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Duration, Control, and Success Factors of Nigerian Public Infrastructure Projects

Gloria Chinwe Ezeoke
Walden University

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Walden University

College of Management and Technology

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2021

Abstract

Duration, Control, and Success Factors of Nigerian Public Infrastructure Projects

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Dissertation Submitted in Partial Fulfillment

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Abstract

In Nigeria, many infrastructural projects are abandoned before completion, representing a failure on the part of the federal, state, and local governments. There is currently an incomplete understanding of the interwoven causes of Nigerian public project failures. The purpose of this quantitative correlation research was to evaluate the relationships between project duration, control, and success. Project and control theories were the theoretical underpinnings of the study. The two predictor variables were project duration and project control, with the criterion variable being project success. A survey was administered to 74 project management professionals, construction workers, and other stakeholders in the Nigerian building and construction industry, who were recruited using convenience sampling. The questionnaire, which was hosted on Survey Monkey, included demographic items and questions about the duration, success, and management control of the last public project in Nigeria the participant managed or led. Use of the multiple regression model for data analysis led to the findings in this study. Findings showed a statistically significant positive correlation between project management control and project success. Project duration (as measured in months) was not a significant predictor of project success. The findings show that project control is a fundamental aspect of project success; as such, project leaders should focus on the type and quality of contractors or project bidders as well as emphasize overall project efficiency. By improving professional practices, stakeholders may be able to reduce the number of failed projects and enhance public project success in Nigeria, which may promote economic development and community and citizenry welfare.

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Dedication

To God Almighty, the owner of my life, and the master planner of my destiny: You showed me your love and mercy. You gave me favor throughout this program. You made me victorious by helping me to surmount all challenges that could have posed threats to my success. I am your project, and you are my manager. Thanks for managing me well. I am forever grateful my King. To my late father, Chief Nze (Hon) Hypolite Emeka Ezeoke (Ezike Obidinnu). You always encouraged me to go higher than a master's degree, and I have. I regret that you are not here today to witness my success. God bless you, my adorable father, man of peace. Continue to rest on in peace. Thank you.

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Chapter 1: Introduction to the Study

This study was about the relationship between project duration, project control, and project success in Nigeria. Abandoned public infrastructure projects in Nigeria are threats to the public, ultimately denying people the benefits expected from expensive investments which should lead to timely completed projects (Nweze, 2016). There has been extensive research into the reasons for the escalating public project failures in Nigeria (Olateju et al., 2011). Despite the solutions proposed in this research, there has been a lack of progress in addressing these failures (Dim, 2018). The project landscape of Nigeria has thus continued to attract the interest of researchers and policy makers.

Providing knowledge to generate evidence-based ways to reduce or eliminate the number of abandoned projects in Nigeria has several implications for positive social change. Improvements may enhance environmental landscapes and add social structure support, as well as reduce threats that endanger the lives of those who use abandoned project structures as shelters, hideouts, or trap-points (Nweze, 2016). This study therefore represented continued efforts to address the expressed concerns of government and other researchers in response to the economic and social jeopardy spurred by abandoned Nigerian public projects. This chapter contains the background to the study, problem statement, research purpose, research questions (RQs) and research hypotheses, theoretical framework, nature of the study, definitions, assumptions, delimitations, limitations, and significance of the study, followed by a summary and transition to Chapter 2.

Background of the Study

In Nigeria, the provision of infrastructural projects is mainly the responsibility of government at various levels. Many projects end in abandonment, and the government has been unable to salvage the situation (Nweze, 2016). Scholars such as Beleiu et al. (2017), Akande et al. (2018), and Alao et al. (2018) have conducted research on project management, construction management, project success, and abandonment in Nigeria. Still, there are gaps in the body of knowledge. In this study, the use of a quantitative research methodology helped to build on findings from previous empirical studies to help generate potential solutions to the problem of public project failures in Nigeria.

The factors accounting for project failure in Nigeria has received concerted empirical attention. Conceptually, a project, or a collection of activities to accomplish a specific objective, falls short of objectives for many reasons. For example, Akande et al. (2018) identified the following reasons for failures in public project management practices in Nigeria using the qualitative research method: delay of payment to contractors, increase in the scope of work, and contract awards to lowest bidders as factors affecting project success. Adebisi et al. (2018) identified the project failure factors leading to abandonment of multistory building projects in Nigeria as inadequate funding, improper planning, structural defects, bankruptcy, improper scheduling, and failure to engage qualified professionals; omitted from the study were project duration and other known aspects of management control. Mukhtar et al. (2017) used a mixed-methods research approach to identify seven factors that affected public housing projects in Nigeria. These were institutional framework, availability of competent personnel,

effective project management, good maintenance management practice, appropriate design and good location, effective housing finance system, and adequate political support. Omitted from these studies were project duration and other aspects of project management control that are possibly linked to project success.

Project management effectiveness involves an element of project management control, which has been a focus in prior research without great emphasis on the Nigerian public project problem. Gbahabo and Ajuwon (2017) specifically recommended project management capacity-building for infrastructure developers and project managers, as well as a number of innovative control mechanisms, as a way of solving project failures. Emphasizing the important role of project team effectiveness, Fung (2015) wrote that sufficient project execution requires the selection of an effective experienced project manager who can lead effective teams.

Several scholars have begun to focus on time and project duration as a factor in project success or failure. Alao et al. (2018) found that time overrun related to project duration in some ways but did not establish a clear link with project success or the study's theoretical foundation. Beleiu et al. (2016) presented an overview of project success and identified its main success factors using a quantitative research method, concluding that time (or project duration) could have an effect on project success. Mac-Barango (2017) examined the causes, effects, and possible remedies to construction project abandonment in Nigeria using qualitative research methodology, where concepts pertaining to time and project duration emerged from the study data.

Because project duration may be a variable related to leadership and team effectiveness, it appeared appropriate to investigate the possibility of a relationship between project duration and project success. The lack of empirical findings about the relationship between project duration, understudied aspects of project control, and project success were reasons for the selection of the variables in this quantitative correlation study. This study yielded findings that clarify the relationships between project duration, management practice effectiveness, and project success.

Problem Statement

There is a need to drastically reduce cases of infrastructure project failures in Nigeria. The Nigerian public project landscape principally includes the construction of infrastructures and buildings for the delivery of public services (Akande et al., 2018). The importance of these projects in the development and sustenance of the economy makes the success of projects an important concern, as the number of failing projects remains extremely high (Dim, 2018). Nweze (2016) reported a 46.8% failure rate of Nigerian public infrastructure projects, representing thousands of project failures occurring at various level of project implementation. The general problem addressed in this study is that there are many abandoned projects in Nigeria. The specific problem addressed in this study is that there is an incomplete understanding of the interwoven causes of Nigerian public project failures.

Purpose of the Study

The purpose of this quantitative correlation research was to evaluate the relationships between project duration, project control, and project success. The two

predictor variables were project duration and project control, with the criterion variable being project success. Project duration is the time invested into a given project. Project success, measured using the Project Success Assessment questionnaire adapted from the study by Shenhar and Dvir (2007), is the extent to which the project culminates in its expected benefits to the designated beneficiaries and serves the intended purpose. Project management control, such as supervision and monitoring, are among the known best management practices, as measured by questions adapted from Verburg et al.'s (2018) previously validated survey about output, process, and normative control.

The expectation was that there would be a positive relationship between duration and success, between project management control and success, and between duration and the control, because it takes time to complete a given project. This could relate to the success of that project and the effectiveness of project management control. The nature and degree of such effect may relate to aspects of project management control, which might help to predict project success. The conjectured interrelationships stemmed from the observed insufficient empirical evidence on the relationship between project duration and project success. Furthermore, there is evidence showing that certain management practices including project management control underpins operational efficiency in the achievement of construction projects (Mpofu et al., 2016). The insufficient literature represented a gap in knowledge within the project management domain, specifically regarding the factors of project implementation related to the preponderance of failed and unsuccessful projects in Nigeria.

Research Questions and Hypotheses

The four RQs aligned with four null hypotheses and corresponding alternative hypotheses. To test the hypotheses, I computed correlation statistics to reveal the direction and degree of relationships between predictor and criterion variables, as well as the statistical significance of any relationship. The quantitative RQs for the correlational study and the corresponding hypotheses were as follows:

RQ1: What is the relationship between project duration and project success?

H_01 . There is no significant relationship between project duration and project success.

H_a1 . There is a significant relationship between project duration and project success.

RQ2: What is the relationship between project duration and project management control?

H_02 . There is no significant relationship between project duration and project management control.

H_a2 . There is a significant relationship between project duration and project management control.

RQ3: What is the relationship between project management control and project success?

H_03 . There is no significant relationship between project management control and project success.

H_a3 . There is a significant relationship between project management practices and

project success.

RQ4: Are project management control and project duration significant predictors of project success?

H_04 . Project management control and project duration are not significant predictors of project success.

H_a4 . Project management control and project duration are significant predictors of project success.

Theoretical Foundation

I used two theories to explain the interrelationship among project duration, project management control, and project success. These were project and control theories, which have been used by many scholars (Koskela & Howell, 2008). The addition of time, which is project duration, extends the theory of project to explain the relationship between project duration and project success. Other researchers, such as Cooper (1993), Koskela and Howell (2008), and Warburton and Cioffi (2014), also contributed to the theoretical foundation of project management studies. In this study, the theory of project helped to explain findings regarding project duration and project success.

The theory of control supported the inclusion of project management control as an aspect of the important management practice variable in the model. The argument, in brief, is that good management practice control without adequate project duration may correlate with the lack of project success (Azimi & AbouRizk, 2011; Koskela & Howell, 2008). From these theoretical underpinnings, I identified three key constructs to examine in the study. These were project duration and project management control, which were

the independent, predictor, or explanatory variables, and project success, which was the dependent, or criterion, variable.

Nature of the Study

I used a quantitative research approach with a correlational design to answer the RQs. The methodology involved the use of an internet-based research questionnaire (see Appendix) completed by participants who anonymously volunteered numerical answers to questions, predominantly in a Likert-type format. Data came from a cross-sectional survey. The respondents, who were Nigerian public project managers in the infrastructure construction industry, completed a survey about their last public project management experience in Nigeria and the related key concepts of this study. Specifically, this took place by asking respondents questions on (a) project duration; (b) project control; and, (c) project success. The nature of the study was therefore quantitative, as the data of interest were numerical in form and the purpose of the study was to test hypotheses.

Being quantitative in nature, the study was aligned with positivist philosophy, which is concerned with “what is” or “what should be” in generating acceptable knowledge (Bell et al., 2018). This approach aligned with the problem statement because it supported the application of natural sciences methods to the study of social reality, specifically experiences with project duration, control, and success. Quantitative researchers strive to be objective and to draw generalizations similar to those made in natural science studies (Bell et al., 2018). For these reasons, I adopted the quantitative research methodology for this study.

A purpose of quantitative research with variable selection is to improve prediction accuracy and the understanding of collected measures through statistical applications performed on numerical data (Elmousalami, 2019). There has been some application of a qualitative methodology to examine perceptions of causative factors of Nigerian infrastructure project failures (Nweze, 2016). Yet, the small sample sizes of qualitative research and the limited opportunities to study a large number of known variables make generalization difficult, with limitations to the application of findings. Conversely, quantitative researchers can study a range of variables known to impact project successes and failures. This can add new knowledge that may be more applicable and relevant to a broader population of project managers and Nigerian leaders. Mixed-methods research is the collection and analysis of both quantitative and qualitative data, thereby integrating the two methodologies (Guetterman et al., 2018). A mixed-methods approach was not necessary to serve the purpose of this study.

Two widely applied quantitative research designs include experimental and correlational. Researchers using experimental designs generate causal evidence based on random sampling; experiments provide the researcher the opportunity to manipulate or vary independent variables and often involve a control group, though quasi-experimental designs do not require random assignment (Schweizer et al., 2016). Correlation research can help to identify key drivers, predictors, and relationships among variables through different statistical techniques, such as factor analysis, regression methods, and correlation coefficient tests (Elmousalami, 2019). In this study, I did not seek to explore cause-and-effect relationships through random sampling, manipulation of variables,

interventions, or the use of control groups. Instead, the purpose aligned with a correlation design, whereby statistical tests performed on numerical data revealed if and how the variables of interest changed. The measures were from cross-sectional surveys, which, according to Samphantharak et al. (2018), means that respondents to the surveys reported what was naturally occurring and data were not representative of intentionally manipulated changes in variables. There was no random assignment. Furthermore, there was a lack of opportunity or interest in manipulating variables with no interventions implemented and an understanding that correlation research does not establish cause-and-effect relationships. For these reasons, the appropriate design selected for this study was a correlation design.

Definitions

In this section, I define some key terms that are used in the study. Some terms have multiple meanings; they are defined here in accord with how they are used in the present study.

Abandoned project: Discontinued activities or an unplanned suspension of work progress by government, especially during the execution or implementation stage; abandonment represents the refusal or failure to complete a project at the required time (Nweze, 2016).

Project duration: The time it takes to complete a given project; project duration was a predictor variable in this study.

Project efficiency: The degree to which the project conforms to anticipated timelines, budget constraints, and other previously defined efficiency criteria (Shenhar

and Dvir, 2007). A dimension of project success, it was measured in this study using a Likert-type question scale.

Project failure: The status of a project as incomplete or completed with expected benefits falling short of expectations (Nweze, 2016).

Project life cycle: The lifetime of a project from initiation phase through planning, execution, monitoring or controlling, and completion phases (Project Management Institute [PMI], 2004; Watson, 2009).

Project management control: The monitoring, identifying, and correcting by a project manager of any observed deviation between the expected and actual performance of task that could ultimately lead to project success (Verburg et al., 2018)

Project Management Institute (PMI): A nonprofit organization of professionals dedicated to the pursuit of professional excellence in the field of project management and to providing a platform for the mutually beneficial exchange of project management problems and solutions (PMI, 2020).

Project Management Institute Consulting Community of Practice (PMI-CCoP): A member-driven virtual community that is a subdivision of the international institute of the PMI with headquarters located in Pennsylvania, United States (Nwagbogwu, 2011); as applied in this study, the PMI-CCoP includes project management professionals, construction workers, and stakeholders in the building and construction industry, including Ministry of Works locations in the six geopolitical zones of Nigeria.

Project managers: The chief architects and executives in charge of project life cycle to completion (Gido & Clements, 2006).

Project objectives: The goals of the project in terms of completion by target times, within set budgets, with the ultimate aim of satisfying the various stakeholders (Nweze, 2016).

Project success: As measured using the Project Success Assessment questionnaire adapted from Shenhar and Dvir (2007), the degree to which a project culminates in expected benefits to the designated beneficiaries and serves the intended purpose. Project success was the criterion variable in this study. It refers to the act of reaching the objectives and the planned results in compliance with predetermined conditions of time, cost, and performance (Zare et al., 2016).

Assumptions

Assumptions in research are beliefs without credible scientific support that researchers nevertheless rely upon to draw conclusions from research efforts (Herlihy & Turner, 2015). In this research, I assumed that I would be able to reach the 500 PMI-CCoP members through my recruitment efforts and that the answers to the survey question would be truthful and a reflection of participants' actual experiences. I assumed that the respondents would complete the questionnaire with an open and informed mindset. Furthermore, there was an assumption that the research findings would be relevant to the PMI-CCoP in Nigeria and that the problems of abandoned projects were generic and experienced by, or familiar to, all members of the population of the study. The assumption in this research was that the selected methodology, design, instruments, and theoretical framework were appropriate for generating new insights to help answer

the RQs and that it was possible to recruit the minimal sample from the population required for appropriate inferences and generalizations.

Scope and Delimitations

The focus of this study was primarily on project duration, effective project management control, and project success, studied in light of the theoretical framework of the project and control theories. Other factors identified as influencers of project success include employees' job satisfaction, work environment, and project sponsors, among other variables (Mpofu et al., 2016). However, in this study my focus was project duration, project management control, and project success as the study variables; this was because the purpose of the study was to understand the nature of relationships among these specific variables. The scope of the study was limited to the population of the study, which included members of the PMI-CCoP in Nigeria. I also considered project duration and management factors commonly experienced by members of the public project management and leadership population in Nigeria, a population which was not exclusive of any particular organization or industry. It would be difficult, if not impossible, to cover the entire construction companies and related industries of Nigeria; however, the nature of the online survey made it possible to reach a broad population and sample. The findings from this study are limited to project management professionals, construction workers, and stakeholders in the building and construction industry, including the Ministry of Works, whose members constitute the bulk of members of PMI-CCoP in Nigeria. Findings may not generalize to other project management or interest groups beyond the public project focus and outside of Nigeria.

