studies, 5*, 287-296. Retrieved from https://theijhss.com/

Johansen, A., Eik-Andresen, P., Landmark, A. D., Ekambaram, A., & Rolstadås, A. (2016). Value of uncertainty: The lost opportunities in large projects. *Administrative Sciences, 6*(3), 1-17. doi:10.3390/admsci6030011

Jones, M. L. (2007). Using software to analyse qualitative data. *Malaysian Journal of Qualitative Research, 1,* 64-76. Retrieved from https://ro.uow.edu.au/commpapers/index.3.html

Joslin, R., & Müller, R. (2015). Relationships between a project management methodology and project success in different project governance contexts. *International Journal of Project Management, 33,* 1377-1392. doi:10.1016/j.ijproman.2015.03.005

Joslin, R., & Muller, R. (2016a). Identifying interesting project phenomena using

philosophical and methodological triangulation. *International Journal of Project Management, 34,* 1043-1056. doi:10.1016/j.ijproman.2016.05.005

Joslin, R., & Müller, R. (2016b). The relationship between project governance and project success. *International Journal of Project Management, 34*, 613-626. doi:10.1016/j.ijproman.2016.01.008

Jung, Y., Jeong, M. G., & Mills, T. (2014). Identifying the preferred leadership style for managerial position of construction management. *International Journal of Construction Engineering and Management, 3*(2), 47-56. doi:10.5923/j.ijcem.20140302.02

Karaman, E., & Kurt, M. (2015). Comparison of project management methodologies: Prince 2 versus PMBOK for IT projects. *International Journal of Applied Sciences and Engineering Research, 4,* 572-589. doi:10.6088.ijaser.04059

Kariuki, J. T. (2018). The effect of project manager's leadership style on performance of water projects in Kenya. *European Scientific Journal, 14*(17), 33-45. doi:10.19044/esj.2018.v14n17p33

Kazbekov, J., Wegerich, K., Yakubov, M., Musayev, S., & Akramova, I. (2015). Project owners: Overlooked factors of uncertainty in the example of water infrastructure improvement project? *Environmental Science & Policy, 53*(Part B), 236-245. doi:10.1016/j.envsci.2015.06.019

Kermanshachi, S., Dao. B., Shane, J., & Anderson, S. (2016). Project complexity indicators and management strategies: A delphi study. *Procedia Engineering, 145*, 587-594. doi:10.1016/j.proeng.2016.04.048

Khalid, K., Hilman, H., & Kumar, D. (2012). Get along with quantitative research process. *International Journal of Research in Management, 2*(2), 15-29. Retrieved from https://rspublication.com/ijrm/march 2012/2.pdf

Khan, S. N. (2014). Qualitative research method: Grounded theory. *International Journal of Business and Management, 9*, 224-233. doi:10.5539/ijbm.v9n11p224

Khanzadi, M., Eshtehardian, E., & Chalekaee, A. (2016). A game theory approach for optimum strategy of the owner and contractor in delayed projects. *Journal of Civil Engineering and Management, 22*, 1066-1077. doi:10.3846/13923730.2016.1210222

Kharuddin, S., Foong, S., & Senik, R. (2015). Effects of decision rationality on ERP adoption extensiveness and organizational performance. *Journal of Enterprise Information Management, 28*, 658-679. doi:10.1108/JEIM-02-2014-0018

Kiehne, J., Ceausu, I., Arp, A., & Schüler, T. (2017). Middle management's role in strategy implementation projects: A behavioral analysis. *Proceedings of the International Conference on Business Excellence, 11*, 539-549. doi:10.1515/picbe-2017-0058

Kihn, L., & Ihantola, E. (2015). Approaches to validation and evaluation in qualitative studies of management accounting. *Qualitative Research in Accounting & Management, 12*(3), 230-255. doi:10.1109/QRAM-03-2013-0012

Kihn, L., & Ihantola, E. (2015). Approaches to validation and evaluation in qualitative studies of management accounting. *Qualitative Research in Accounting & Management, 12*, 230-255. doi:10.1109/QRAM-03-2013-0012

Kiridena, S., & Sense, A. (2016). Profiling project complexity: Insights from complexity science and project management literature. *Project Management Journal, 47*(6), 56-74. doi:10.1177/875697281604700605

Konno, Y. (2018). Relationship between construction performance evaluation and contractor characteristics in Japan. *Cogent Business & Management, 5*(1486169), 1-10. doi:10.1080/23311975.2018.1486169

Kononenko, I., & Lutsenko, S. (2018). The project management methodology and guide formation's method. *Institute of Electrical and Electronics Engineers, 2018,* 11-14. doi:10.1109/STC-CSIT.2018.8526621

Kornbluh, M. (2015). Combatting challenges to establishing trustworthiness in qualitative research. *Qualitative Research in Psychology, 12,* 397-414. doi:10.1080/14780887.2015.1021941

Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice, 24*(1), 120-124. doi:10.1080/13814788.2017.1375092

KPMG. (2015). *Building on success; learning from failure: Governance and executive management of major capital projects*. Retrieved from https://assets.kpmg.com/

KPMG. (2017). *Driving business performance: Project management survey 2017*. Retrieved from https://assets.kpmg.com/

Kumar, D., Sharma, M., & Trivedi, A. S. (2017). To identity principal causes of construction delay. *International Journal of Engineering Trends and Technology (IJETT), 46,* 427-431. doi:10.14445/22315381/ijett-v46p274

Kureshi, N. (2013). Project performance and contingency theory. *Journal of Strategy and Performance Management, 1*(2), 46-51. Retrieved from http://www.jspm.firstpromethean.com/