Limitations

Limitations are uncontrollable elements of the study that could affect findings; the research should attempt, however, to minimize potential limitations by careful planning and implementation of the study design (Schweizer et al., 2016). Factors that could have constituted limitations to the study included delay in completion of the surveys by respondents, dishonest or uninformed answers, hesitant attitudes of some respondents of the PMI-CCoP to disclose information, and a low response rate. To improve the quality of the data used in this research, respondents volunteered to give information for the research, qualified for the study through eligibility questions, completed surveys anonymously, and were allowed to not answer any or all questions. I sought to avoid bias in the questions asked on the key constructs of the study and to appropriately operationalize the variables through the adaptation and field testing of previously validated measures and scales.

Significance of the Study

Significance to Theory

This investigation adds to the general knowledge of successful project management in Nigeria expands the scope of knowledge of the project management discipline as a whole. The original contribution of this study therefore was to expand theoretical applications through the generation of empirical evidence about project duration, project management control, and project success. A new framework for studying, understanding, and solving construction projects and management-related problems emerged from this study. As such, this study helped to fill the gap that exists in

literature on project success in the field of project management and public construction projects.

Akande et al. (2018) observed that most failed or abandoned projects are the products of planning, human, or implementation factors. By this observation, it may be true that there may be some factors responsible for project failure and success, among which could be project management control and duration, which are human, planning, and implementation factors. Mukhtar et al. (2017) confirmed that adequate planning and control are important to the successful completion of projects and that inadequate planning and lack of control systems can cause a delay in completion, leading to loss of resources, and a negative impact on project success. As it was the case in a similar study by Nwagbogwu (2011), this study represented a contribution to the literature on theory and practice of project management from its inception to delivery. The results inform practicing project managers about the basic tenets of the theory in combination with empirical directives for managing projects. The recommendations that stem from the study findings could help inform stakeholders about ways to effectively and efficiently reduce the spate of failed projects in developing countries, including Nigeria.

Significance to Practice

Conceptually, the improvement of professional practices to enhance public project success eventually benefits the other businesses in the nation that rely on information about best project practices to succeed. There are conflicting reasons why projects fail in Nigeria. Some scholars have insisted that it is due to corrupt procurement practices (Adeyemo & Amade, 2016) or lack of professionalism (Zuofa & Ochieng, 2014),

whereas others have cited a variety of project success and failure factors (Nweze, 2016). Additional empirical investigation is recommended (Papke-Shield et al., 2010). Without more information, the research community and organizational leaders may not have the adequate information needed to maximize practices to improve the success rates of projects. This study may provide knowledge that stakeholders can use to improve professional practice and tackle the menace of abandoned or uncompleted projects in Nigeria.

Practically, the findings inform organizational managers about which project management factors could lead to the success of the projects and increase competitive advantage and stakeholder satisfaction. With greater knowledge about these factors, project managers in an organization may wish to integrate practices shaped by findings into project management control, from project initiation and development to implementation. In doing so, they may make strides in solving or reducing the prevalent rate of abandoned projects from project failures in Nigeria.

Significance to Social Change

Successful projects are important in the economic development and promotion of welfare in a state, and a nation's economy is a function of many variables, of which provision of public projects is a dominant factor. After World War II, leaders of various governments invested to promote the quality of projects and also encouraged the private sector to make investment in project development. Implementing successful projects generates positive effects on the economy, influencing not just short- and medium-, but also long-term development (Beleiu et al., 2016).

The findings of the study provide a fuller understanding of issues that hinder the realization of the social benefits of completed public projects in Nigeria. Project failures constitute a pressing social problem as abandoned projects constitute a threat to lives, other properties, and the environment. Some of the project sites have turned out to be dump sites and eventually a source of sickness and health challenges due to environmental pollution as well as a hideout for criminals and miscreants (Adebisi et al., 2018). The findings of this study could provide insight into the mechanics of project completion by project managers. With this knowledge, project managers may be able to reduce instances of project failure and associated financial, economic, and socioeconomic losses while adding more value to the life of ordinary Nigerians. To contribute to social change, stakeholders may be able to use the findings from the study to help abate the menace of project failure and ensure that the benefits of projects for the people of Nigeria are pursued vigorously with the right framework.

Summary and Transition

In this chapter, I discussed the purpose of this quantitative correlation research study, which was to evaluate the relationships between project duration, project management control, and project success. I provided the background to the study, stated the problem, presented the RQs and hypotheses, and provided overview of the theoretical foundation and nature of the study. The two predictor variables were project duration and project management control, with the criterion variable being project success. This study involved two theories to explain any relationships among variables: theory of project and control theory. In the chapter, I also defined key terms and discussed the assumptions,

delimitations, limitations, and significance of the study. In Chapter 2, I reviewed relevant literature on the theories used, concepts addressed, and empirical studies relevant to this research study.

Chapter 2: Literature Review

In Chapter 1, I provided an overview of this research, which included discussing the problems addressed in this study and the research objectives. For emphasis, the key social problem of the study was the increasing number of abandoned government projects in Nigeria and the attendant economic losses and social maladies. The key research problem is that there is currently an incomplete understanding of the interwoven causes of Nigerian public project failures, based on my review of the literature. To address this gap in the literature, I investigated the interrelationship among project duration, project success, and project management control in Nigeria with a view to see if project duration and project management control relate to or predict the successes or failures projects in Nigeria.

This study was therefore a response to the need to reduce the rate of abandoned or failed projects in Nigeria and their attendant negative consequences. In examining these interrelationships, I drew from the theoretical explanations of control and project theories. In this chapter, I provide an overview of the stated theories on project success and the possible role of management control in achieving project success. The review also helps in developing an understanding of the variables of project success and project duration, as well as management control, to improve the quality, validity, and reliability of the research instruments adopted for this study. The review of relevant literature further helps in establishing the fundamental meanings of the various concepts and thus enhances clarity about the thrust of this study.

I begin this chapter by providing overviews of the literature search strategy and theoretical framework. I searched for and reviewed current literature from peer-reviewed journals selected from a number of established and highly referenced publishers, including Emerald, Taylor and Science, and Inderscience, amongst others. The PMI online database and other professional websites also were sources of relevant information. In the chapter's literature review, I review relevant empirical studies that pertain to the overarching concepts, topics, and variables that were of interest in this study. Previous findings from researchers published in reputable peer-reviewed journals and other documents bearing on project duration, project success, and management control are included.

Literature Search Strategy

To thoroughly review past studies, I used a number of databases and search engines. Principally, the Walden University Library databases and Google Scholar were sources of information. These included the databank hosted by Emerald Publishers, Science and Tailor, Thompson Reuters, Proquest Central, and EBSCOhost Central, amongst others. Specifically, use of search engines and Google Scholar yielded articles from both peer- and editorial-reviewed journals to ensure a wider coverage of search. These tools included a comprehensive range of studies pertinent to the current investigation.

The Emerald Publishers, Science and Taylor, and Thompson Reuters resources yielded only peer reviewed articles. Unlike earlier sources, these sources require subscriptions to download relevant articles. Hence, the articles found and downloaded

come from quality and not predatory journals. Most articles from Emerald Publishers, and Science and Tailor were Scopus indexed while those from Thompson Reuters, though peer reviewed, were mostly non-Scopus indexed. To gather relevant literature, I used the following search terms: *project success, project failure, project management, management control, project scheduling, project timing, abandoned project, construction projects, project completion, and uncompleted project*, among others. These terms and combination of terms returned accessible and downloadable articles.

The scope of literature in terms of years was largely current, meeting the minimum criteria for recent, peer-reviewed studies. The number of articles in the recently published period reflects that the topic of research was relevant. The types of literature reviewed included narrative, systematic, argumentative, integrative, empirical, and theoretical literature. The narrative literature presents a critique of the relevant past studies and offers a summary from which a conclusion about the topic was drawn. The purpose of this type of review was to identify gaps or inconsistencies in research findings in this area of study. The review represents a synthesis of past studies using a well-defined approach.

The integrated literature review is relevant and necessary because it combines critiques and synthesis of past studies with heavy reliance on secondary data. The review encompasses new research frameworks and perspectives central to this present investigation. Finally, the focus of the theoretical literature review is on theories regarding the concept, phenomena, and subject of investigation, with emphasis on the premise of theory used to explain the concepts.

Theoretical Foundation

The theoretical foundation of this study was that of project management, proposed by Koskela and Howell (2008), espoused under the project management body of knowledge framework of PMI. However, clear theories that explain project management as a whole are still debatable, as evidence on the underlying conventional theories is deficient and “obsolete and has to be substituted by a wider and more powerful foundation” (Koskela & Howell, 2002, p. 3). From among Koskela and Howell’s proposed theories, which are extended versions of the conventional theory of project management, there were two theories potentially applicable in this study. These were the theory of project and the theory of control. Both help to explain the possible interrelationships among project duration, management control, and project success, at least in their implicit forms.

Previous scholars using the theory of project only considered project management as a transformation of input to output; the new version takes a paradigmatic form that extends to flow value generation, time, variability and customer conceptualizations (Koskela & Howell, 2008). The addition of time, likened to project duration, means that this extended form of the theory of project can be useful in explaining any relationship between project duration and project success. Other authors have contributed to this paradigm of theoretical foundation of project management studies (e.g., Cooper, 1993; Warburton & Cioffi, 2014). For instance, Cooper (1993) argued that a project characteristically signifies a mass of development project expenditures and time. Here time was an important factor in project management and ultimately project success.

Moreover, the theory of project, as used in this study, was the same as previously presented as the theory of production by Koskela and Howell (2008). The reason for its use as such was that a project was also seen as a special type of production; in one of the definitions of a project by PMI, projects are temporary endeavors pursued with the purpose of creating unique products or services (Mir & Pinnington, 2014). I concluded that the theory of project was appropriate to explain the relationship between project duration and project success.

The basic doctrines of the theory of control include measuring the rate of realizing assigned tasks, examining the reasons for the tasks not being realized, and eliminating the identified causes. As explained by Koskela and Howell (2008), there is need to ardently confirm the picture of how work is progressing and to provide statistics on the work performed, so as to use the same in future projects. This provision addresses the financial performance dimension of project management, which was lacking in the earlier conventional thermostat models of project management theory. Therefore, Koskela and Howell argued for the inclusion of management control as important in the model. The argument in brief was that good project duration, without adequate management control, may result in project failure. This implies that project duration and project success could also relate to management control.

Explaining the relevance of this control theory, Koskela and Howell (2008) noted that project management is dominated by planning and dispatching; the thermostat model then becomes important. The point emphasized in their proposition pertains more to project planning than project execution. Koskela and Howell explained that, in their

traditional continuum, the link between project planning and project execution is via authorizations central to the dispatching model. This concept clearly separates planning from execution like project scheduling, where time assigned to project tasks are delineated. This ultimately affects project duration, which was a key variable in this study and is a factor that control theory implicitly emphasizes.

The dictates of control theory explain the intervening role of management control in terms of project control, using the thermostat model. In this model, the role of management control pertains to correcting deviations from preset parameters. This means that there are certain assumptions known and held. One of the assumptions is that there are already established performance standards or expected outcomes which could be project benefits or deliveries that are measurable quantitatively (Hofstede, 1978).

Another assumption is there is a causal relation between actions taken by management and the outcome of the project; such actions return the project to the desired state. These actions encapsulated under management control are potentially associated with project duration and project success. The traditional assumption of these theories is that project activities, when time or duration are specified, relate by sequential dependencies. These dependencies account for the emergence of a practically useful association among the network structure of the project and labor rate profile, the last from which management control situates (Warburton & Cioffi, 2014).

Literature Review

Conceptually, one can define a project in many ways. For this literature review and research, I adopted the definition of a project as a collection of activities to

accomplish a specific objective (Eja & Ramegowda, 2020). Projects in this study involve defining and selecting a set of unique tasks that are of overall benefit to a nation; additionally, a project has to be completed within a specification, having defined start and end dates or a duration (Nzekwe et al., 2015). This last description of a project suggests that every project is time-bound and out of place if the influence of such time on the success of that project is not given a concerted empirical discursion. Accordingly, the review of the literature revolves around public infrastructure projects, project abandonment, successes and failures, duration, and management practices, including control. Emphasis is on findings pertaining to Nigeria and similar developing countries, derived from rigorous, published, peer-reviewed research.

Public Infrastructure Projects

Projects are important to the economic development and promotion of welfare level in countries across the world, recognized as especially important in developing countries, such as Nigeria (Damoah & Kumi, 2018). The state of a nation's economy is a function of many variables, of which provision of projects is a dominant factor. Although funding varied, based on other significant national and global events, such as wartime, most governments historically invested throughout time to promote infrastructural projects while encouraging the private sector to also invest in project development (Stupak, 2018).

Government infrastructural projects are series of tedious undertaking by government that helps to maintain or improve a state economy. They are relatively long-term investment projects requiring typically large sums to acquire, develop, improve

and/or maintain capital assets, such as building roads. These tasks associated with governments require the use of significant capital (financial and labor) and proper monitoring to achieve completion. Government infrastructural projects are projects to build either new facilities or make significant, long-term renewal improvements to existing facilities. Infrastructures are usually funded by sources specifically set aside for capital purposes, such as proceeds of bond sales, long-term financing contracts, and other dedicated revenues (Damoah & Akwei, 2017).

Government infrastructures are essential to the operations of all economies. They are projects sponsored by the government for the maintenance of itself and provision of public goods, services, and works needed to foster or promote economic growth and improve the welfare of people in the society. It also refers to governments' plan for acquisition of fixed (productive) assets (whose useful life extends beyond the accounting or fiscal year), as well as action to upgrade or improve existing fixed assets such as factory, building, roads, machines and equipment for betterment of the society. Government infrastructure is a major component for improving social amenities and the state economic. This implies that government infrastructure is a key determinant of the size of the economy and of economic growth (Stupak, 2018).

Infrastructural inputs for the growth process promote and enhance national integration. For example, roads, as a part of infrastructure, are the foundation of the transport system. Road networks, from public infrastructure projects, are integral to the daily economic prosperity of industries and social life of people. Road infrastructure facilitates movement of people, materials, and businesses, linking industries and

agriculture to the market. Roads are instrumental in interconnecting all businesses to all markets, driving trade, creating employment, ensuring a better distribution of wealth, and connecting mankind. Connectivity provided by government infrastructure projects, such as roads, is perhaps the single most important determinant of wellbeing and the quality of life of people living in a country. A good infrastructure, such as a road network, is a prerequisite for sustained economic development (Smridi, 2012).

Good infrastructure supports the development of industries whose product requires mobility and marketing. Climatic factors sometimes influences the location of industries far away from the markets but roads bridge the gap between production and consumption centers and create place utility. A good infrastructure, such as road networks, enhances and increases the demand of products and services. Through good infrastructure, such as roads and transportation systems, newer customers in newer places can be connected and the products can be introduced to them (Adebayo et al., 2018).

Nigeria has been the focus of research on public infrastructure projects. For example, Akinyele et al. (2016) conducted a study on infrastructural development as a predictor to small and medium enterprises performance in Nigeria. Their aim was to examine the effects certain infrastructure has on the growth of SMEs and employment. To accomplish this, focus was on main infrastructures, such as electricity, technology, and education to ascertain effects on SMEs and entrepreneurial development. Performance measures included business survival, profitability, service, product delivery, innovation, and sales turnover, with a survey research design. Using simple random sampling techniques to draw a sample of 239 from the population of 593 respondents,

ANOVA revealed significant positive correlations between infrastructure and SME growth and entrepreneurial development. Implications are that infrastructure helps ensure the successful operations of business and innovation. Akinyele et al. recommended that government should adequately provide these basic infrastructures for successful SME operation and entrepreneurial development.

With similar findings in mind, Manijeh et al. (2015) carried out a study on the economic development programming approach in a free trade industrial zone based on AHP hierarchical analysis model. The purpose of the study was to determine planning approach to economic development in the free zone. Manijeh et al. adopted the survey method along with content analysis to evaluate the indicators and concluded that internal and external investments had the highest share in regional economic development. Recommendations of Manijeh et al. were that government should create an attractive investment environment that enhanced business opportunities and trade, lending and concessions to investors, legal protection of large investors, and raise the standard of goods produced in the country.