Kwofie, T. E., Adinyira, E., & Fuga, F. (2015). Nature of communication ineffectiveness inherent in the procurement systems on mass housing projects. *Journal of Construction Engineering, 2015*, 1-15. doi:10.1155/2015/914520

Larsen, J. K., Shen, G. Q. P., Lindhard, S. M., & Brunoe T. D. (2015). Factors affecting schedule delay, cost overrun, and quality level in public construction projects. *Journal of Management in Engineering, 32*(1). doi:10.1061/(ASCE)ME.1943-5479.0000391

Lategan, T., & Fore, S. (2015). The impact of leadership styles on project success: Case of a telecommunications company. *Journal of Governance and Regulation, 4*(3), 48-56. doi:10.22495/jgr_v4_i3_p4

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and integration in complex organizations. *Administrative Science Quarterly, 12*, 1-47. doi:10.2307/2391211

Lessing, B., Thurnell, D., & Durdyev, S. (2017). Main factors causing delays in large construction projects: Evidence from New Zealand. *Journal of Management, Economics and Industrial Organization, 1*(2), 63-82. doi:10.31039/jomeino.2017.1.2.5

Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of family medicine and primary care, 4*, 324-327. doi:10.4103/2249-4863.161306

Levitt, H. M., Creswell, J. W., Josselson, R., Bamberg, M., Frost, D. M., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA publications and communications board task force report. *American Psychologist, 73*(1), 26-46. doi:10.1037/amp0000151

Liang, X., Yu, T., & Guo, L. (2017). Understanding stakeholders' influence on project success with a new SNA method: A case study of the green retrofit in China. *Sustainability, 9*(10), 1-9. doi:10.3390/su9101927

Liao, H., & Hitchcock, J. (2018). Reported credibility techniques in higher education evaluation studies that use qualitative methods: A research synthesis. *Evaluation and Program Planning, 68*, 157-165. doi:10.1016/j.evalprogplan.2018.03.005

Lindhard, S., & Larsen, J. K. (2017). Identifying the key process factors affecting project. *Engineering, Construction and Architectural Management, 23,* 657-67. doi:10.1108/ECAM-08-2015-0123

Ling, F. Y. Y., & Ma, Y. (2014). Effect of competency and communication on project outcomes in cities in China. *Habitat International, 44*, 324-331. doi:10.1016/j.habitatint.2014.07.002

Livari, N. (2018). Using member checking in interpretive research practice: A hermeneutic analysis of informants' interpretation of their organizational realities. *Information Technology & People*, *31*(1), 111-133. doi:10.1108/ITP-07-2016-0168

Long, H. (2014). An empirical review of research methodologies and methods in

creativity studies (2003-2012). *Creativity Research Journal, 26,* 427-438. doi:10.1080/10400419.2014.961781

Longenecker, J. G., & Pringle, C. D. (1978). The illusion of contingency theory as a general theory. *Academy of Management Review, 3,* 679-683. doi:10.5465/amr.1978.4305970

Mabuza, L. H., Govender, I., Ogunbanjo, G. A., & Mash, B. (2019). African primary care research: Qualitative data analysis and writing results. *African Journal of Primary Health Care & Family Medicine, 6,* 2071-2936. doi:10.4102/phcfm.v6i1.640

MacLeod, A. (2016). Understanding the culture of graduate medical education: The benefits of ethnographic research. *Journal of Graduate Medical Education, 8*(2), 142-144. doi:10.4300/JGME-D-15-00069.1

Maggio, L. A., Sewell, J. L., & Artino, Jr, A. R. (2016). The literature review: A foundation for high-quality medical education research. *Journal of Graduate Medical Education, 8,* 297-303. doi:10.4300/JGME-D-16-00175.1

Makui, A., Zadeh, P. M., Bagherpour, M., & Jabbarzadeh, A. (2018). A structural equation modeling approach to examine the relationship between complexity factors of a project and the merits of project manager. *Journal of Project Management, 3,* 1-12. doi:10.5267/j.jpm.2017.12.001

Maliszewski, P., Larson, E., & Perrings, C. (2013). Valuing the reliability of the electrical power infrastructure: A two-stage hedonic approach. *Urban Studies, 50,* 72-87. doi:10.1177/0042098012450482

Marnewick, C. (2014). The business case: The missing link between information

technology benefits and organizational strategies. *Acta Commercii, 14,* 1-11. doi:10.4102/ac.v14i1.208

Matin, D. M. (2016). Identifying the effective factors for cost overrun and time delay in water construction projects. *Engineering, Technology & Applied Science Research, 6,* 1062-1066. Retrieved from http://www.etasr.com

Martin, H., Lewis, T. M., & Fifi, J. (2014). Centralized versus decentralized construction project structure: Easing communication difficulties. *The International Journal of Construction Management, 14*(3), 156-170. doi:10.1080/15623599.2014.922726

Martínez-Mesa, J., González-Chica, D. A., Bastos, J. L, Bonamigo, R. R., & Duquia, R. P. (2014). Sample size: How many participants do I need in my research? *Anais Brasileiros de Dermatologia, 89,* 609-15. doi:10.1590/abd1806-4841.20143705

McAdam, R., Miller, K., & McSorley, C. (2019). Towards a contingency theory perspective of quality management in enabling strategic alignment. *International Journal Production Economics, 207,* 195-209. doi:10.1016/j.ijpe.2016.07.003

McClory, S., Read, M., & Labib, A. (2017). Conceptualising the lessons-learned process in project management: Towards a triple-loop learning framework. *International Journal of Project Management, 35,* 1322-1335. doi:10.1016/j.ijproman.2017.05.006

McMahon, S. A., & Winch, P. J. (2018). Systematic debriefing after qualitative encounters: An essential analysis step in applied qualitative research. *BMJ Global Health, 3*(5), 1-6. doi:10.1136/bmjgh-2018-000837

Miracle, V. A. (2016). The Belmont report: The triple crown of research ethics.

Dimensions of Critical Care Nursing, 35, 223-228. doi:10.1097/DCC.0000000000000186

Mirza, E., & Ehsan, N. (2017). Quantification of project execution complexity and its effect on performance of infrastructure development projects. *Engineering Management Journal, 29*(2), 108-123. doi:10.1080/10429247.2017.1309632

Mogashoa, T. (2014). Applicability of constructivist theory in qualitative educational research. *American International Journal of Contemporary Research, 4*(7), 51-59. Retrieved from http://www.aijcrnet.com/

Mohajan, H. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University, 17*(3): 58-82. doi:10.26458/1746

Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People, 7*(1), 23-48. doi:10.26458/jedep.v7i1.571

Mohammed, I., Guillet, B. D., & Law, R. (2015). The contributions of economics to hospitality literature: A content analysis of hospitality and tourism journals. *International Journal of Hospitality Management, 44*, 99-110. doi:10.1016/j.ijhm.2014.10.010

Mok, K. Y., Shen, G. Q., & Yang, J. (2015). Stakeholder management studies in mega construction projects: Stakeholder management studies in mega construction projects. *International Journal of Project Management, 33*, 446-457. doi:10.1016/j.ijproman.2014.08.007

Moon, K., Brewer, T. D., Januchowski-Hartley, S. R, Adams, V. M., & Blackman. D. A.

(2016). A guideline to improve qualitative social science publishing in ecology and conservation journals. *Ecology and Society, 21*(3), 17. doi:10.5751/ ES-210317

Moon, M. D., & Wolf, L. A. (2019). Triangulation: A method to increase validity, reliability, and legitimation in clinical research. *Journal of Emergency Nursing, 45*(1), 103-105. doi:10.1016/j.jen.2018.11.004

Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research, 25*, 1212-1222. doi:10.1177/1049732315588501

Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *The European Journal of General Practice*, *24*(1), 9-18. doi:10.1080/13814788.2017.1375091

Mossalam, A., & Arafa, M. (2016). The role of project manager in benefits realization management as a project constraint/driver. *Housing and Building National Research Center (HBRC) Journal, 12*, 305-315. doi:10.1016/j.hbrcj.2014.12.008

Mulla, S., S., & Waghmare, A. P. (2015). A study of factors caused for time & cost overruns in construction project & their remedial measures. *International Journal of Engineering Research and Applications, 5*(1), 48-53. Retrieved from http://www.ijera.com

Musair, A., Serra, C. E. M., Zwikael, O., & Ali, I. (2017). Project governance, benefit management, and project success: Towards a framework for supporting organizational strategy implementation. *International Journal of*

ProjecManagement, 3, 1658-1672. doi:10.1016/j.ijproman.2017.07.007

Musembi, A. K. K., Guyo, W., & Mbuthia, A. (2018). Effect of employees' leadership skills on project performance in the energy sector in Kenya. *International Academic Journal of Information Sciences and Project Management, 3,* 2, 1-11. Retrieved from http://www.iajournals.org/

Muszynska, K. (2018). A concept for measuring effectiveness of communication in project teams. *Journal of Economics and Management, 3*(3), 63-79. doi:10.22367/jem.2018.33.04

Nauman, S., & Piracha, M. S. S. (2016). Project stakeholder management: A developing country perspective. *Journal of Quality and Technology Management, 12*(2), 1-24. Retrieved from http://journals.pu.edu.pk/journals/index.php/jqtm/index

Nenty, H. J. (2009). Writing a quantitative research thesis. *International Journal of Educational Sciences, 1,* 19-32. doi:10.1080/09751122.2009.11889972

Nguyen, T. H. D., Chileshe, N., Rameezdeen, R., & Wood, A. (2019). External stakeholder strategic actions in projects: A multi-case study. *International Journal of Project Management, 37,* 176-191. doi:10.1016/j.ijproman.2018.12.001

Nguyen, T. S., Mohamed, S., Panuwatwanich, K. (2018). Stakeholder management in complex project: Review of contemporary literature. *Journal of Engineering, Project & Production Management, 8*(2), 75-89. doi:10.32738/JEPPM.201807.0003

Niazi, G. A., & Painting, N. (2017). Significant factors causing cost overruns in the construction industry in Afghanistan. *Procedia Engineering, 82,* 510-517.

doi:10.1016/j.proeng.2017.03.145

Nijhawan, L. P., Janodia, M. D., Muddukrishna, B. S., Bhat, K. M., Bairy, K. L., Udupa, N., & Musmade, P. B. (2013). Informed consent: Issues and challenges. *Journal of Advanced Pharmaceutical Technology & Research*, *4*(3), 134-40. doi:10.4103/2231-4040.116779

Noranga, A., & Nooshinb, S. M. (2016). Designing a lessons learned model to improve the success of new product development in project oriented organizations. *Management Science Letters, 6,* 759-766. doi:10.5267/j.msl.2016.10.004

Nowell, L. S., Norris, J. M., White, D. E., & Moules, J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16,* 1-13. doi:10.1177/1609406917733847