Infrastructure development enhances economic growth and increases the standard of living. Government projects such as roads are of immense importance to citizens because they form the foundation that supports national growth (Eja & Ramegowda, 2020). Ivanova and Masarova (2013) conducted a study on the importance of road infrastructure in the economic development and competitiveness in Slovakia. In carrying out their study, Ivanova and Masarova used a time series analysis from 2000 until 2011. Conclusions from correlation analysis were that a strong dependence exists between the

expenditures on the road infrastructure and foreign direct investment inflows that affect the competitiveness of the economy and increase the standard of living of the people.

Ivanova and Masarova recommended that the government of Slovakia should build major motorway and expressway networks in the shortest time possible, to increase accessibility and transit traffic, thereby reducing cost of living.

Focusing on Nigeria, Bala (2015) carried out a study on the effects of road transport development on urban growth and commercial activities in the Gombe metropolis. In carrying out the study, Bala collected 282 questionnaire administered to the commercial outfits in the identified major road corridors. The study adopted alpha, beta, gamma indices and GIS technique to measure the development in road network and to determine the pattern of urban growth. The study used inferential statistical techniques and a paired T-test to test the research hypothesis. Bala revealed that road improvements affect commercial activities in many ways, such as provision of access to commercial outfits by locating along major roads, junctions, and roundabouts which in turn results in increase profits from income, improvements in standard of living, and reduction in poverty. Bala recommended more road construction and renovations to improve and diversify the commercial nature of Gombe metropolis.

Also in Nigeria, Adeyemi (2013) studied the relationship between electricity consumption and economic growth, using the Johansen and Juselius Co-integration technique based on the Cobb-Douglas growth model covering the period 1980-2008. Adeyemi used the vector error correction modelling and the pairwise granger causality test to empirically ascertain the error correction adjustment and direction of causality

between electricity consumption and economic growth. Data for gross fixed capita formation, labor force and energy use were from the World Development Indicators of World Bank, 2012 while data about gross fixed capita formation were from the Central Bank of Nigeria Statistical Bulletin, 2010. From unit root testing to ascertain the stationery status of the data series, Adeyemi found a unique co-integrating relationship among the variables in the model, as well the VECM estimates that indicate a possibility of a long run convergence with high speed of error correction. The indicator of electricity consumption exerted a very significant impact on economic growth. Adeyemi recommended strengthening the effectiveness of energy generating agencies by ensuring periodic replacement of worn-out equipment and necessary tools in order to drastically reduce power losses.

Similarly looking at electricity as a part of the public infrastructure, Olufemi (2015) carried out a study on the effect of electricity consumption on industrial growth and generation of employment opportunity in Nigeria. Olufemi used time series data covering the period between 1980 and 2012, with co-integration, multiple regression, and error correction techniques to estimate the short-run and long run dynamics of the study models respectively. Like Adeyemi (2013), the aim of the study was to examine the relationship between electricity consumption and industrial growth in Nigeria, and Olufemi was able to document a significant positive relationship between industrial growth and electricity consumption, electricity generation, labor employment, and foreign exchange rate. Recommendations were that government should undertake cogent approach towards reforming the electricity supply to increase industrial production and to

monitor the privatization policy of the electricity sub-sector to provide employment and hence reduce the high rate of unemployment in Nigeria (Olufemi, 2015).

Lacking infrastructure, such electricity, not only impacts employment, but also affects business profits. Henry et al. (2016) also conducted a study on the impact of power sector reforms on small scale businesses in Cross River State, Nigeria, administering questionnaire to small scale businesses engaged in manufacturing, service, and trade. Henry et al., like Adeyemi (2013) and Olufemi (2015), reported that a major challenge confronting businesses was inadequate supply of electricity affecting their business operations and profits. Recommendations were for Cross River State government to address better the issue of electricity, and embark on additional infrastructure projects that include constructing more dams and thermal stations to boost the existing supply and establish a monitoring team to check the excesses of this distribution company to avoid unnecessary exploitation of the consumers (Henry et al., 2016).

Developing counties need multiple types of infrastructure development. Tahar and Mohamed (2016) studied on the impacts of seaport investment on the economic growth in Tunisia, with a focus on Tunisia's economic sectors (manufacturing, services and agriculture) over the period 1983-2011. Tahar and Mohamed adapted the econometric model by employing the Cobb-Douglas production function and revealed that the public investment in seaport infrastructures has a positive influence on Tunisian economic growth. They also revealed that such infrastructure investment benefitted the services and manufacturing sectors more than the agricultural sector, indicating an inequality in the

economic effect of infrastructure investments among economic sectors. Tahar and Mohamed concluded that globally, infrastructure investment has positive influences on the economic growth and employment generation. Specifically, Tahar and Mohamed noted that seaport development generates economic benefits, but it could create a kind of imbalance between the various economic sectors; to avoid such an inequality, decision-makers should take into account all sectors in the orientation of all new infrastructural investments.

Public Infrastructure Project Abandonment

Government infrastructural projects help to provide new products and services that will improve the standard of living and at the same time promote the beauty of the environment. However, these advantages remain unattained because of its continuous abandonment (Ayodele & Alabi, 2011). The management of abandoned government infrastructure in Nigeria requires the application of knowledge, skills, and techniques that will facilitate the completion of these abandoned projects (Eja & Ramegowda, 2020). The elimination or reduction of abandoned government infrastructural projects and significant increase in the completion of these projects will result to provision of good roads, housing, bridges, dams, railways and other infrastructures for benefit of the population (Ubani & Onomyu, 2013).

The completing of abandoned infrastructural projects in a country enhances reduction in waste of resources, human and material, as well as enhanced physical and socio-economic development of the country, amongst other benefits. Completing government infrastructural projects expands the economy and fosters rapid economic

growth, which depends on whether it is productive or unproductive. All things being equal, productive government capital project would have positive effect on the economy, while unproductive one would have the reverse effect. Completing government infrastructure is seen as installing facilities to a workable state that will create benefits, as there could be some lags between when it is completed and when it takes effect on the economy. Completing abandoned infrastructure is the art of installing unfinished project to a functioning stead. These activities require a substantial commitment of time and resources. However, for this to be effectively implemented, governmental entities should establish policies and procedures to support effective capital project monitoring and reporting to eliminate or mitigate the level of project abandonment in the country (Amade et al., 2015).

Amade et al. (2015) gave illustrations of six federal government abandoned construction projects in the South-East and South-South regions of Nigeria. The illustrations show that the Federal Government's IPP project at Ahoda, Rivers State, which commenced in 2005, was abandoned in 2007. The River State's Bridge project at Eagle Island in 2000 was abandoned in 2006 while its Low Cost Housing project at Ahoda in 2001 was abandoned in 2003. The Imo State's road project at Orji linking Mbeiri, Nwaoruobi to Ugwuorji in 2009 was abandoned in 2011, while the one in collaboration with NDDC in 2011 linking Alike-Umuosochi-Umulogho was abandoned same year the Abia State's Road Construction in 2010 linking Ugwunagbo and Umunka road was abandoned in 2013.

One of the recurrent projects considered to have failed in Nigeria are road construction projects. Poor and abandoned road infrastructure will result in low economic activities in a country. The demand for transport is largely a derived demand, arising from economic and social activities. Transport and the economy has a two way relationship, that is, supply in transport may influence the level of economic activities in reversed, the level of economic activity can influence the demand for transport (Adebayo et al., 2018).

Completion of abandoned roads in the country enhances speed in the distribution of product in the minimum possible time and it enhances mobility of labor and capital. It makes people of one place migrate to other places in search of jobs, capital, machineries and equipment can move easily to factories. Completion of abandoned roads presents firms with a range of opportunities to reorganize their production and distribution channels to achieve cost savings that could not have been achieved. Completed road networks lower transport costs and also present other opportunities, such as the ability to choose the most appropriate supplies to improve efficiency, offer more competitive prices and compete for sales in more distant market (Waka, 2014).

Over the years, several authors illuminated the issue of abandoned projects or project success factors from different parts of the world and made suggestions and recommendations to overcome or prevent the reoccurrences of projects abandonment. In particular, corruption in Nigeria has been the focus of prior scholarly efforts (Aladwani, 2016). Research by Olapade (2012) led to suggestions on overcoming the issue of abandoned projects in Nigeria: government should ensure the process of

selection of all favorable parties according to the contract, with attention to accountability, transparency, honesty, and integrity. According to Olapade, the economic advantages in determining a new project should be the main criteria and not the political influence. Other authors agreed that corruption at the level of government and other parties to the contract should be curbed (Ijewereme, 2015). Olapade recommended corruption reduction through due process, the agency of Economic and Financial Crime Control, Budget Monitoring and Price Intelligence Unit, and other crime control agencies. A national construction industrial bank could help in preventing abandoned projects (Olapade, 2012).

Funding and cost controls were also the focus in prior research efforts to help mitigate the problem of project abandonment. Many Nigerian projects have resulted in abandonment as a result of financial problems (Akande et.al. 2018). For example, the Abia State road construction projects in Nigeria which began in 2010, was abandoned 3 years later, largely because of insufficient funding (Amade, et al., 2015). Olusegun and Michael (2011) elaborated on some of their ideas for drastically reducing the project abandonment effects, stating that government should adequately plan for the project at to ensure sufficient funding, available as estimated by the quantity surveyor also at the starting point as well. Recommendations included the appointment of competent construction professionals from the beginning stage, preparing an economic design as required, according to the cost plan, and the quantity surveyor controlling cost from the beginning and throughout the period of the contract (Olusegun & Michael, 2011). Botchkarev (2015) similarly noted that there should be accuracy in estimating project

costs and benefits. Olusegun and Michael added that government should ensure that the processes of payment to the contractors are made accordingly through the valuation work done by the Quantity Surveyor and with the Architect's certification.

Restrictions on abandoning a project have already been started, as the government employs contractors with strong financial stand and competency in executing contracts. The proper measures that could be useful in preventing the occurrence of abandoned government capital projects will also help to protect the welfare of the citizens. This prevention method to resolve the issue of abandoned projects enhanced savings which ultimately contributes towards the growth of the state's economy. Completing abandoned project helps prevent loses of money and valuable resources of government as well as improving the economic condition of the state (Olusegun & Michael, 2011).

In addition to corruption and funding issues, Mac-Barango (2017) examined the causes, effects, and possible remedies to construction project abandonment in Nigeria using qualitative research methodology. By this method, data were from site visitations of the abandoned projects and questionnaires completed by building clients, consultants, contractors, and the work-force at different sites. Eja and Ramegowda (2020) revealed a number of factors responsible for project abandonment: inflation, faulty design, inadequate planning, bankruptcy of contractors, inadequate funding, variation of project scope, quackery (incompetence), and delayed payment. Several other authors also reported poorly managed financing, inadequate monitoring and control, incompetence, and corruption as among reasons for public project failures and abandonment in Nigeria (Nweze, 2016; Ogunmola, 2015).

Ayodele (2011) similarly investigated causes and effects of abandoned project in Nigeria using structured questionnaires as a means of qualitative data collection from quantity surveyors, civil engineers, architects, builders, and contractors. Among the factors found to contribute to project abandonment were insufficient project planning, inadequate or delayed funding and poor costs controls, inflation, bankruptcy, deviation from project scope, political factors, death of client, incompetent project managers, wrong estimates, and faulty designs. Eja and Ramegowda (2020) added poor communication resulting in Nigerian project abandonment, as well as poor contracting practices linked with sub-par and late delivery of projects which also led to abandonment of public projects across all states within Nigeria. Possible remedies proposed by Ayodele included better project planning, funding, and engagement, amongst other measures.

Project Success and Failure

When referring to success and failure, it is not only a matter of abandonment; other aspects such as project goals are among the factors and determinants (Eja & Ramegowda, 2020). While scholars often consider failure in terms of abandonment or goal achievement, project success is a multidimensional concept in project management literature that attracted the interests of both practitioners and academics (Mir & Pinnington, 2014). In a brief definition, project success is reaching the objectives and the planned results, in compliance with predetermined conditions of time, cost, and performance. Implementing successful projects generates positive effects on the

economy, influencing not just short- and medium-, but also long-term development (Beleiu et al., 2016).

Project success, as a multidimensional concept in project management literature, attracted the interest of both practitioners and academics (Mir & Pinnington, 2014). While a generally adopted definition of project success is reaching the objectives and the planned results in compliance with predetermined conditions of time, cost, and performance, Shenhar and Dvir (2007) further operationalized the project success construct. Measures of project success advanced by Shenhar and Dvir include project efficiency, impact on customers, impact of the project in general, impact of the project on the team, impact of the project on the organization, and general impressions of overall success. As demonstrated in the review of the related literature that follows, this view of project success encompasses the broad range of outcomes discussed by most project management scholars and practitioners. Therefore, it appeared appropriate to adopt the Shenhar and Dvir definition and previously validated measures of project success for this study.

Looking at project failure factors, Durdyev et al. (2019) used a survey research design with a sample of 155 project management professionals. Semi-structured interview data from two contractors and one professor in Malaysia augmented the Durdyev et al. survey data, analyzed through Semi Equation Modeling and Partial Least Square regression. Factors undermining project success included late as well as unclear decisions, lack of utilization of building information modeling, lack of communication between stakeholders, poor relationships between stakeholders, and a lack of spirit of

collaboration among team members (Durdyev et al., 2019). Eja and Ramegowda (2020) further focused their project failure findings on Nigeria; noted causes included insufficient financial capacity; inaccurate costing; managerial incompetence and knowledge deficits; inadequate planning and estimation; suboptimal communication; deficient contracting and contractor practices; poor control of design scope leading to excessive changes and errors; sociocultural and political complications; ineffective management and leadership, and corruption.

Financing is typically linked to project success and failures. In fact, some industrial measures of project success or failure revolve around three predominate factors: cost, time, and quality performance (Nzekwe et al., 2015). As in many other prior studies, Asiedu et al. (2017) focused on cost from its estimation, forecasting, overrun, and so on, in relation to other aspects of project success. Asiedu et al. conducted their study in Ghana to develop a model for forecasting cost overrun in projects. They adopted a survey research design and collected data from respondents on 321 educational projects with multiple linear regression analysis. Result showed that project cost overrun is influenced by contractors' financial class, scope of the project, source of funds, and initial contract sum. Conclusions drawn from these studies are that financial management and controls influence the outcomes of the project.

Additional cost overrun studies included that of Lau et al. (2019) who studied the challenges of adopting new engineering contracts in Hong Kong. Lau et al. argued that project delays and cost overrun are common problems faced in conventional project contracts. With the aim of identifying the challenges and barriers to project

implementation in Hong Kong, the method adopted by Lau et al. was surveys and 45 high-ranking industry experts completed semi-structured interviews. The result were that peoples' unwillingness to change, insufficient number of trained professionals, and case law vis-à-vis adjudication experience significantly influenced project delays and cost overrun leading to failures in the adoption of new engineering contracts in Hong Kong.

Worker shortage and safety issues are also other reasons credited for project failures. For example Karimi et al. (2016) conducted a study to quantify the impact of craft worker shortage on safety performance of construction projects in America. Karimi et al. accessed a database of 50 North American construction projects between 2001 and 2014; using secondary data, t-tests, and the Mann-Whitney test, finding were that projects with worker recruiting difficulty had more safety issues and barriers to completion. A shortage of skilled workers can lead to an increase in foreign workers, leading to multicultural and communication issues that can become major impediments to project completion and overall success (Salleh, et al., 2014). Rahim et al. (2016) likewise emphasized the challenge of labor shortages for sustainable construction. Okuntade (2015) similarly studied the shortage of skilled workers in the Nigerian construction industry, calling the phenomenon a paradigm of a failed government policy.

Project Duration

Project duration may be a factor in successful projects. For example, in the aforementioned study by Karimi et al. (2016), the duration of a construction project ranged between 46 to 3,131 days. As their study did not implicitly or explicitly address the possible link between project duration and project success, their argument has cued

the possibility of a marked relationship between these two variables. In a similar study by Niazi and Painting (2017), unrealistic contract duration was identified as the fifth out of 69 factors that could influence project success. Their findings indicated that this problem could be client-based, meaning that it is those who bid for the contract that cause this problem of unrealistic contract duration. Although the degree of influence that this unrealistic contract duration can affect project success has not been empirically ascertained to know if it is serious problem for abandonment and failure of projects in Nigeria, other authors focused on the possibility that project duration could relate to project success.