Nubuor, S. A., Hongyi, X., & Frimpong, S. K. (2017). Research on project success factors within the construction industry of Ghana: Evidence from wide horizon Ghana limited. *International Journal of Management Science and Business Administration, 3*(5), 38-43. doi:10.18775/ijmsba.1849-5664-5419.2014.35.1004

Olawale, Y., & Sun, M. (2015). Construction project control in the UK: Current practice, existing problems and recommendations for future improvement. *International Journal of Project Management, 33,* 623-637. doi:10.1016/j.ijproman.2014.10.003

Omair, A. (2014). Understanding the process of statistical methods for effective data analysis. *Journal of Health Specialties, 2*(3), 100-104. doi:10.4103/1658-600X.137882

Oppong, G. D., Chan, A. P. C., & Dansoh, A. (2017). A review of stakeholder management performance attributes in construction projects. *International Journal of Project Management, 35*, 1037-1051. doi:10.1016/j.ijproman.2017.04.015

Ortiz, J., Pellicer, E., & Molenaar, K. (2018). Management of time and cost contingencies in construction projects: A contractor perspective. *Journal of Civil Engineering and Management, 24*, 254-264. doi:10.3846/jcem.2018.1643

Otley, D. (2016). The contingency theory of management accounting and control: 1980–2014. *Management Accounting Research, 31*, 45-62. doi:10.1016/j.mar.2016.02.001

Pace, M. (2019). A correlational study on project management methodology and project success. *Journal of Engineering, Project, and Production Management, 9*, 56-65. doi:10.2478/jeppm-2019-0007

Palaganas, E. C., Sanchez, M. C., Molintas, M. P., & Caricativo, R. D. (2017). Reflexivity in qualitative research: A journey of learning. *The Qualitative Report, 22*, 426-438. Retrieved from https://nsuworks.nova.edu/tqr/

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services, 42*, 533-544. doi:10.1007/s10488-013-0528-y

Paradis, E., O'Brien, B., Nimmon, L., Bandiera, G., & Martimianakis, M. A. (2016). Design: Selection of data collection methods. *Journal of Graduate Medical*

Education, *8*, 263-264. doi:10.4300/JGME-D-16-00098.1

Paulusa, T., Woods, M., Atkins, D. P., & Macklin, R. (2015). The discourse of QDAS: Reporting practices of ATLAS.ti and NVivo users with implications for best practices. *International Journal of Social Research Methodology*, *20*(1), 35-47. doi:10.1080/13645579.2015.1102454

Paver, M., & Duffield, S. (2019). Project management lessons learned: "The elephant in the room." *Journal Modern Project Management, 18*, 105-121. doi:10.19255/JMPM01807

Pellerin, R., Perriera, N., Guillota, X., & Léger, P. (2013). Project management software utilization and project performance. *Procedia Technology, 9,* 857-866. doi:10.1016/j.protcy.2013.12.095

Pezalla, A. E., Pettigrew, J., & Miller-Day, M. (2012). Researching the researcher-as-instrument: An exercise in interviewer self-reflexivity. *Qualitative research, 12,* 165-185. doi:10.1177/1487941111422107

Pilkienė, M., Alonderienė, R., Chmieliauskas, A., Šimkonis, S., & Müller, R. (2018). The governance of horizontal leadership in projects. *International Journal of Project Management, 36,* 913-924. doi:10.1016/j.ijproman.2018.06.002

Pitsis, T. S., Sankaran, S., Gudergan, S., & Clegg, S. R. (2014). Governing projects under complexity: Theory and practice in project management. *International Journal of Project Management, 32,* 1285-1290. doi:10.1016/j.ijproman.2014.09.001

Popp, M., & Hadwich, K. (2018). Examining the effects of employees' behaviour by transferring a leadership contingency theory to the service context. *Journal of*

Service Management Research, 2(3), 44-62. doi:10.15358/2511-8676-2018-3-44

Potter, E. M., Egbelakin, T., Phipps, R., & Balaei, B. (2018). Emotional intelligence and transformational leadership behaviours of construction project managers. *Journal of Financial Management of Property and Construction, 23*(1), 73-89. doi:10.1108/JFMPC-01-2017-0004

Prater, J., Kirytopoulos, K., & Ma, T. (2017). Optimism bias within the project management context: A systematic quantitative literature review. *International Journal of Managing Projects in Business, 10*, 370-385. doi:10.1108/IJMPB-07-2016-0063

Preston, J., & Barnes, K. E. R. (2017). Successful leadership in rural schools: Cultivating collaboration. *The Rural Educator, 38*(1), 6-15. Retrieved from http://epubs.library.msstate.edu/index.php/ruraleducator/index

Pretorius, S., Steyn, H., & Bond-Barnard, T. J. (2017). Exploring project-related factors that influence leadership styles and their effect on project performance: A conceptual framework. *South African Journal of Industrial Engineering, 28*(4), 95-108. doi:10.7166/28-4-1778

Project Management Institute. (2016). *The high cost of low performance: How will you improve business results*? Retrieved from https://www.pmi.org/

Puddicombe, M. S. (2011). The contingencies of project management: A factor analytic approach to complexity and novelty. *International Journal of Construction Education and Research, 7*, 259-275. doi:10.1080/15578771.2011.595474

Pyrko, I., Dörfler, V., & Eden, C. (2017). Thinking together: What makes communities of

practice work? *Human Relations, 70*, 389-409. doi:10.1177/0018726716661040

Qazi, A., Quigley, J., Dickson, A., & Kirytopoulos, K. (2016). Project complexity and risk management (ProCRiM): Towards modelling project complexity driven risk paths in construction projects. *International Journal of Project Management, 34*, 1183-1198. doi:10.1016/j.ijproman.2016.05.008