For example, Akbari et al. (2018) studied the project success concept as an emerging controversial issue in developing nations. Akbari et al. focused on building a sets-based prediction model for large-scale construction projects based on sustainable success index. Their quasi-experimental study, using secondary data collected from 26 large-scale construction projects in about five countries, revealed that one of the SSI factors was project time or duration (Akbari et al., 2018). Focusing on Nigeria, Alao et al. (2018) investigated project abandonment, cost, and duration of rehabilitation projects. A qualitative research approach with questionnaires completed by 47 professionals involved in construction and development of physical projects, led to findings that project abandonment significantly disappointed stakeholders and over-stretched existing facilities. In the study by Alao et al., there was a direct and proportional as well as exponential effect of the period of project abandonment on costs and time overrun of

projects. Interestingly, this study involved time overrun, which related to project duration without a clear link to project success.

Delays or underestimation of project duration is highly likely to impact the chance of completing the project successfully. Al-Hazim et al. (2017) conducted a study on delays and cost overrun in infrastructure projects in Jordan; among the factors identified for causing delay and ultimately project failure were planning time for project completion which ranked 9 of 20 factors. The times planned for project completion for all the 14 projects investigated by Al-Hazim et al. were grossly less than the actual times required to complete the projects. Ika (2009) also previously noted that time (or project duration) and the measurability of project management objectives represented parameters for the analysis of project success. Time (also known as project duration), according to Ika, constitutes a hard dimension of a project that is tangible, objective, and measurable, usually tied to project completion. Thus, project duration is a factor implicated in project success; a relationship may exist between these two variables, a finding which could be of theoretical, practical and methodologically relevance.

Similarly, Onwuanyi et al. (2018) wrote on factors needed to attain sustainable project management success in the Nigerian public sector projects. Onwuanyi et al. performed content analysis of past empirical literature on public sector project management at the three tiers of Nigerian government, namely Federal, State and Local Government. Among factors identified by Onwuanyi et al. as project completion challenges in Nigeria were poor monitoring and time overrun; at the construction industry level, poor supervision and project monitoring were part of the challenges. Like Al-

Hazim et al. (2017), Ika (2009) also reported time overrun, which could stem from inaccurate time estimates and poor monitoring or management, as a factor that could inhibit successful project completion, leading to project abandonment. Poor time horizons for implementation, along with poor cost estimations were suspected causes of project failures in Nigeria (Dosumu & Aigbavboa, 2017).

Erroneous estimates of time can represent a type of risk. For example, Namazian et al. (2019) studied the efficacy of both Monte Carlo Simulation and Bayesian Networks Methods at assessing project completion time under risk, to assess the effect of risk on actual duration of each project activity and completion time of the project. Risk assessment of a project offers more accurate estimates of the parameters affecting the functional objective of projects and can subsequently help to improve the chance of the project success (Namazian et al., 2019). Eriksson and Szentes (2017) investigated tensions management in both exploration and exploitation phases in large construction projects in Sweden, with a qualitative research approach; 40 semi-structured interviews occurred with several construction experts including project managers, clients, contractors and designers focusing on seven large construction projects. Findings reported by Eriksson and Szentes included the idea that tight time schedules obstruct both radical innovations and incremental developments. In simple terms, project activities are functions of their duration and these activities have both perceived and real risks which may affect project success.

In research carried out by Sutrisna and Goulding (2019), the relevance of project duration was the subject in a case study, with emphasis on the management of

information flow and design processes to lessen design risks in construction projects. Sutrisna and Goulding identified time, which represents project duration, as one of the internal project requirements for reaching practical project goals; the authors stated that time is of essence, and particularly project completion time (that is project duration) which has become crucial in project implementation. The decision to construct a project could revolve around the project's cost and anticipated completion time, especially during the design phase. According to Sutrisna and Goulding, the time-cost-quality triangle or duration-cost-quality triangle are key aspects considered in the project design phase. The extended argument is that requirements for successful project are cost, time (or duration), and quality, confirmed in subsequent research (Eja & Ramegowda, 2020).

Project duration as a possible success factor may differ from one country to another. Ozyurt et al. (2019) also studied the construction industry across 39 similar countries with a view to demonstrating how countries can overcome the mistakes committed in another country that embarked on similar project. With the similar major objective of identifying the most significant causes of delays, focusing on the United Arab Emirates construction industry, Mpofu et al. (2016) conducted survey research by Mpofu et al. with three targeted sets of stakeholders (clients, contractors and consultants) revealing important causes of construction delays, ranging from unrealistic contract durations to poor labor productivity. Mpofu et al. concluded that delays may be country specific and appear to be time related, viewed within the social, economic, and cultural settings of the country. Similarly, Xiao et al. (2018) focused on 77 residential building projects completed between 2011 and 2016 in China, applying univariate distribution and

maximum likelihood estimation method to secondary data, concluding that duration is a factor that project decision makers can consider to reduce risks in their projects; the cost of a project and the duration of the project had a positive relationship. Interpretations of the Xiao et al. findings include the idea that the higher the duration of the project, the higher the cost of the project, which Ozyurt noted was a similar finding across countries.

In their quantitative research, Adesi et al. (2018) revealed how project duration could have a critical role in the attainment of project success. Focusing on professional quantity surveying (QS) services as a critical factor in delivering construction projects in Ghana within set budget, quality and duration, Adesi et al. collected survey responses from a sample of 372 respondents. Applying chi-square statistical techniques for analysis of the data, Adesi et al. showed that the service pricing of professional quantity surveyors was statistically significant in determining the managerial and professional competence of QS consultants. These services were business management, service cost management, and production capabilities. Of interest in this study is project duration, recognized as a condition for a successful project; the nature of pricing used by construction consultants for their services requires competency within project duration (Adesi et al., 2018).

There is a possibility that, in trying to complete a project that has been behind schedule, managers may force the workers into avoidable errors and repeating activities thereby further delaying completion. Chitongo and Pretorius (2018) studied project time schedule controls with the aim of understanding project control protocols adopted by clients in the design of a project to enhance project time schedule performance. In their conceptual paper, Chitongo and Pretorius applied a dynamic hypothesis and emphasized

the possibility that, to avoid time overruns, managers may provoke workers into avoidable errors and repeating activities which could further delay project completion. Findings suggest that there could be a relationship between project duration and project control, which could affect the successful completion of a project.

In addition, the attitudes and behaviors of project team members may also affect time or project duration. Olatunde et al. (2017) investigated the impact of the composition of teams on delivery of construction projects in Nigerian higher institutions, focusing on time and cost. Olatunde et al. used a survey research design and collected data from 191 surveyors, architects, structural/civil engineers, services engineers, contractors, and clients from 35 Nigerian construction projects completed between 2000 and 2013. Mean item scores, Kendall's test, t-test and eta-squared showed that the completion time and cost of construction projects was significantly affected by composition of team members marginally and markedly respectively; Olatunde et al. also reported that some team members did not play active role in the project execution due to lack of requisite knowledge, skills, and abilities. Conclusions drawn were that knowledge, skills, and abilities of team members are likely related to project costs and time, which can affect project success, failure, or completion.

Identified project success factors, according to Musa et al. (2015), under different subcategories included those relating to project manager/leadership, team members' and management actions, and project monitoring. Musa et al. examined external factors that influence the success of public housing projects in developing countries, such as Nigeria. Mixed method research whereby Musa et al. applied SEM to analyze the data collected

from the final sample of 276 revealed that economic, political, and social factors all affected housing project significantly in Nigeria. Interestingly, under project success factors, project completion time was clearly identified, but not exhaustively examined as an independent construct in the Musa et al. model. This has left the extent of effect of project time or duration as on project success unascertained, thus calling for further investigation as the current study intends to cover.

A study by Cao et al. (2020) seemed to indirectly link project success to project duration. In their study, Cao et al. aimed at developing and testing a model for analyzing the association between work–family conflicts and job satisfaction, and between work–family conflicts and job performance of construction professionals with the moderating role of affective organizational commitment in China. Findings from survey research with a sample of 317 construction professionals, with structural equation modeling was that work-family conflicts, whether the work interferes with family life or family life interferes with work, directly and inversely affected affective organizational commitment, and job satisfaction. Team members’ inability to invest the adequate time into projects could undermine achieving the ultimate goal of successful project completion. This proposition was corroborated by Rezvani et al. (2016).

Project Management Factors

Project management practices can significantly improve project success rates. The Federal Acquisition Institute (2015) published a guidebook for project managers, which consists of a breakdown of the essential responsibilities of project managers. The justification of the purpose of such a guidebook is the use of public funds should be

applied in the most efficient and effective ways; the government considers the project management role so important because they have the responsibilities of ensuring that the public funds invested into projects culminate in timely outcomes. The PMI (2017) published a similar guidebook encompassing the project management body of knowledge including project management frameworks, standards, and knowledge areas. What emerged from these resources coalesced into empirically studied effective management practices in the following categories: project lifecycle, organizational systems, scope stability, planned commitments, quality assurance, and the tracking, correction and control of processes or output variances that deviate from expectations.

Despite such guidelines, as Eja and Ramegowda (2020) highlighted, government-sponsored projects in Nigeria fail, in part because of poor project management practices. Project management failures can, in part, be attributed to the project manager's incompetency. As previously revealed by Olateju et al. (2011), project management practice in the Nigerian public sector were suboptimal as a result of inadequate core knowledge of project management tools and poor planning. Abdullah et al. (2018) searched for the competencies of project managers of construction projects using a mixed method research approach. The four competency categories noted by Abdullah et al. were hard skill, knowledge (both of which they considered to be technical competency), soft skills, and abilities (both of which they also considered non-technical competencies). In addition, Abdullah et al. highlighted the need to manage project's staff, materials, labor, plant, sub-contractors, time, project closeout and handover, quality, environment, money, pre-construction activities, safety, site administration, construction contract, computer

literacy, and third parties. Conclusions drawn from these similar studies were that the inability to manage these activities may likely lead to failure in the project implementation.

Project management control could also be an important project management practice that could relate to project success or failure. Goals of project teams are to achieve project success, but management must be able to control project costs, duration, and quality, “improving the economic, social, and environmental benefits of the project, and providing smooth project delivery within the specified period of time” (Wu et al., 2017, p.11). Ika (2009) stated that project management could lead to project success, so it is reasonable to assume that failure in project management (including project management control) could result in project failures. Lack of skillful project management, including planning, estimation, control, and scheduling have been implicated in significant failures in projects across Nigeria (Eja & Ramegowda, 2020).

Applying the tenets of control theory to industrial projects in an off-site construction environment, Azimi et al. (2011) used a case study approach to investigate the ability of a project manager to monitor and control project execution to its successful completion. Findings reported by Azimi et al. were that high-quality real-time data are essential for increasing the speed of the monitoring process as quickly as possible. Project planning, and project management factors, such as control and monitoring, are important to project outcomes (Adebayo et al., 2018), but as Azimi et al. also noted, there needs to be adequate feedback and data monitoring for optimal control outcomes.

The work of Ahmed (2017) also illuminated the role of management control as a part of management practices that may relate to project duration and project success. From the perspective of stakeholder engagement in project implementation, Ahmed joined the likes of Achterkamp and Vos (2008) and Brown and Jones (1998) to argue that project failure (or success in the current research) is not always attributable to ineffective management; rather, failures can stem from inappropriate or suboptimal interrelationships among project stakeholders. As reported by Ahmed, project managers from their sample expressed concerns over non-engagement of stakeholders in the project implementation process, which could pose serious hindrance to the implementation of the project; such hindrances could come by means of obstruction, interference, and non-payments. Part of stakeholder relationship management and control is negotiating conflict. Gunarathna et al. (2018) illustrated how management control as an aspect of management practices can play an interactive role in the attainment of project success. It has been established in the literature that the presence of conflict in project implementation can have both constructive and destructive outcomes, depending on how it is handled (Tjosvold, 2006).

The constructive outcome in this sense could be the success of the project while the destructive outcome in this sense could be project failure. Sociocultural and political interferences through conflicts and incessant oppositions to public projects have been documented impediments to project completion in Nigeria (Eja & Ramegowda, 2020). Monitoring and controlling the project implementation process could identify these potential obstacles to be addressed accordingly. This suggests that if project managers do not exhibit effective management practices, including good monitoring and control of the

project, there is the likelihood of a conflict that could hinder the project success. Optimal monitoring and control practices can inspire employees' trust and enhance performance outcomes (Verburg et al., 2018). Management control of the project encompasses a kind of management style adopted by the managers of the project, especially where there are potential conflicts while the project is being executed. Giving more support to the present investigation, Gunarathna et al. (2018) identified the length of the process as one of the inherent characteristics of construction industry that can lead to conflict and ultimately project failure. Also, investigating the role of the project manager in relationship management, Meng and Boyd (2017) noted its effect on project success.

Project success may also tie into perspectives of management support. In a conceptual paper, Kamau and Mohamed (2015) conducted archival review of extant empirical literature on project critical success factors, project monitoring, and evaluation. In their study, Kamau and Mohamed specifically focused on factors that relate to monitoring and evaluation that affect project success in Kenya. Factors of monitoring and evaluation were in four categories: strength of M&E team, M&E approach adopted, political influence, and project lifecycle stages. Kamau and Mohamed also identified management support as a mediating factor between M&E and project success. Ahmed, Mohamad, and Ahmad (2016) carried out investigation into the effect of multidimensional top management support as a critical success factor on project success, with a cross-sectional survey of 208 global project management professionals; regression analysis indicated that providing resources and power dimensions of top management support had significant effects on project success

Further studies occurred to consider top management, power, and project success in terms of project governance. For example, project governance, operationalized as the extent of shareholder versus stakeholder orientation and the extent of behavior versus outcome control, was the focus of Joslin and Müller (2016), who studied project success from this perspective of project governance. Joslin and Müller applied a cross-sectional worldwide online survey that produced a total of 254 usable responses, analyzed using factor and regression analysis. Joslin and Müller reported that project success positively correlated with increased stakeholder orientation, but that management control could have an interactive or predictive role rather than explanatory role in project success.

A related concept is integrated management, as effective project management begins with the integration of processes and people within the construction project. Demirkesen and Ozorhon (2017) examined the influence of integration management on construction project management performance focusing on project charter development, process integration, knowledge integration, staff integration, integration of changes, and supply chain integration; project management performance included time, quality, cost, safety, and client satisfaction. Based on survey data collected from project construction professionals from 121 projects, analyzed with structural equation modeling, results were that integration management has a strong impact on project management performance (Demirkesen & Ozorhon, 2017). Banihashemi et al. (2017) similarly studied critical success factors for integrating sustainability into construction project management practices in developing countries. Results from 16 semi-structured interviews and 101 completed questionnaires, using a partial least squares structural equation modelling,

revealed a need for adeptly applying management practices that integrate environmental, social, and economic challenges that are likely to impact project success.

Management capability is said to be one of the criteria used in evaluating construction contractors during the prequalification and tender phases of project contract awards. Aje et al. (2009) investigated the impact of contractors' management capability to integrate, monitor, and control on cost and time performance of construction projects in Nigeria with survey data analyzed using one-way ANOVA and multiple regression. Results reported by Aje et al. were that management capability of contractors has a significant impact on cost and time performance of building projects. One dimension of management capability included quality control, an element of project management control in the model.

Also addressing some of the neglected dimensions of management practices, such as control, in the attainment of project success, was Asiedu et al. (2017) in Ghana. Asiedu et al. chronicled critical failure factors of project implementation against their mitigating measures to avoid overruns that often lead to unsuccessful projects. Asiedu et al. conducted focus group discussions with a purposive qualitative sampling method and reported that, among factors responsible for project failure and success, was project management practices of supervision and monitoring, which according to the Asiedu et al., have not received adequate empirical investigation in project management literature.

It is obvious that monitoring is an integral part of project management control. However, Asiedu et al. (2017) lamented that, although there is a general consensus regarding the significance of effective project planning and monitoring to project success,

there are divergent opinions about the degree of effort project managers need to invest. Habibi and Kermanshachi (2018) are among those who agree that there is a need to investigate project management control in contemporary researches; thus, they conducted a qualitative content analysis of 200 peer-reviewed journal papers, conference proceedings, and other scholarly publications. Findings reported by Habibi and Kermanshachi were that the time required to complete a project and the cost of completing the project are significantly affected by changes in the project designs in the engineering and construction phases. Wu et al. (2017) also suggested that good management control is required for a successful project delivery, and as previously noted, that time specification (which is project duration) is also necessary to achieve success in a project. Such reports give impetus to the inclusion of project management control as a management and supervision factor affecting all project phases.

Project management efficiency and performance may also lead to project success. Hattingh et al. (2019) examined, identified, and ranked key determinants of project efficiency with a survey research design, revealing the following project efficiency factors: design, project specifications, site management, budget, planning, monitoring and controlling, project scope, and quality. The exact relationships of these concepts with project success was beyond the scope of their study, but Hattingh et al. recommended that construction professionals should have good knowledge of said concepts with further research required. Implications are that project monitoring, which is part of project management control, is implicitly identified as one of the factors that must be present for valid theoretical analysis of project efficiency of project success. Similarly, focusing on

performance Deng et al. (2019) investigated a possible correlation between management behaviors and performance and between the project duration and performance of new projects. Deng et al. inferred that project management control is a factor in project success; in addition, project duration was one of the four variables involved in effective management.

Finally, the performance outcomes of construction projects rely on a number of project management dimensions. For example, Hassan et al. (2017) investigated the degree that project managers' personality influence project success in NGOs, with transformational leadership mechanisms as a mediating factor. Hassan et al. applied a quantitative survey research approach with 170 project managers that engaged in about 10 different programs in different areas of Parkistan. Hassan et al. reported that personality dimensions of extraversion, agreeableness, and openness to experience all directly influenced project success significantly with one dimension (conscientiousness) influencing project success indirectly.

The review of the literature reflected that project management control encompasses concepts pertaining to output, process, and normative management control. Operationalizing control as a management practice, Verburg et al. (2018) described how organizational control helps to align employees' and stakeholders' actions with the goals of the organization, through the managerial monitoring of behaviors and conditions. Control, in practice consists of various combinations of formal and informal control mechanisms; formal controls stem from reliance upon officially documented rules and plans of leadership, whereas informal controls are more normative. Verburg et al, further

illustrated different control targets; for example, *outcome* controls are oriented toward goals and results, while *process* controls pertain to compliance with procedures, and *normative* controls involve value congruence among employees (Weibel et al., 2016). In summary, optimal management control practices generally help to ensure optimal adherence to plans and standards, congruent behaviors, and overall effective performance (Verburg et al., 2018). A measurement of management control, as applied in this study, can therefore stem from the combination of outcome, process, and normative control practices.

Summary and Conclusions

This chapter started with the strategy for the literature search, which involved the use of web-based search engines. Also discussed were the theories applied in this study, which are the theory of project and the control theory. Public infrastructure projects, project abandonment, project success and failure, project duration, and project management practices, including control, were the key concepts underpinning the discussions. A review of studies in these areas culminated in a better understanding of the different dimensions pertaining directly or indirectly to the possible relationships between project duration, project success, and project management control.

Conclusions drawn from these discussions of the related literature are that project failure in Nigeria is a topic of ongoing interest. Adebisi et al. (2018) acknowledged that many states in Nigeria have trouble in sustaining human and financial resource investments in projects, thereby leading to their failures, losses, and abandonments. Disappointing of the populace and overstretching of existing facilities were among the

consequences of abandoned project noted in the peer-reviewed literature (Alao et al., 2018). Many of these abandoned projects could collapse, jeopardizing life and causing enormous social unrest and threats to healthy living. Based on these concerns noted in the literature, this study appears to be necessary to address the problem of abandoned projects in Nigeria.

A review of the literature revealed that projects that are not well managed can fail (Gunarathna et al., 2018). Proper management practices (including control as one of the basic management functions), may help to improve the chance of success of the project. Management control of the project may help engender project success through effective management practices. Project implementation literature also included an address of project quality, project time (duration), project cost, and safety, as well as numerous other issues. Inferences from previous studies are that project management control and project duration might relate to or even be predictive of project success, hence this investigation. Conclusions drawn from the literature is that after a few years of project commissioning, sustainable management becomes difficult if not impossible. A project designed for the long-term may not yield more than short or medium term benefits; thus, such projects then may remain uncompleted or abandoned and the project fails to deliver expected economic benefits to the people.

Although some of the previously published studies reviewed were in other countries outside of Nigeria, this approach represented an extensive review of empirical literature which aided in identifying issues in countries with similar characteristics. Such results are useful to enhance learning from international public, infrastructure, and

construction projects. Limitations in previous studies represent avenues for future investigation into project success. Project duration and project management control might relate to or be predictive factors of project success. Until there is further study of the possible interrelationship among these variables, the role of these factors in project success remain debatable. The present research is aimed at resolving this debate.

From this review of the literature, there are apparent gaps that this study helped to fill to make significant contributions. These gaps included a practical gap, theoretical gap, and methodological gap. Practical gaps are concerned with the unavailable relevant empirical work to provide blueprints as guides in the execution of successfully completed projects in Nigeria. The theoretical gap is concerned with the lack of supportive theoretical foundation for most empirical studies on project duration, project management control, and success. The methodological gap concerns the limited quantitative studies in this area of research, which can complement qualitative findings and results from the analysis of secondary data previously performed in this area of research. This study helped close these gaps by the efforts to investigate the significance of any noted relationships between project duration, project management control, and project success. By applying appropriate theoretical foundation and a quantitative research methodology, it becomes possible to reveal and explain the nature of these conceivable relationships, to suggest ways to solve the problem of the spate of abandoned projects and related problems in Nigeria.

Chapter 3 includes discussions of the methodological and design elements applied for this study. These methodological and design steps culminate in scientific testing of

the hypotheses aligned with the research questions. The chapter includes the justification of the appropriateness of the design and methodological approach selected for this study. Other specific contents of the following chapter include the population, sample and sampling technique, instrumentation, the validity and reliability of the instruments, data collection and analytical techniques, and ethical procedures.

Chapter 3: Research Method

The purpose of this quantitative correlation research was to evaluate the relationships between project duration, project management control, and project success. The two predictor variables were project duration and project management control, with the criterion variable being project success and the theoretical framework encompassing project management and control frameworks. In this chapter, I discuss methodological issues pertaining to the study. These methodological and design steps culminated in scientific testing of the hypotheses formulated in Chapter 1. I provide justification for, and discuss the appropriateness, of the design and approach selected for this study. Other topics addressed in this chapter are the population, sample and sampling technique, research instrumentation, the validity and reliability of the instruments, data collection and analytical techniques, threats to validity, and ethical procedures.

Research Design and Rationale

This was a quantitative survey study with a correlational design. As I discuss, I determined a correlational design to be the most appropriate design for a study of this nature. This study represents the epistemological worldview of the quantitative research tradition. The procedure suited to this kind of research revolves around the defined population of the study, sampling procedures, and data collection with analysis involving statistical power and decisions about the hypotheses to answer the RQs (Cundill & Alexander, 2015). The study aligned with a positivist philosophy and the use of a quantitative research approach, which concerns itself with answering “what is” or “what should be” questions to generate acceptable knowledge (Bell et al., 2018). The study of

project duration, management control, and success occurred in an objective way, where the goal of the research was to draw generalizations similar to those made in natural science studies. In contrast to qualitative research, the purpose of quantitative research is to improve prediction accuracy and the understanding of collected measures through statistical applications performed on numerical data (Elmousalami, 2019). The mixed method, which Guetterman et al. (2018) described as combining qualitative with quantitative methodologies, was unnecessary; generating answers to the RQs did not require a qualitative component but did require hypotheses testing through a quantitative approach.

Quantitative research involves different designs, such as experimental, quasi-experimental, and correlational (Schweizer et al., 2016). Correlation research involves the identification and understanding of drivers, predictors, and relationships among and between variables, as determined through the use of various statistical techniques, including factor analysis, regression methods, and correlation coefficient tests (Elmousalami, 2019). Although it clarifies relationships among variables, correlational analysis cannot be used to determine cause-and-effect relationships; there is a difference between causality and correlated associations (Kiene et al., 2013). The quantitative measures in this study were from cross-sectional surveys, which, according to Samphantharak et al. (2018), means that data were naturally occurring and not reflective of the outcomes of experimentally manipulated changes in variables. As there was no random sampling or manipulation of variables or interventions, correlation research was

an appropriate design selection for this study. The choice of this design was informed by the nature of the research being a correlational investigation.

Specifically, I asked the participants, who were project management professionals and stakeholders in the building and construction industry in Nigeria, questions on (a) project duration, (b) project control, and (c) project success. Project duration was the time invested into a given project. Project success, measured using the Project Success Assessment questionnaire adapted from Shenhar and Dvir (2007), was the extent to which the project culminates in its expected benefits to the designated beneficiaries and served the intended purpose. Management control, such as supervision and monitoring, is among the known best management practices. I measured this variable using questions adapted from the Verburg et al.'s (2018) previously validated survey about output, process, and normative control. The expectation was that there was a positive relationship between duration and success, between project management control and success, and between duration and the control. This was because it takes time to complete a given project, which can relate to the success of that project and the effectiveness of project management control (Mpofu et al., 2016). The nature and degree of such effect may relate to aspects of project control such as management control of the project. The conjectured interrelationships stem from the observed insufficient empirical evidence on the relationship between project duration and project success given that certain management practices, including a certain level of project management control, underpin operational efficiency in the achievement of construction projects (Mpofu et al., 2016).

Methodology

Population

The population for this study included all the members of the PMI-CCoP. There are over 500 PMI-CCoP members who are project managers in Nigeria and who constituted the population for this study. As the population in this study, the PMI-CCoP included project management professionals, construction workers, and stakeholders in the building and construction industry, including Ministry of works locations in the six geopolitical zones in Nigeria. This approach was similar to that of Nwagbogwu (2011). The PMI-CCoP is a virtual community that is member-driven within the subdivision of the international institute of the PMI, with headquarters located in the state of Pennsylvania. As a not-for-profit organization, PMI offers state-of-the-art and far-reaching levels of expertise and professionalism in project management and serves as a rallying point for the search for solutions to the problems and challenges relating to project management globally (Nwagbogwu, 2011; PMI, 2020). The population of project managers encompassed different professions involved in project management disciplines and practices, such as project professionals in information technology, business and financial services, industrial and commercial processes, construction and engineering, telecommunications, housing and real estate operators, infrastructural provisions among others. This scope was a preference because of the desire to ensure a sufficient sample.

Sampling and Sampling Procedures

Determining an appropriately sufficient sample size in quantitative research involves calculations that take into consideration the selected design (Kerkhoff &

Nussbeck, 2019). For correlation research involving predictor variables and regression tests, researchers take into consideration the desired probability level, the number of predictors in the model, the anticipated effect size, and the desired statistical power level (Riley et al., 2019). To calculate the minimum number of respondents required to be in the sample for this study, I used the Soper (2020) online statistical software to conduct the a-priori sample size calculation for multiple regression. Using software for sample size calculations is an acceptable approach in quantitative research (Palazón-Bru et al., 2017). Based on the population size of 500, using a conventional desired probability level of .05, with two predictor variables, a medium anticipated effect size, and a desired statistical power level of .8, a minimum of 67 participants was required for this study. The application of this formula in selecting the sample was to ensure that the sample used was scientifically representative of the population.

The sampling strategy, which required participant recruitment, was a nonprobability convenience sample. Although random sampling is a quantitative research ideal (Kerkhoff & Nussbeck, 2019), it was more realistic to expect that the minimum number of participants would opt into the study by volunteering to complete the survey. Despite reduced generalizability compared to random probability sampling, convenience sampling is widely acceptable within social science research fields; with clear eligibility criteria and a sufficiently narrow, well-defined population, convenience samples can lead to reasonably reliable and valid generalizability (Jager et al., 2017). The use of a convenience sample in this research meant that respondents opted in the study by choosing to voluntarily access the online link and complete the informed consent,

eligibility, and survey question pages. Although membership in the convenience sample may indicate self-selection bias, such as greater access to online resources, education, knowledge, or managerial support, an estimate based on a convenience sample may correctly reflect the wider population (Hedt & Pagano, 2011).

It is the norm in survey research that the anticipated number of individuals will not respond to recruitment invitations and complete the questionnaire in a timely manner (Cantuaria & Blanes-Vidal, 2019). In such a case, another sampling strategy called snowballing sampling is necessary. Staunch proponents of probability sampling consider snowball sampling a necessary sampling strategy when confronted with difficult-to-reach populations, particularly if there were few other alternatives (Kirchherr & Charles, 2018). Although power analysis indicated that a minimum of 67 participants would be a sufficient sample size, to account for attrition, I aimed to recruit at least 75 participants. I was able to obtain 74 completed surveys after attempting to recruit participants for a period of 4 weeks. Recruitment efforts depended on the access of individuals to their computers, social media sites, and emails; there was an assumption that all 500 members of the population received the invitation to participate. Accordingly, 67 participants would have been a response rate of almost 14%, which is within range of a historically average survey response rate of around 20%. A way to overcome the limitations of self-selection and nonresponse bias in research is to ensure an adequately thorough description of the sample that may help explain and homogeneity or particular characteristics that might distinguish the sample from the broader population (Compton et al., 2019; Jager et al., 2017). Therefore, I also included demographic and related

descriptive questions that allowed me to discern and understand any particularly unique characteristics of the sample.

Procedures for Recruitment, Participation, and Data Collection (Primary Data)

Researchers are expected to recruit participants in ethically appropriate unbiased ways (Hokke et al., 2018). With the expansion of the internet to connect people across a global marketplace, more researchers rely on web-based sites such as professional association memberships and social media to access prospective participants who are likely to meet particular job, geographic, and industry criteria (Arigo et al., 2018). I relied upon the PMI's professional association with a web-based membership and social media component to recruit participants for this study. The invitation to participate included the purpose of the study, a summary of participant rights and responsibilities, and a link to the online survey. Researchers also determine appropriate relevant eligibility criteria (detailed descriptions of the characteristics a person must or must not have to participate in the study) to ensure that participants are informed and qualified, as generally stated in terms of inclusion and exclusion criteria (Shivade et al., 2015).

The participants in this study were at least 18 years old and fluent in English, with a minimum of 5 years of Nigerian public project management experience. The online survey site began with an informed consent form to electronically sign; then the individual could advance to the actual survey questions. Challenges, such as response rates, may exist in recruiting an international sample of eligible participants, although internet-mediated and social media approaches to recruitment represents a low-cost technique for sampling an international population (McRobert et al., 2018). Although it

required repeated efforts and an investment of time and patience, I continued to post online invitations until obtaining the minimum number of completed surveys, as reported by the online survey site and determined through applicable sample size calculations.

Data Collection

In this study, data or information required are not available in the ready-made or secondary form. This implies that to successfully complete this study, the researcher would have to collect data or information from the primary sources or the respondents. Primary data collection was through the use of a web-based online survey site, SurveyMonkey. The utilization of an online method of data collection is increasing in social science research (Cantuaria & Blanes-Vidal, 2019). The web-based survey is less expensive in terms of cost and time required to collect the data and may have a better response rate than mailed or paper surveys (Fitzgerald et al., 2019). Web-based, also called internet-based, surveys are the preference by some demographic groups, including educated professionals (Mlikotic et al., 2016).

In terms of cost, web-based administration of the research instrument was less expensive than other options, although I did pay for the service to collect and store a relatively large number of responses. It did not require paper work, postage and mailing charges. Online recruiting and surveys guarantee reach of a wider audience of targeted respondents which can be done within a lesser time and money (Fitzgerald et al., 2019). Although this technique has unique positive potentials to facilitate the researcher process toward good result, there are also some drawbacks in this technique (Cantuaria & Blanes-Vidal, 2019). Some members of the targeted population may not have the requisite

facilities like computers, and even if they do, some may not be able to participate in this research and this can contribute to increasing non-response bias in the study as well as reduce the response rate. Moreover, many people can experience difficulty in accessing the internet due to poor connectivity in the location of low internet bandwidth and different internet service providers may vary from location to location in terms of functionality and line speeds (McCloud et al., 2016). Despite these potential drawbacks, there was more promise in the online format reaching the population of interest in this research than in the paper method which would be even more difficult to implement in this study.

The internet-based method involved sending waves of invitation emails to the PMI-CCoP membership and posting invitations on the PMI social media websites. Web-based invitations as a means to begin data collection in cross-sectional studies are ways to reduce costs and increase the number of respondents (Ebert et al., 2018). Posts and emails included descriptions of the purpose of the study, asking them to participate in the informed consent and survey process accessible through an online link. At the online survey link, respondents read and electronically sign an informed consent form, then advanced to survey questions, including demographic and descriptive inquiry.