Qubaisi, J. M. M. L. F. A., Elanain, H. M. A., Badri, M. A., & Ajmal, M. M. (2015). Leadership, culture and team communication: Analysis of project success Causality: A UAE case. *International Journal of Applied Management Science, 7*, 223-243. doi:10.1504/IJAMS.2015.071149

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies, 3*, 369-387. doi:10.5281/zenodo.887089

Radujkovića, M., & Sjekavica, M. (2017). Project management success factors. *Procedia Engineering, 196*, 607-615. doi:10.1016/j.proeng.2017.08.048

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences, 6*(2), 1-5. doi:10.4172/2162-6359.1000403

Rahman, M. S. (2016). The advantages and disadvantages of using qualitative and quantitative approaches and methods in language “testing and assessment” research: A literature review. *Journal of Education and Learning, 6*(1), 102-112. doi:10.5539/jel.v6n1p102

Rajablu, M., Hamdi, S., Marthandan, G., & Yusoff, W. F. W. (2017). Managing for stakeholders: Introducing stakeholder metrics-integrated model to lead project ethics and success. *International Journal of Project Organisation and Management, 9*(1), 31-56. doi:10.1504/ijpom.2017.083124

Ramabhadran, M. (2018). An investigation into cost overrun in construction projects in United Arab Emirates. *International Journal of Construction Engineering and Management, 7*(1), 1-21. doi:10.5923/j.ijcem.20180701.01

Ramlee, N., Tammy, N. J., Raja Mohd Noor, R. N. H., Ainun Musir, A., Abdul Karim, N., Chan, H. B., & Mohd Nasir, S. R. (2016). Critical success factors for construction project. *AIP Conference Proceedings, 1774*(030011), 1-6. doi:10.1063/1.4965067

Rashvand, P., Majid, M. Z. A., & Pinto, J. K. (2015). Contractor management performance evaluation model at prequalification stage. *Expert Systems with Applications, 42,* 5087-5101. doi:10.1016/j.eswa.2015.02.043

Rathi, A. S., & Khandve, P. V. (2016). Study of factors influencing cost overruns: An overview. *International Journal of Science and Research (IJSR), 5*, 334-336. Retrieved from https://www.ijsr.net

Raziq, M. M., Borini, F. M., Malik, O. F., Ahmad, M., & Shabaz, M. (2018). Leadership styles, goal clarity, and project success: Evidence from project-based organizations in Pakistan. *Leadership & Organization Development Journal, 3*, 309-323. doi:10.1108/LODJ-07-2017-0212

Redick, A., Reyna, I., Schaffer, C., & Toomey, D. (2014). Four-factor model for effective project leadership competency. *Journal of Information Technology and Economic Development, 5*(1), 21-35. Retrieved from http://www.ebscohost.com/

Rich, M. (2014). Learning research methods: How personalised should we be? *The Electronic Journal of Business Research Methods, 12*(2), 131-138. Retrieved from http://www.ejbrm.com

Richardson, T. M., Marion, J., & Onu, S. (2015). Insights from global project Managers: Career advice for successful international assignments. *International Journal of Business and Management, 10*(10), 9-18. doi:10.5539/ijbm.v10n10p9

Rimmington, A., Dickens, G., & Pasquire, C. (2015). Impact of information and communication technology (ICT) on construction projects. *Organization, Technology and Management in Construction, 7*, 1367-1382. doi:10.5592/otmcj.2015.3.4

Ross, L. E. (2017). An account from the inside: Examining the emotional impact of qualitative research through the lens of "Insider" research. *American Psychological Association, 4*, 326-337. doi:10.1037/qup0000064326

Rout, C. C., & Aldous, C. (2016). How to write a research protocol. *Southern African Journal of Anaesthesia and Analgesia, 22*(4), 101-107. doi:10.1080/22201181.2016.1216664

Rowley, J. (2014). Designing and using research questionnaires. *Management Research Review, 37*, 308-330. doi:10.1108/MRR-02-2013-0027

Saidu, I., Shakantu, W. M., Adamu, A. D., & Anugwo, I. C. (2017). A bespoke approach for relating material waste to cost overrun in the construction industry. *Journal of Construction Business and Management, 1*(1), 39-52. Retrieved from http://journals.uct.ac.za/index.php/jcbm

Salah, A., & Moselhi, O. (2015). Contingency modelling for construction projects using fuzzy-set theory. *Engineering, Construction and Architectural Management, 22*, 214-241. doi:10.1108/ECAM-03-2014-0039

Salvador, J. T. (2018). Exploring quantitative and qualitative methodologies: A guide to novice nursing researchers. *European Scientific Journal, 12*(18), 107-122. doi:10.19044/esj.2016.v12n18p10

Samarghandi, H., Tabatabaei, S. M. M., Taabayan, P., Hashemi, A. M., & Willoughby, K. (2016). Studying the reasons for delay and cost overrun in construction projects: The case of Iran. *Journal of Construction in Developing Countries, 21*(1), 51-84. doi:10.21315/jcdc2016.21.1.4

Samset, K., & Volden, G. H. (2016). Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance. *International Journal of Project Management, 34*, 297-313. doi:10.1016/j.ijproman.2015.01.014

Sanjari, M., Bahramnezhad, F., Fomani, K. F., Shoghi, M., & Cheraghi, M. A. (2014). Ethical challenges of researchers in qualitative studies: The necessity to develop aspecific guideline. *Journal of Medical Ethics and History of Medicine, 7*(14), 1-6. Retrieved from https://www.ncbi.nlm.nih.gov/