Prior to the commencement of data collection, I received permission to carry out this investigation from the Institutional Review Board (IRB) of Walden University, including approval to use the survey and the informed consent terms. If the respondent did not electronically sign the informed consent form at the first page of the survey link, the screen advanced to an exit page and no data were collected. The likelihood of

participation increases when informed consent processes are concise and comprehensible (Fanaroff et al., 2018); therefore, the informed consent page was simple and concise while as thorough as possible. If the respondent did not self-report answers to qualify as eligible for the study as a member of the population under study, their data was excluded from the study. Clear eligibility criteria and a sufficiently narrow, well-defined population and sample can lead to enhance the generalizability of a convenience sample (Jager et al., 2017).

Adhering to the ethical right of withdrawal, participants were able to exit the survey at any time or skip answers for any or all questions. The right of a participant to withdraw at any time without consequence coincides with the right to not answer questions and to choose to delete existing data (Kearney et al., 2018). At the end of the survey, there was an option to submit answers to the survey question of withdraw from the study. All exit pages included a note of gratitude for attempting or completing the survey.

The design of the online survey also ensured anonymity and that every participant answered the same questions in the same structure, format, and order, which are steps to enhance data quality, collection consistency, and completeness (Ebert et al., 2018). Being the conventional practice, instructions on how to answer the questions in the instrument were a part of the survey design. Instructions and pretesting surveys, according to Colbert et al. (2019) enhance the likelihood that respondents understand and interpret questions as intended and that items and response options are relevant and sensible. The anticipated time frame to complete the survey was no more than 30 minutes, based on field testing,

but the average time it took respondents to complete the entire online survey process was actually a few seconds short of 12 minutes. The answers to the questions were in numerical form and the data were downloadable from the survey site, in both Excel and Statistical Package for the Social Sciences (SPSS) formats, which are tools useful for secure and traceable data collection and storage (Bruland & Dugas, 2017).

Instrumentation and Operationalization of Constructs

The instrument was a survey that included questions about the last public project in Nigeria the participant managed or led. The respondents participated by clicking the link on the email or announcement posts that took them to the survey, which represented the instrument in this study. The instrument had different sections: demographic questions, project duration (a continuous variable), and Likert scale items pertaining to the project success and project management control of interest in the study (ordinal variables).

The first section included demographic and descriptive information of the respondents. The responses were to ascertain the description of the self-reporting convenience sample (in terms of gender, age range years of experience in the industry, and education), to demonstrate that respondents are qualified and with a command of authority that can inform research efforts. Collecting this information can help to determine the appropriateness of generalizations (Jager et al., 2017).

The subsequent questions were about the key constructs of the research, including the predictor variables of project duration and project management control, and the criterion variable of project success. The predictor (or independent variable) of project

duration was a length of time, expressed in months. A project has to be completed within a specification, having defined start and end dates, suggesting that every project is time-bound. Time is a continuous variable, which can have any value within a reasonably expected range; continuous variables are metric quantitative variables, which are infinitely measurable in discrete or smaller units (Allen, 2017). Continuous variables such as time can be subject to tests for correlations to appreciate the direction and degree of any relationships between variables (Schober et al., 2018).

Additional survey questions about project management control (a predictor or independent variable) and project success (the criterion or dependent variable) were on a 5-point Likert scale with closed-answer rating options from 1 to 5. Likert scales represent ordinal data (Tijmstra et al., 2018). Likert scales are useful in quantitative research where respondents answer close-ended questions that require numerical answers (Xiao et al., 2017). Ordinal data, such as that derived from Likert scales can also be subject to tests for correlations to appreciate the direction and degree of any relationships between variables (Schober et al., 2018). Scoring and scaling of responses was to help in data collection by simply picking the option most suitable with respondents' positions. SurveyMonkey facilitated this type of data categorization of the survey responses and fast data extraction and tabulation for ease of statistical analysis. In this scaling type, respondents chose answer options.

Project success, as a multidimensional concept in project management literature, attracted the interest of both practitioners and academics (Mir & Pinnington, 2014). In a brief definition, project success is reaching the objectives and the planned results in

compliance with predetermined conditions of time, cost, and performance. Likert scale items pertaining to project success are adaptations from the Project Success Assessment questionnaire by Shenhar and Dvir (2007), which reflect the extent to which the project culminates in its expected benefits to the designated beneficiaries and served the intended purpose. There were 29 items: four questions about project efficiency, five questions about impact on customers, six questions about the impact of the project in general, six questions about the impact of the project on the team, six questions about the impact of the project on the organization, and one question about overall success. The items were rated from 1 (strongly disagree) through 5 (strongly agree). The total score was a numerical reflection of the success of a project.

Project management control encompasses the more recently considered concepts of output, process, and normative management control, measured by questions adapted from a previously validated survey with 11 items pertaining specifically to practices of management control, as modelled by Verburg et al. (2018). Respondents rated the question items about project management practices on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree), to reflect their perceptions of the degree to which the practices did or did not occur in the last project they managed. For the purposes of the study, reporting included the use of the cumulative management control practice score.

Although the questions were primarily from previously validated instruments, they were adapted to the purpose and population of this study. Field testing can help to improve an instrument or research project before data collection from the main study

(Eldridge et al., 2016). Pretesting of the instrument helped ensure respondents understand and interpret questions as intended and that items and response options are relevant and sensible (Colbert et al., 2019). Pretesting or field testing the instrument included a panel of three experts in social science research who reviewed the questions, completed the questionnaire, and recommended changes and updates to the survey design that improved the wording, order, and instructions for answering the survey questions. Reliance on field testing and research experts can help to improve data collection through consultation, collaboration, and contributions that refine the instrument and data collection designs (Forsythe et al., 2016).

Data Analysis Plan

As a correlational study, the chosen design allowed the researcher to examine the relationships among variables, which in this study were project duration, project success, and project management control. Specifically, this design was an investigation into the correlation between project duration and project success, project duration, and project management control, and management control and project success. This study required the operationalization and quantification of the key variables. The predictor (independent) variables were project duration and project management control, while project success was the criterion (dependent) variable. Descriptions of relationships or correlations between variables can be positive (indicating a direct relationship) or negative (indicating an inverse relationship) and the strengths of correlation can vary from -1.0 (the strongest negative correlation) to +1.0 (the strongest positive correlation) (Schober et al., 2018). Multiple regression is an appropriate statistical test of the

relationship between variables (Lamont et al., 2016; Luo et al., 2015), which was the statistical approach to the hypotheses testing in this study.

The answers to the survey questions were in numerical form and the data were downloadable from the survey site, in Excel or SPSS formats, which are software tools useful for data collection, organization, and analysis (Bruland & Dugas, 2017). Following the downloading of data, I began the analysis process with the inspection and cleaning of data. Data cleaning can involve frequency conversions, reverse coding, and addressing possible errors, incomplete data sets, and obvious outliers (Wooley et al., 2020). Data cleaning involved inspecting the data to ensure that there are complete data sets and that answers to the questions are within the specified range of numbers possible. There was no need for reverse coding of any of the survey items. I discarded and excluded any incomplete or erroneous data sets based on such inspections. Kulkarni and Bakal (2014) explained how data cleaning requires prudent judgements, transparency and documentation of data cleaning procedures and outcomes. Therefore, I included a discussion about actions taken during data cleaning in the report of the results of the study.

Determination of correlations among the variables was by the application of statistical tests. The statistical tests require, as a rule or operational mechanism, quantitative data or the quantification of variables in the form of measurement scales, (Schweizer et al., 2016), accomplished in the study through the instrument described. The nature of the data makes the application of the chosen statistical design appropriate. Correlation research involves identifying key drivers, predictors, and relationships among

variables through statistical techniques, such as factor analysis, regression methods, and correlation coefficient tests (Elmousalami, 2019). In this study, Spearman non-parametric correlation testing and multiple regression applied to test the hypotheses and answer the research questions.

Multiple regression tests can indicate significant regression weights as well as the contributions of variables to a multiple regression model (Ernst & Albers, 2017). Multiple regression analysis involves the prediction of an outcome, leading to an appreciation of the relationship between more than one predictor variable and the criterion variable in the study (Kim et al., 2020). The multiple regression model including the two predictor variables in this study may be helpful in explaining more variance of the criterion variable than would occur by chance. The generation of correlation matrices is also a direct indicator of the strength and direction of correlations that might exist between variables (Schober et al., 2018). The outcomes of the tests allowed me to make an informed decision about whether it was appropriate to reject each null hypotheses presented in this study.

The software for statistical analysis of the data collected was SPSS Version 23 Pro. SPSS is a statistical package that has expanding capabilities to perform complex statistical tests electronically, while analysts can also test for assumptions, handle, missing data, and generate charts, figures, and graphs of results (Vanus et al., 2019). SPSS is useful to researchers in performing tests for relationships and correlations, such as through the application of regression techniques (Bruland & Dugas, 2017; Duricki et

al., 2016), which applied in this study to test the hypotheses and answer the research questions.

A study of statistical methods utilized in social science research revealed that regression procedures are one of the most common ways to examine relationships among variables (Blanca et al., 2018). Hence, the statistical test was multiple regression to examine the relationships between predictor variables (project duration and project management control) and a criterion variable (project success). The examination of these relationships involved analyzing quantitative data to answer the research questions about the extent to which any significant correlations may exist between variables. Cheung and Jak (2016) discussed how hypotheses testing can occur through valid and efficient analysis techniques, including multiple regression. Testing the hypotheses through multiple regression statistics can lead to decisions about the appropriateness of rejecting the null hypotheses, based on statistical findings (Vetter, 2017).

The analysis of quantitative data sets should start with descriptive statistics prior to testing the hypotheses (Cheung & Jak, 2016). Thus, the data analysis procedures began with the generation of descriptive statistics (demographic descriptions and the measures of central tendency including the mean, median, mode, and standard deviations). The data analysis continued with the hypotheses testing through multiple regression statistics. Descriptive statistics leads to findings that help readers and analysts appreciate the overall totality of the data collected and the distribution of the data set (Vetter, 2017).

The hypotheses testing through additional statistical tests culminate in decisions about the appropriateness of rejecting the null hypotheses which leads to answers to the

research questions (Perrone & Müller, 2016). Multiple regression is an appropriate statistical test of the relationship between variables (Lamont et al., 2016; Luo et al., 2015). Researchers use multiple regression as a means to identify the strength of negative or positive relationships among variables (Bakdash & Marusich, 2017; Sánchez-Taltavull et al., 2016). I applied multiple regression techniques to determine if there are statistically significant correlations between the public project variables of interest in this study.

However, the statistical tests of multiple regression require attention to several assumptions, such as a normal distribution (Ernst & Albers, 2017). Proof of a normal distribution meets the assumption requirements in correlation tests such as multiple regression (Luo et al., 2015). I can assume a normal distribution with my planned sample size, because of the guarantee of the central limit theorem of a normal distribution with sufficiently large sample sizes (Cundill & Alexander, 2015; Shanks, 2017).

Variable selection is a critical part of multiple regression which also requires tests for collinearity of the predictor variables (Liu & Li, 2017), which according to Ernst and Albers (2017) can complicate the interpretations of the results of regression tests. Collinearity can result in the over-inflation of the standard error and a less powerful test of significance, leading to faulty conclusions, and one must also evaluate the impact of collinearity on the study findings (Feng et al., 2019). Therefore, I tested for collinearity among the predictor variables.

Determinations about statistical significance and appropriate inferences and generalizations revolve around the interpretations of calculations based on parameters in the selected design (Kerkhoff & Nussbeck, 2019). For correlation research involving

predictor variables and regression tests, one must determine the desired probability and statistical power levels (Riley et al., 2019). I am using a conventionally desired probability level of .05, and a .8 desired statistical power level. Statistical power pertains to the probability that the test will reveal statistical significance when it actually exists, allowing one to appropriately reject a null hypothesis and avoid a Type II error (Soper, 2020). A desired power of .8 or greater is generally acceptable which meant that there should be an 80% or greater chance of determining statistical significance when it actually exists (Bakker et al., 2016). At the same time, I was willing to accept a 5% chance that the results were due to chance.

Threats to Validity

Validity and reliability are essential considerations in rigorous research studies (DuBois et al., 2016). Reliability revolves around the idea that repeating the study would lead to similar results and that under the same circumstances, other applying the same processes would yield the same results (Matheson, 2019). Although there was no interest in repeated studies for this particular research effort, the documentation of the steps, sample, and the findings allow others to repeat the procedures. The adaptation of previously validated survey items and scales demonstrates a reasonably reliable approach to data collection in this study.

The concept of validity encompasses how well quantitative study findings accurately represent reality (Shwartz et al., 2015). Threats to validity may culminate in errors, such as erroneously rejecting or not rejecting the null hypothesis (Baker et al., 2016). Minimizing threats to validity requires utilizing reliable instruments,

demonstrating thorough and accurate data analysis techniques, and recruiting an appropriate number of subjects in the sample (Ciolinoi et al., 2015). I enhanced validity through the thoughtful operationalization of variables, consistency of data collection and measurements, appropriate sampling and data analysis techniques, and acceptable implementation of the related research steps.

Different concepts of validity apply to rigorous research studies but collectively represent the capacity to measure what one intends to measure (Truijens et al., 2019). For example, I enhanced content validity by demonstrating that instrument was relevant to and representative of the constructs of interest in this study. Reliance upon individuals with significant research expertise can help to improve the content validity of a research instrument (DuBois et al., 2016). Accordingly, the address of content validity in this study occurs through field testing and pre-testing the instrument, relying upon experts in research and the study field.

The internal validity related to causal relationships was not of consequence in this study because there was no interest in drawing conclusions about causal relationships. External validity is relevant to inferences or generalizations from the research (Rooney et al., 2016). Sampling strategies can enhance external validity (Mindell et al., 2015). Establishing that the sample is representative of the population for the study and that the sample size is sufficient are acceptable ways to demonstrate external validity (McBride, 2016). A-priori sample size calculations are acceptable ways to predetermine a sufficient minimum sample size (Das et al., 2016; Tavernier & Giraudeau, 2015). Use of power analysis, a-priori values, and assumed parameters indicated that a minimum sample size

of 67 would be appropriate, based on two predictor variables, a medium effect size, a desired statistical power of .8, and a probability level of .05. Affecting validity are Type I errors and the assumptions required for specific statistical tests, such as multiple regression (Ernst & Albers, 2017). I applied the most appropriate procedures for meeting assumptions and controlling errors.

Ethical Procedures

Behavioral research in management and social science involving human participation requires consideration of a variety of ethical issues pertaining to planning, implementing, and executing the research (Klingler et al., 2017). DuBois and Antes (2018) highlighted several core dimensions of research ethics pertaining to (a) norms, rules, regulations, and institutional policies; (b) validity, reliability and trustworthiness; (c) social value; and (d) relationships. Associated ethical steps included use of informed consent forms, an anonymous design that eliminates harm, voluntary participation with the right to withdraw, justifications of the value of the research and ways to recognize and reduce bias, and the inclusion of a nondiscriminatory sample from eligible members of the study population. The following steps helped to ensure that the research steps comply with those ethical expectations.

Regarding rules, regulations, and institutional policies, I followed the guidelines of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979), as published in the *Belmont Report*, and adhered to the requirements of Walden's IRB. I invited people to participate in research only after meeting certain conditions, including an IRB review. The IRB review ensures an

appropriate balance between risks and benefits and recruitment strategies that are fair, voluntary, and involve informed consent (Bracken-Roche et al., 2017). I did not collect data until after IRB approval. The IRB approval number is 06-02-21-0998560. Walden University established guidelines and governing principles of research ethics followed by the students in conducting research. I followed these guides to protect the rights, privacy, and confidentiality of the respondents.

An ethical duty of researchers is engaging prospective participants in a proper informed consent process (Beltran-Aroca et al., 2016). I ensured that all respondents give their consents before completing the research questionnaire. The informed consent process included communicating to prospective participants no expectation for serious risks or harm from their participation. The informed consent process was online. The first web page from the survey link was the informed consent page. Respondents read and checked a box to agree to the informed consent before advancing to the survey questions. The likelihood of agreeing to the informed consent form to be able to continue on to provide data for the research study increases when informed consent processes are concise and comprehensible (Fanaroff et al., 2018). Therefore, the single one-page form was simple and easy to understand, while including the relevant details of participants' rights and responsibilities.

As part of the ethics of norms and relationships discussed by DuBois and Antes (2018), this researcher ensured that participation in this research was voluntary. This means that no respondents were forced or coerced into participating in this study and that there were no incentives or enticements for participating and no consequences or

penalties for not participating. Incentives or a token of appreciation can improve response rates from recruitment efforts (McRobert et al., 2018). However, other scholars, such as Hokke et al. (2018), claimed that incentives might undermine recruitment efforts and involve obtaining some type of personal details from potential participants which could compromise anonymity. Therefore, there were no tangible incentives for participation in the research. However, the invitations impressed upon readers the importance of their participation in helping to solve a problem impacting project management and society in general in Nigeria.

Voluntary participation also means the right to withdraw without penalty or consequence, even after the respondent started to participate. The right of a participant to withdraw at any time coincides with the right to not answer questions and to delete existing data (Kearney et al., 2018). There were options on each survey page to exit and delete responses from the data collected and to either submit answers or withdraw from the study. All exit pages included a note of gratitude for voluntarily participating in the survey process, regardless of whether a respondent submitted answers or chose to delete their data and exit the survey process.

Respondents' information and identity were anonymous throughout the research. All data collection was anonymous which means that there were no individual or company names or personal identifiers collected in the research process. Beltran-Aroca et al. (2016) described a difference between confidentiality (being able to identify individual participants but safeguarding this information) and anonymity (being unable to identify of the subject, who remains unknown to the researcher). Maintaining privacy through

anonymity is possible in online research (Hokke et al., 2018). SurveyMonkey allows research designers to choose between collecting anonymous information and tracking participants. In this research, I collected responses anonymously. Although I recruited participants via the internet, and particularly social media, I did not attempt to discern data connected to any online profiles or memberships. Although data were anonymous, I downloaded data for storage in a password-protected computer, and then will destroy data 5 years after the publication of the study. I will also not share the information supplied directly and remotely involved in this research or use the collected data for any purpose other than for this research.

Other core dimensions of research ethics pertain to validity, reliability and trustworthiness, which stems from the reduction of bias (DuBois & Antes, 2018). Although scholars such as Jager et al. (2017) recognized that it may be impossible to completely eliminate the impact of bias using a convenience sample and close-ended survey questions limit a fuller expression of experiences, I identified sources of bias to reduce their impact on the research findings and conclusions. Steps included pretesting the instrument, describing the population and sample in great detail, and noting response rates and their potential influence on the results of the study. Documenting the assumptions, delimitations, and limitations of the study helps to ensure that findings are ethically evaluated in light of any shortcoming of the research.

The essence of ethical procedures include engaging in research that has social value and reducing any, the breach of which could lead to serious invalidity and unreliability of the research outcome (DuBois & Antes, 2018). Reliance on the peer-

reviewed, current body of literature led to identification of the research problem, rationales for the steps in methodology and design, justifications for the need for the study, potential significance to professional practice, and descriptions of social implications. The peer-review process of evaluating literature helps to ensure high ethical and quality standards and the reliance upon recent findings and recommendations for future research helps ensure the research is relevant and potentially beneficial to society (Kulczycki et al., 2019). Therefore, this research stems from and adds to efforts of prior researchers who were subject to an ethical and rigorous peer-reviewed research process.

Summary

[The role of a researcher in quantitative survey research is to plan the steps for the research, collect data through surveys, and analyze the data through statistical tests (Greenleaf et al., 2017). Accordingly, I justified the steps of the methodology and research design, recruited participants, designed the survey, and collected data through an online format. I downloaded and analyzed data, then reported, discussed, and interpreted findings from statistical tests performed on the data. Literature findings in publications, the peer review process, and concerns about validity shape researchers' scholarly perspectives (Kratz & Strasser, 2015). In planning the research project, I continuously sought the peer-review process inherent to doctorate-level research and was attentive to issues and threats to the validity and reliability of the study.

Researcher responsibilities also include identifying and eliminating sources of bias (Hargittai, 2015). I was vigilant about potential sources of bias, such as from the

survey questions, participant recruitment efforts, and response rates, to be able to recognize, report, and reduce potential biases in the study. I do not work in Nigeria or the public project industries, but can consciously recognize and set aside any pre-conceived notions about the topic to reduce any possible personal bias from influencing the design, data analysis, and interpretations of the findings from this study.

In addition, there are a variety of ethical issues to consider when planning, implementing, and executing research involving human subjects (Klingler et al., 2017). I followed the guidelines of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1979), as set forth as the *Belmont Report*, and adhered to the requirements of the IRB. I did not collect data until after IRB approval. Ethical steps included use of informed consent forms, an anonymous design that eliminates harm, voluntary participation with the right to withdraw, and the inclusion of a nondiscriminatory sample meeting the basic eligibility requirements as a member of the study population. All data were electronic and I will store data confidentially in a password protected computer, then destroy data 5 years after the publication of the study.

This chapter included the methodological approach, design, and steps of this study. The quantitative methodology with a correlation design adopted in this study by this researcher involved a cross-sectional online survey. Both descriptive and inferential statistics were employed to analyze the data. Descriptively, statistics such as the mean and standard deviation were useful to ascertain the quality of research data and respondents' demographics. Inferentially, multiple regression statistics were the means to test the hypotheses developed for this study. The population of this study was

approximately 549 members of PMI-CCoP and a minimum sample of 67 was the recruitment goal for the convenience sample in this study. Respondents were contacted and invited to participate in the survey through associated social media tools and via the PMI-CCoP leader who forwarded the invitation flyer to the membership directory. Discussed in the chapter were a number of ethical issues identified and the modalities for addressing the reliability and validity of this research. In Chapter 4 are the results of the study and the presentation of the findings from the data collection, analysis, and hypotheses testing process.

Chapter 4: Results

The purpose of this quantitative correlation study was to evaluate the relationships between project duration, project management control, and project success. The first three RQs pertained the possibility of a significant relationship between (a) project duration and project success, (b) project duration and project management, and (c) project management control and project success. The null hypotheses were that there are no statistically significant relationships; to test the hypotheses, I determined the correlation coefficients between the stated variables. The alternative hypotheses were that there are significant relationships, as determined by statistically significant correlations. The fourth RQ addressed whether project management control and project duration were significant predictors of project success, with hypothesis testing through multiple regression. Of the 107 people who started to complete the online survey, 74 respondents answered all the survey questions. This chapter includes the description of the sample, along with the results of the pilot study, data collection, and statistical tests of hypotheses.

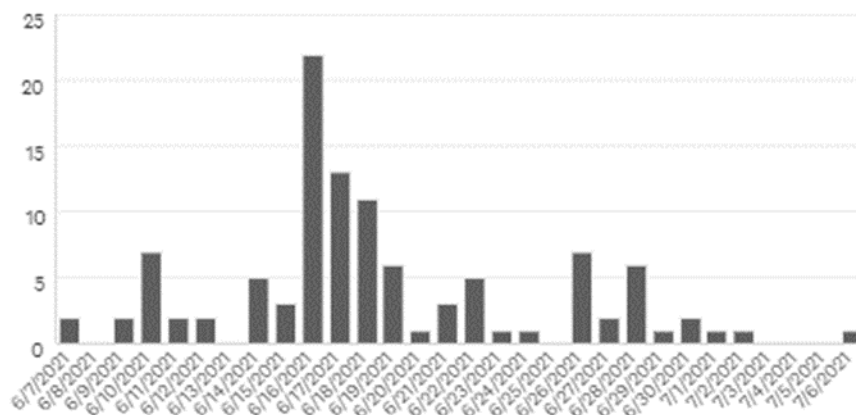
Pilot Study

Field testing occurred before data collection from the main study. Pretesting of the instrument helped ensure that the online survey link was accessible, the design was uncomplicated, question wording was clear, and answer choices were as intended. By field testing the instrument with the participation of three individuals from population, I was able to determine that the question items and response options were clear and sensible. As a result of the field-testing process, I made minor corrections (e.g., to minor typos in the questions) and added explanations of answer choices to every question

(rather than just at the top of the page). I was able to determine that the survey should take no more than 20 minutes to complete. Following the field testing, I accessed the data online to ensure that the data showed up in the online format as expected and that data were downloadable as Microsoft Excel, PDF, and SPSS files. After field testing, I renamed the survey link that I included in the invitation flyers to begin recruiting participants for the main study. The data collected during the field-testing process were not a part of the main study data and are not included in the results or report of findings.

Data Collection

The online survey design process and field testing occurred after IRB approval. Following field testing, I distributed the invitation flyer, which included the online survey link, to prospective participants. Data collection for the main study, using the SurveyMonkey online platform and response collection tools, started on June 7 and ended 1 month later, on July 7, 2021. Figure 1 is a summary of the responses collected during that time frame. The vertical scale is the number of survey responses completed. The completion rate was approximately 70%, and the average time to complete the survey was 12 minutes. The power analysis, a-priori values, and assumed parameters indicated that a minimum sample size of 67 would be appropriate, based on two predictor variables, a medium effect size, a desired statistical power of .8, and a probability level of .05. A sample of 74 exceeded the minimum sample size established as appropriate for this study.

Figure 1*Survey Response Time Frame*

Data cleaning involved downloading data files from SurveyMonkey. Inspection of the files indicated that there were several missing answers among the 107 surveys. The majority of those incomplete surveys were from individuals who began the survey but then exited the survey after answering demographic questions and before answering questions related to the variables. Only the completed surveys were included in the data analysis, which meant deleting the 33 incomplete surveys and surveys from individuals who did not meet the eligibility criteria for participation. Verifying answers to the questions pertaining to eligibility (such as having at least 5 years of experience in project management) was a part of the data organization, inspection, and cleaning process. Any data from any respondent who did not appear eligible based on established criteria were also excluded from the data analysis.

Study Results

Of the 74 respondents who answered all of the survey questions, most were male (62%), older (57% older than 40 years), and college-educated (90% with college degrees). Almost half of the sample reported having managed projects as a member of the construction industry. The remainder of the sample was almost equally distributed across other industries including agriculture, finance and banking, information technology, manufacturing, medical, and retail/wholesale. Two thirds of the sample managed projects in Nigeria for at least 5 years but not longer than 15 years, with their latest project management experience occurring in the last 5 years. The remaining one third of the sample have been project managers for more than 15 years in Nigeria.

Descriptive Statistics

Descriptive statistics from the data of the 74 respondents included the means and standard deviations of the variables, with project control success, and efficiency measured on scales ranging from 1 (*strongly disagree*) through 5 (*strongly agree*). Findings were that the sample means and medians for project control, success, and efficiency were above the neutral point (3), indicating that the group of Nigerian project managers generally agreed that their last project was successful and efficient. In fact, when asked the degree to which they agreed that the “overall the project was a great success,” only one participant *strongly disagreed* (1), none *disagreed* (2) and only five participants *neither agreed nor disagreed* (3). Accordingly, approximately 92% of the sample *agreed* (4) or *strongly agreed* (5) that their last project management in Nigeria

was an overall success. Table 1 includes a summary of the central tendencies of the variable of interest in the study.

Table 1

Descriptive Statistics (N = 74)

Variable	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Project control	4.25	4.29	.55
Project success	4.14	4.17	.64
Project duration (efficiency)	4.04	4.00	.86
Project duration (months)	23.00	14.5	22.56

Research Question 1

The first RQ was as follows: What is the relationship between project duration and project success? The null hypothesis was that there is no significant relationship between project duration and project success. The alternative hypothesis was that there is a significant relationship between project duration and project success. Tests of the hypothesis associated with the first RQ involved the generation of Spearman's rank correlation coefficient (r_s), a nonparametric test often applied to Likert type data.

Spearman's correlation is a rank-based correlation measure suitable for Likert-type data; as a nonparametric test, it does not rest upon an assumption of normality. The correlation coefficient between measures of success and project duration (as measured in months) was not statistically significant ($r_s = .05, p = .63$). Although a positive correlation would mean that success increased with length of project, the relationship is very weak and not statistically significant. There is no statistically significant relationship between project

success and duration when project duration is measured in months. There is no justification for rejecting the first null hypothesis.

Looking more closely at concepts pertaining to project duration, there were three survey questions relevant to project duration, but instead of duration being measured in months, the efficiency of the project was the focal point. The question items were as follows: (a) the project was completed on time or earlier, (b) the duration of time was appropriate for the project, and (c) the project was completed efficiently. The correlation between measures of success and efficiency was statistically significant ($r_s = .89, p < .001$).

Research Question 2

The second research question was, What is the relationship between project duration and project management control? The null hypothesis was that there is no significant relationship between project duration and management control. The alternative hypothesis was that there is a significant relationship between project duration and management control. Tests of the hypothesis associated with the second research question involved the generation of Spearman's rank correlation coefficient (r_s), a non-parametric test often applied to Likert type data, which does not require an assumption of normality. The correlation between measures of project management control and project duration (as measured in months) is not statistically significant ($r_s = -.07, p = .53$). The very weak negative correlation means that the length of the project increased with decreased control. However, the correlation coefficient is so weak, it is very near zero in this study. There is no statistically significant relationship between project success and

duration when project duration is measured in months. There is no justification for rejecting the second null hypothesis.

The three survey questions that pertained to project duration could have been operationalized as a measure of the efficiency of the project. The question items were as follows: (a) the project was completed on time or earlier, (b) the duration of time was appropriate for the project, and (c) the project was completed efficiently. The correlation between measures of project efficiency and control was statistically significant ($r_s = .28, p = 0.01$).

Research Question 3

The third RQ was, What is the relationship between project management control and project success? The null hypothesis was that there is no significant relationship between project management control and project success. The alternative hypothesis was that there is a significant relationship between project management control and project success. Tests of the hypothesis associated with the third RQ involved the generation of Spearman's rank correlation coefficient (r_s), a non-parametric test often applied to Likert type data. As a nonparametric test, Spearman's correlation is suitable for Likert-type data and does not rest upon an assumption of normality. There was a strong positive correlation between measures of success and control ($r_s = .79, p < .001$). By normal standards, the association between the two variables would be considered statistically significant. There is justification for rejecting the third null hypothesis.

Research Question 4

The fourth RQ was, Are project management control and project duration significant predictors of project success? The fourth null hypothesis was that project management control and project duration are not significant predictors of project success. The alternative hypothesis was that project management control and project duration are significant predictors of project success. After testing for assumptions, the regression results were, $F_{(1,72)} = 179.19$, $p = .00$. Because $p < \alpha (.05)$, I rejected the fourth null hypothesis. The linear regression model provides a better fit than the model without the independent predictor variable, project control.

An answer the fourth RQ stemmed from multiple regression tests applied to the data. X1 was project duration (measured in months), and X2 was project management control, with Y being the measure of project success. I assumed a normal distribution, because of the guarantee of the central limit theorem of a normal distribution with sufficiently large sample sizes. However, upon closer inspections, data were negatively skewed. Skewness was $-.79$, and kurtosis was $.87$, as displayed in Figure 2. Neither the skewness nor kurtosis were outside of the $+1$ to -1 range; therefore, the project management control data could be treated as normally distributed.

Figure 2

Histogram: Project Management Control

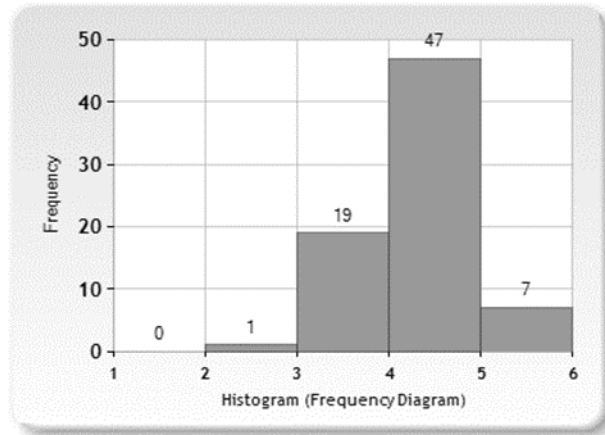


Figure 3 is the histogram of the data collected for project success. Data were skewed. Skewness was -1.26 and kurtosis was 2.8. Both skewness and kurtosis were outside of the +1 to -1 range. Therefore, the project success was not considered normally distributed. Although it is still possible to apply the central limit theorem, and it is best if y were normally distributed, that would be the conditional y , or the distribution of the estimated residuals about each predicted y . It is acceptable for the actual unconditional, dependent variable data for y data to be skewed. Although it is desirable for y to be normally distributed, it is appropriate to consider the predicted y instead, and the estimated residuals, as was the case in the multiple regression steps.