Sargeant, J. (2012). Qualitative research part II: Participants, analysis, and quality assurance. *Journal of Graduate Medical Education, 4(*1), 1-3. doi:10.4300/JGME-D-11-00307.1

Saunders, B., Kitzinger, J., & Kitzinger, C. (2015). Anonymising interview data: Challenges and compromise in practice. *Qualitative Research, 15,* 616-632. doi:10.1177/1468794114550439

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & quantity*, *52,* 1893-1907. doi:10.1007/s11135-017-0574-8

Sauser, B. J., Reilly, R. R., & Shenhar, A. J. (2009). Why projects fail? How contingency can provide new insights: A comparative analysis of NASA's Mars climate orbiter loss. *International Journal of Project Management, 27,* 665-679. doi:10.1016/j.ijproman.2009.01.004

Schoonhoven, C. B. (1981). Problems with contingency theory: Testing assumptions hidden within the language of contingency "Theory." *Administrative Science Quarterly, 26*, 349-377. Retrieved from http://journals.sagepub.com/loi/asq

Schutz, D. (2012). Validity and reliability of instruction. *Social Science Research Network, 1*, 1-4. doi:10.2139/ssrn.2062439

Sefotho, M. M. (2015). A researcher's dilemma: Philosophy in crafting dissertations and theses. *Journal of Social Sciences, 42*, 23-36. doi:10.1080/09718923.2015.11893390

Senaratne, S., & Ruwanpura, M. (2016). Communication in construction: A management perspective through case studies in Sri Lanka. *Architectural Engineering and Design Management, 12*(1), 3-18. doi:10.1080/17452007.2015.1056721

Serra, C. E. M., & Kunc, M. (2015). Benefits realisation management and its influence on project success and on the execution of business strategies. *International Journal of Project Management, 33*(1), 53-66. doi:10.1016/j.ijproman.2014.03.011

Serrador, P., & Turner, R. (2015). The relationship between project success and project efficiency. *Project Management Journal, 46*(1), 30-39. doi:10.1002/pmj.21468

Shenhar, A. J. (2001). One size does not fit all projects: Exploring classical contingency domains. *Management Science, 47,* 394-414. doi:10.1287/mnsc.47.3.394.9772

Shete, A. N., & Kothawade, V. D. (2016). An analysis of cost overruns and time overruns of construction projects in India. *International Journal of Engineering Trends and Technology (IJETT), 14*(1), 33-36. doi:10.14445/22315381/ijett-v41p208

Shirazia, F., Kazemipoor, H., & Tavakkoli-Moghaddam, R. (2017). Fuzzy decision analysis for project scope change management. *Decision Science Letters, 6,* 395-406. doi:10.5267/j.dsl.2017.1.003

Sinesilassie, E. G., Tabish, S. Z. S., & Jha, K. N. (2018). Critical factors affecting cost performance: A case of Ethiopian public construction projects. *International Journal of Construction Management, 18*(2), 108-119. doi:10.1080/15623599.2016.1277058

Smith, S., Jitpaiboon, T., Yang, J., & Gu, Q. (2018). Effects of non-cognitive skills on project management behaviors: An agency view. *Journal of Supply Chain and*

Operations Management, 16, 263-277. Retrieved from http://www.csupom.org/journals.htm

Snelson, C. L. (2016). Qualitative and mixed methods social media research: A review of the literature. *International Journal of Qualitative Methods, 15*(1), 1-15. doi:10.1177/1609406915624574

Sohi, A. J., Hertogh, M., Bosch-Rekveldt, M., & Blom, R. (2016). Does lean & agile project management help coping with project complexity? *Procedia: Social and Behavioral Sciences, 226*, 252-259. doi:10.1016/jsbspro.2016.06.186

Sousa, M. J., Dias, I., Moço, I., Saldanha, A., & Caracol, C. (2017). Project managers perceptions about more effective leadership styles. *Journal of International Business Research and Marketing, 2*(3), 7-13. doi:10.18775/jibrm.1849-8558.2015.23.3001

Špundak, M. (2014). Mixed agile/traditional project management methodology: Reality or illusion? *Procedia: Social and Behavioral Sciences, 119*, 939-948. doi:10.1016/j.sbspro.2014.03.024

Squires, A. (2018). Qualitative research in nursing and health professions regulation. *Journal of Nursing Regulation, 9*(3), 15-26. doi:10.1016/s2155-8256(18)30150-9

Srdić, A., & Šelih, J. (2015). Delays in construction projects: Causes and mitigation. *Organization, Technology & Management in Construction, 7*, 1383-1389. doi:10.5592/otmcj.2015.3.5

Starman, A. B. (2013). The case study as a type of qualitative research. *Journal of Contemporary Educational Studies, 1*, 28-43. Retrieved from

http://www.sodobna-pedagogika.net/en/

Stryjewski, T. P., Kalish, B. T., Silverman, B., & Lehmann, L. S. (2015). The impact of institutional review boards (IRBs) on clinical innovation: A survey of investigators and IRB members. *Journal of Empirical Research on Human Research Ethics, 10*, 481-487. doi:10.1177/1556264615614936

Suda, K. A., Rani, N. S. A., Rahman, H. A., & Chen, W. (2015). A review on theories used for decision making in project management studies. *International Journal of Scientific & Engineering Research, 6,* 562-565. Retrieved from http://www.ijser.org

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy, 68,* 226-231. doi:10.4212/cjhp.v68i3.1456

Tabassi, A. A., Argyropoulou, M., Roufechaei, K. M., & Argyropoulou, R. (2016). Leadership behavior of project managers in sustainable construction projects. *Procedia Computer Science, 100*, 724-730. doi:10.1016/j.procs.2016.09.217

Tahri, H., & Drissi-Kaitouni, O. (2015). New design for calculating Project Management Maturity (PMM). *Procedia: Social and Behavioral Sciences, 181,* 171-177. doi:10.1016/j.sbspro.2015.04.878

Taleb, H., Ismail, S., Wahab, M. H., Rani, W. N. M. W. M., & Amat, R.C. (2017). An overview of project communication management in construction industry projects. *Journal of Management, Economics, and Industrial Organization, 1*, 1-8. doi:10.31039/jomeino.2017.1.1.1

Tamene, E. H. (2017). Theorizing conceptual framework. *Asian Journal of Educational Research, 4*(2), 50-56. Retrieved from http://multidisciplinaryjournals.com/asian-journal-of-educational-research/

Terzieva, M. (2014). Project knowledge management: How organizations learn from experience. *Procedia Technology, 16,* 1086-1095. doi:10.1016/j.protcy.2014.10.123

Terzieva, M., & Morabito, V. (2016). Learning from experience: The project team is the key. *Business Systems Research, 7*, 1-5. doi:10.1515/bsrj-2016-0001

Tharp, J., & Chadhury, P. D. (2008). *Corporate social responsibility: What it means for the project manager*. Paper presented at Project Management Institute Global Congress, St. Julian's, Malta. Retrieved from https://www.pmi.org/

Thomas, D. R. (2017). Feedback from research participants: Are member checks useful in qualitative research? *Qualitative Research in Psychology, 14*(1), 23-41. doi:10.1080/14780887.2016.1219435

Touran, A., & Liu, J. (2015). A method for estimating contingency based on project complexity. *Procedia Engineering, 123*, 574-580. doi:10.1016/j.proeng.2015.10.110

Tran, D. Q., Nguyen, L. D., & Faught, A. (2017). Examination of communication processes in design-build project delivery in building construction. *Engineering, Construction and Architectural Management, 24*, 1319-1336. doi:10.1108/ECAM-12-2015-0192

Tshuma, B., Steyn, H., & van Waveren, C. (2018). The role played by PMO's in the

transfer of knowledge between projects: A conceptual framework. *South African Journal of Industrial Engineering, 29*(2), 127-140. doi:10.7166/29-2-1966

Turkulainen, V., Aaltonen, K., & Lohikoski, P. (2015). Managing project stakeholder communication: The Qstock festival case. *Project Management Journal, 46*(6), 74-91. doi:10.1002/pmj.21547

Uribe, D. F., Ortiz-Marcos, I., & Uruburu, A. (2018). What is going on with stakeholder theory in project management literature? A symbiotic relationship for sustainability. *Sustainability. 10*(4), 1-23. doi:10.3390/su10041300

Vaardini, U. S., Karthiyayin, S., & Ezhilmath, P. (2016). Study on cost overruns in construction projects: A review. *International Journal of Applied Engineering Research, 11*, 356-363. Retrieved from http://www.ripublication.com/ijaer.htm

VanWynsberghe, R., & Khan, S. (2007). Redefining case study. *International Journal of Qualitative Methods, 6*(2), 80-94. doi:10.1177/160940690700600208

Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. *Journal of Nursing Education and Practice, 6*(5), 100-110. doi:10.5430/jnep.v6n5p100

Valenko, T., & Klanšek, U. (2017). An integration of spreadsheet and project management software for cost optimal time scheduling in construction. *Organization, Technology and Management in Construction, 9,* 1627-1637. doi:10.1515/otmcj-2016-0028

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: Systematic analysis of

qualitative health research over a 15-year period. *BMC Medical Research Methodology, 18,* 148. doi:10.1186/s12874-018-0594-7

Vidal, G. G., Campdesun, R. P., Rodrıguez, A. S., & Vivar, R. M. (2017). Contingency theory to study leadership styles of small businesses owner-managers at Santo Domingo, Ecuador. *International Journal of Engineering Business Management, 9,* 1-11. doi:10.1177/1847979017743172

Vohra, V. (2014). Using the multiple case study design to decipher contextual leadership behaviors in Indian organizations. *The Electronic Journal of Business Research Methods, 12*(1), 54-65. Retrieved from http://www.ejbrm.com

Voropaev, V., Gelrud, Ya., & Klimenko, O. (2016). Who manages what? Project management for different stakeholders. *Procedia: Social and Behavioral Sciences, 226,* 478-485. doi:10.1016/j.sbspro.2016.06.214

Wali, K. S., & Othman, S. A. (2019). Comparison and assessment of using Primavera and Microsoft project in construction projects in Erbil City. *ZANCO Journal of Pure and Applied Sciences, 31,* 285-291. doi:10.21271/ZJPAS.31.s3.39

Wang, H., Tong, L., Takeuchi, R., & George, G. (2016). Corporate social responsibility: An overview and new research directions. *Academy of Management Journal, 59,* 534-544. doi:10.5465/amj.2016.500

Wang, S., & Zhu, P. (2015). Exploring a research method – Interview. *Advances in Social Sciences Research Journal,* 2(7), 161-165. doi:10.14738/assrj.27.1270

White, D. E., Oelke, N. D., & Friesen, S. (2012). Management of a large qualitative data set: Establishing trustworthiness of the data. *International Journal of*

QualitativeMethods, 11, 244-258. doi:10.1177/160940691201100305

Williams, C. (2008). Research methods. *Journal of Business & Economic Research, 5*, 65-72. Retrieved from https://www.cluteinstitute.com

Williams, T. (2016). Identifying success factors in construction projects: A case study. *Project Management Journal, 47*(1), 97-112. doi:10.1002/pmj.21558

Wilson, V. (2016). Research methods: Triangulation. *Evidence Based Library and Information Practice, 9*(1), 74-75. doi:10.18438/B8WW3X

Wong, P. W. (2014). A snap shot on qualitative research method. *Academic journals, 9*(5), 130-140. doi:10.5897/ERR2014.1801

Woodward, J. (1965). *Industrial organization: Theory and practice*. London, UK: Oxford University Press.

Wooton, L. M. (1977). The mixed blessings of contingency management. *Academy of Management Review, 2*, 431-441. doi:10.2307/257699

Wu, G., Liu, C., Zhao, X., & Zuo, J. (2017). Investigating the relationship between communication-conflict interaction and project success among construction project teams. *International Journal of Project Management, 35*, 1466-1482. doi:10.1016/j.ijproman.2017.08.006

Wu, T., & Eisner, A. (2018). Relationship between stakeholders perceptions of project success and project planning. *International Review of Management and Business Research, 7,* 587-599. doi:10.30543/7-2(2018)-26

Yang, R. J., Wang, Y., & Jin, X.-H. (2014). Stakeholders' attributes, behaviors, and decision-making strategies in construction projects: Importance and correlations

in practice. *Project Management Journal, 45*(3), 74-90. doi:10.1002/pmj.21412

Yap, J. B. H., Abdul-Rahman, H., & Wang, C. (2018). Preventive mitigation of overruns with project communication management and continuous learning: PLS-SEM approach. *Journal of Construction Engineering and Management, 144*(5), 04018025. doi:10.1061/(asce)co.1943-7862.0001456

Yelena, P. Wu., Thompson, D., Aroian, K. J., McQuaid, E. L., & Deatrick, J. A. (2016). Commentary: Writing and evaluating qualitative research reports. *Journal of Pediatric Psychology*, *41*, 493-505. doi:10.1093/jpepsy/jsw032

Yeong, M., Ismail, R., Ismail, N., & Hamzah, M. (2018). Interview protocol refinement: Fine-tuning qualitative research interview questions for multi-racial populations in Malaysia. *The Qualitative Report, 23*, 2700-2713. Retrieved from https://nsuworks.nova.edu/tqr/

Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education, 48*, 311-324. doi:10.1111/ejed.12014

Yin, R. K. (2011*). Qualitative research from start to finish*. New York, NY: The Guilford Press.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage.

Yu, M., Vaagaasar, A. L., Müller, R., Wang, L., & Zhu, F. (2018). Empowerment: The key to horizontal leadership in projects. *International Journal of Project Management, 36*, 992-1006. doi:10.1016/j.ijproman.2018.04.003

Zeithaml, V. A., Varadarajan, P., & Zeithaml, C. P. (1988). The contingency approach: Its foundations and relevance to theory building and research in marketing. *European Journal of Marketing, 22*, 37-63. doi:10.1108/EUM0000000005291

Zheng, E. Z. H., & Carvalho, M. M. de. (2016). Managing uncertainty in projects: A review, trends and gaps. *Revista de Gestão e Projetos, 7*(2), 95-109. doi:10.5585/gep.v7i2.402

Zhu, J., & Mostafavi, A. (2017). Discovering complexity and emergent properties in project systems: A new approach to understanding project performance. *International Journal of Project Management, 35*(1), 1-12. doi:10.1016/j.ijproman.2016.10.004

Zuo, J., Zhao, X., Nguyen, Q. B. M., Ma, T., & Gao, S. (2018). Soft skills of construction project management professionals and project success factors: A structural equation model. *Engineering, Construction and Architectural Management, 25*, 425-442. doi:10.1108/ECAM-01-2016-0016

Appendix A: Interview Protocol

Participant #: _____ Organization #: _____

Date: _____ Start Time: _____ End Time_____

1. Welcome and introduce self to the participant.
2. Review specific contents of Informed Consent Form with the participant.
3. Turn on the audio recording device.
4. Provide the participant with identification number (pseudonym) assigned to the participant and participant's organization.
5. Ask the question 1 followed sequentially the remaining 8 questions.
6. Ask follow up questions to any of the questions as necessary.
7. Write down in field notes nonverbal observations made during the interview.
8. Discuss member checking of the researcher's interpretations of interview responses with the participant.
9. Ask for provision of relevant organizational project records.
10. Provide participant with contact details of the researcher.
11. Thank participant for participating in the study.
12. End interview and turn off audio recording device.

Appendix B: Open-Ended Interview Questions

1. What criteria did you use to assess project performance of your construction projects?
2. What strategies did you implement to improve project performance rate of your construction projects?
3. What strategies did you implement to reduce cost overrun and how did you implement these strategies?
4. What strategies did you implement to reduce time overruns and how did you implement these strategies?
5. What challenges did you experience in implementing the strategies that you employed to reduce cost and time overruns?
6. How did you address the challenges that you faced during implementation of strategies to reduce cost and time overruns?
7. How are management or project management software tools relevant to improving project performance of construction projects?
8. What advice would you give to a utility organization that is currently experiencing poor project performance of its construction projects and wants to improve performance?

   What other information would you add to what you have told me about strategies to deliver infrastructure projects on-budget and on-schedule that I have not asked you about?

Appendix C: Permission to reuse UC Framework in Doctoral Study

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