Figure 3

Histogram: Project Success

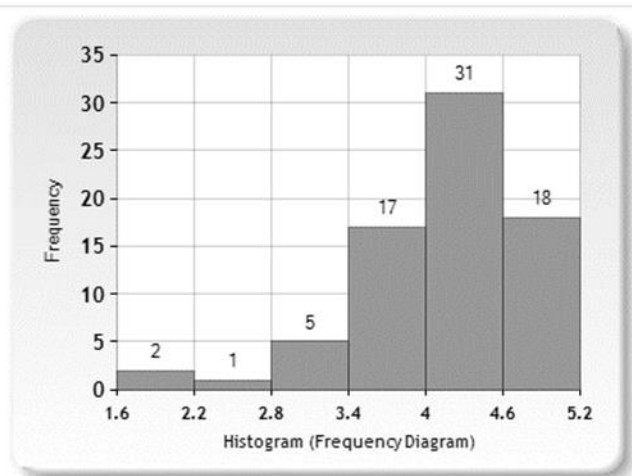
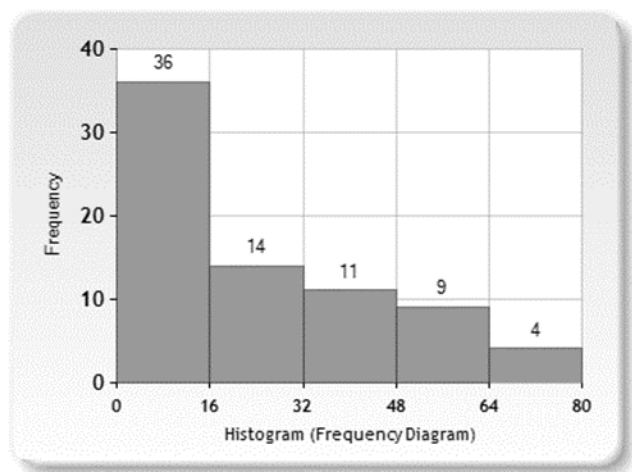


Figure 4 is the histogram of the data collected for project duration. Data were skewed. Skewness was .91, and kurtosis was -.11. Neither the skewness nor kurtosis were outside of the +1 to -1 range. Although data were skewed, project duration data could be treated as normally distributed.

Figure 4

Histogram: Project Duration



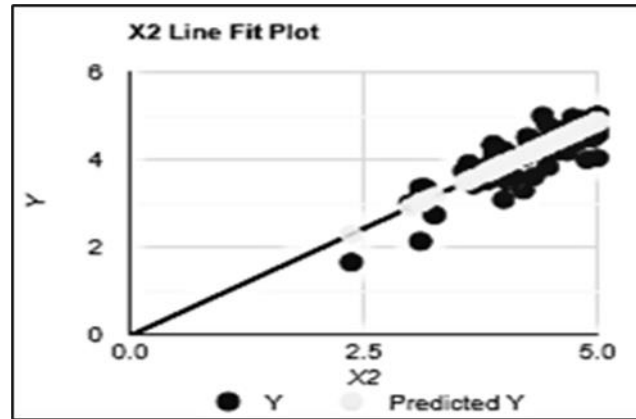
There was no multicollinearity concern as all the variance inflation factors values were smaller than 2.50. Multiple regression also revealed a statistically significant relationship between project control (X2) and success, but not between duration (X1 as measured in months) and success. Table 2 includes a summary of the results of the regression test performed in this study.

Table 2

Multiple Regression

Variable	SE	t-stat	Lower $t_{0.025(71)}$	Upper $t_{0.975(71)}$	Standard Coefficient	p-value	VIF
Duration	.01	.05	-0.01	0.01	0.01	0.96	1.00
Control	.07	13.28	0.83	1.12	0.84	< 0.01*	1.00

Project management control (X2) was a statistically significant predictor of project success (Y). Because project duration (X1 as measured in months) was not a significant predictor of project success, it was excluded from the model. R square (R^2) equals .71, which means that 71% of the variance of Y could be explained by the predictor X1, project management control. Overall regression results were, $F_{(1,72)} = 179.19$, $p = .00$. Because $p < \alpha$ (.05), the fourth null hypothesis can be rejected. The linear regression model provides a better fit than the model without the independent predictor variable, project control. The coefficient of multiple correlation (R) equals .84. This means that there is a very strong direct relationship between the predicted data (\hat{y}) and the observed data (y). Figure 5 is the predicted Y residuals plot in relation to X2 (project management control).

Figure 5*Line Fit Plot***Summary**

In summary, there are justifications for rejecting two of the four null hypotheses, according to the results of the statistical tests on data. The correlation coefficient between measures of success and project duration (as measured in months) was very weak and not statistically significant ($r_s = .05, p = .63$). There is not a statistically significant correlation between project duration and project success, and there is no reason to reject the first null hypothesis. There is no statistically significant correlation between project duration (as measured in months) and project management control and no reason to reject the second null hypothesis ($r_s = -.07, p = .53$). There is a statistically significant strong positive correlation between project management control and project success ($r_s = .79, p < .001$). Accordingly, there is justification to reject the third null hypothesis. There is no statistically significant relationship between project success and duration, or between project control and duration, when project duration is measured in months, although when operationalized in terms of efficiency, there are statistically significant

correlations among variables. Table 3 includes a summary of the correlations between the variables on interest in this study.

Table 3

Correlation Matrix

Variable	Success	Duration	Control
Success	-	.05	.79
Duration (months)	.05	-	-.07
Control	.79	-.07	-

Project management control but not project duration is a significant predictor of project success. There is justification to reject the fourth null hypothesis. When project duration is operationalized as project efficiency measures instead of number of months, there are statistically significant positive correlations with both project control and project success. Chapter 5 includes a discussion of the findings in light of the research questions, theoretical framework, and prior research findings, culminating in recommendations for leaders and future research.

Chapter 5: Discussion, Conclusions, and Recommendations

In this chapter, I further discuss the answers to the RQs and outcomes of the hypotheses testing. Discussions of the findings occur in light of the theoretical framework and previously published research results. Recommendations for leaders and suggestions for future research complete the chapter. I also discuss the limitations of the research; recognizing limitations is necessary to avoid biased interpretations of results that jeopardize the validity of a study (Johnson et al., 2014; Page et al., 2018).

To test the hypotheses, I performed correlational analysis to reveal the direction and degree of relationships between predictor and criterion variables, as well as the statistical significance of any relationship. Based on findings from this study, it is possible to reject the second and fourth null hypotheses. There is a statistically significant strong positive correlation between project management control and project success, and project management control is a significant predictor of project success. I first present the answers to the RQs. Following this section is a discussion of findings, discussed in light of the theoretical underpinnings of the study and previously published research results.

Research Question 1

There was no significant relationship between project duration and project success when project duration was measured in months. Based on these findings, it was not possible to reject the null hypothesis when project duration is measured in months. There was a statistically significant positive correlation, however, between project duration when operationalized in terms of project efficiency and time frame appropriateness (e.g.,

the project was completed on time or earlier; the duration of time was appropriate for the project; and the project was completed efficiently).

Research Question 2

There was no significant relationship between project duration and project management control when project duration was measured in months. There was a statistically significant positive correlation between efficiency and success when project duration was operationalized as project efficiency (i.e., the project was completed on time or earlier, the duration of time was appropriate for the project, and the project was completed efficiently). Based on these findings, it is not possible to reject the null hypothesis when project duration is measured in months.

Research Question 3

There was a statistically significant positive correlation between project management control and project success. Based on these findings, it is possible to reject the null hypothesis. There appears to be a direct, positive relationship between project management control and project success.

Research Question 4

It is appropriate to reject the fourth null hypothesis. Multiple regression statistics led to findings that project management control was a significant predictor of project success. However, project duration, as measured in months, was not a significant predictor of project success.

Interpretation of Findings

Research Question 1

There was no significant relationship between project duration and project success when project duration was measured in months. Newer versions of the theory of project assume a paradigmatic form that extends to time (Koskela & Howell, 2008). Cooper (1993) argued that a project characteristically signifies a mass of project expenditures and that time is an important factor in project management and ultimately project success. Beleiu et al. (2016) presented an overview of project success and identified its main success factors, concluding that time (or project duration) could have an effect on project success. In this study, time did appear to be relevant to project success; instead of measures of finite intervals of time, the efficient use of time appeared to be a more significant factor related to the degree of project success.

For example, Niazi and Painting (2017) concluded that realistic contract duration was identified as the fifth out of 69 factors that could influence project success. Like Al-Hazim et al. (2017), Ika (2009) also focused on time overrun, stemming from inaccurate time estimates and poor monitoring or management, as a factor that could undermine successful project completion, leading to project abandonment. Erroneous time estimates can represent a type of risk (Namazian et al., 2019). The results of this study, which were consistent with prior research, indicated that the length of a project could vary substantially. However, project duration related more to project success when the duration of time was appropriate for the project and the project was completed efficiently.

Research Question 2

There was no significant relationship between project duration and project management control when project duration was measured in months. When project duration was operationalized differently, there was a statistically significant positive correlation between efficiency and success. The theory of project control encompasses the idea that good management practice control without adequate project duration may contribute to the lack of project success (Azimi & AbouRizk, 2011; Koskela & Howell, 2008). Following these theoretical underpinnings, I tested the hypothesis that project management control related to project duration. Findings in this study showed a negative correlation, indicating that less project management control related to longer durations of project time frames. It is possible that longer project time frames were somehow associated with a lack of project management control. However, the correlation was so close to zero that it was not statistically significant at any alpha level. Findings might be different with a sample of project managers who have more diverse perceptions about their experiences with project management control and project success.

Research Question 3

There was a statistically significant positive correlation between project management control and project success. Several authors reported poor management control among reasons for public project failures and abandonment in Nigeria (Eja & Ramegowda, 2020; Nweze, 2016; Ogunmola, 2015). Lack of skillful project management, including planning, estimation, control, and scheduling, was implicated in project failures across Nigeria in one study (Eja & Ramegowda, 2020). Aje et al. (2009)

performed ANOVA and multiple regression analysis to reveal a significant impact on Nigerian project cost and time of contractors' monitoring and control management capabilities. The results from this study, including a positive, strong, and statistically significant correlation between project management control and success, were consistent with these prior research findings.

Research Question 4

It is appropriate to reject the fourth null hypothesis. Multiple regression statistics led to findings that project management control was a significant predictor of project success. However, project duration was not a significant predictor of project success. Akbari et al. (2018) studied project success using secondary data collected from 26 large-scale construction projects in five countries, with predictors of success being project time or duration (Akbari et al., 2018). Alao et al. (2018) investigated project abandonment, cost, and duration of Nigerian rehabilitation projects, noting a direct and proportional as well as exponential effect of costs and time overrun of projects. Similar to the discussions of findings pertaining to the first and second hypotheses, findings regarding project duration may be better understood in terms of efficiency and appropriateness of time, rather than the actual time it takes to complete a project.

Limitations of the Study

This study pertained to project managers in Nigeria and should be not be generalized to other types of projects in different locations. Limitations to this study included incomplete surveys; however, the number of completed surveys were sufficient to meet the minimum required sample size. In addition, the sample as whole reported

largely successful project management experiences, with a small number ($n = 4$) having reported a lack of success or a neutral answer to the level of perceived project success. The number of respondents reporting project success was more than expected, and, as a result, there was a lack of data regarding perceived project failures. It is possible that self-selection and response bias might have contributed to those findings. It is possible that project managers with failed projects might have been less likely to complete the survey or less likely than those with successful projects to participate in the PMI-CCoP from which the sample was drawn.

Recommendations

Recommendations for Leaders and Practitioners

The findings of this study present some interesting directions for leaders and practitioners to follow. The leaders here are those persons in the government involved in project awards and implementation monitoring. Based on the findings, the leadership of a nation has a greater role to play in the success of a project especially during the project assessment and award. The findings of the study show that project control rather than duration is the most important factor in project success. Project efficiency was not initially of interest in this study; however, post hoc findings included a relationship of project efficiency to project management control and a stronger positive correlation of project efficiency to project success than project duration. It is evident from the findings that the duration of the project could range from 1 month to several years, but that project management control, rather than the duration of the project, significantly predicted project success. What leaders under this category should therefore do is to place emphasis

and priority on the type and quality of contractors or project bidders in terms of managerial capacity, past experience, competency, and human-based project control measures that the bidding project construction and management firms have in place to ensure the success of the project. These leaders should emphasize project efficiency in relation to project duration and project control as a fundamental aspect of project success. By so doing, the selection of the winner of the project would be considered fair and just, and successful implementation of such project might be more likely to follow.

For practitioners, the findings have made known an important factor that predicts project success, which is project management control. This aspect of project management control must be taken seriously and garner the attention that it deserves. Being the human aspect of project implementation, leaders of project teams must develop good leadership skills and qualities necessary for optimal project management control, to be able to lead the project teams in the right directions.

The aspects of control recommended are output control, process control, and normative control as enshrined in the research instrument. For instance, concerning output control, project leaders should ensure that tactical objectives are monitored and met at all times and be sure that corrective measures are effected once any deviation is observed at every stage of the implementation process. Feedback to project workers should be timely and reflect the extent to which these objectives are achieved. For process control, project leaders should ensure that rules governing every aspect of the project and its execution are properly written, communicated to all workers involved in the project implementation, and strictly enforced. Procedures for resolving any conflict

should be put in place to ensure harmonious working environments. Addressing normative control, it is recommended that project leaders encourage peer pressure to correct violations of set or established organizational norms, especially as they relate to project implementation by any employees involved in the execution of the project. Taking these measures could enhance the likelihood of successful implementation of projects helping to reduce the problem of abandoned projects in Nigeria.

Recommendations for Future Research

Including a broader sample of project managers is necessary to gain further insight into project failures and abandonment in Nigeria. Given the limitations of the study, repeated study could include a sample of project managers with a recent history of failed projects. Gaining these additional insights and perspectives could reveal findings that would be more helpful in understanding project management failures and in filling the gap in the related literature.

There were no statistically significant findings involving project duration as a variable, when project duration was measured as a stated time frame, such as number of months of a project. Instead, when aspects of project duration were considered in light of efficiency concepts, there were statistically significant correlations between variables. It appears that the degree to which the project was completed on time or earlier, the perceived appropriateness of the duration of time for the project, and the extent to which the project was completed efficiently could be a better way to operationalize the project duration variable in future research.

Project management control predicted a significant degree of project success in this study, according to multiple regression statistics, there were other variables accounting for project management success that were not included in this study. Qualitative research might be a way to capture the in-depth information needed to more thoroughly understand the reasons for project management abandonment from the perspectives of project managers in Nigeria.

There was no attempt in this study to disentangle industries in this research. Although the majority of respondents reported being in the construction industry, the balance of the members of the sample were almost equally distributed across other industries including agriculture, finance and banking, information technology, manufacturing, medical, and retail/wholesale. Focusing on individual industries and comparisons between potentially unique features and experiences among managers across industries might also be revealing of interesting and relevant findings.

Importantly, there were factors in this study that were not included and could contribute to results in future studies to help illuminate better the problem of abandoned projects in Nigeria. Already known or suspected are political, regulatory, and funding factors that could be significant predictors of project failures. Incorporating more factors, as possible predictors of project success and failures, into future research and conceptual models could lead to additional recommendations for leaders that could help to reduce the problem of abandoned projects in Nigeria.

Conclusions

The purpose of this quantitative correlation research study was to evaluate the relationships between project duration, project management control, and project success. Of the 107 people who started to complete the online survey, 74 respondents met the criteria of inclusion in the study, consented to informed consent terms, and answered all the survey questions. Findings were a statistically significant positive correlation between project management control and project success, but project duration was not a significant predictor of project success. Findings led to recommendations for leaders and suggestions for future research.

Successful projects are essential to the economic development and promotion of community and citizenry welfare in Nigeria. Implementing and completing successful projects generates positive outcomes for the economy and the citizens of Nigeria. The findings of the study led to a fuller understanding of projects undertaken in Nigeria from the perspectives and experiences of project managers. Stakeholders should be able to use the findings from the study to inform practice to help abate the menace of project failure and ensure the benefits of projects for the people of Nigeria are pursued vigorously with the right framework.

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Appendix: Survey Questionnaire

Instruction: Please mark your appropriate opinion among the alternatives provided.

1. Your gender is?

(a) Male

(b) Female

2. Your age fall within?

(a) 21-30 years

(b) 31-40 years

(c) 41-50 years

(d) 50 and above

3. Your terminal educational level is?

(a) High school or equivalent

(b) Associate or technical degree

(c) Bachelor degree

(d) Master's degree

(e) Doctorate degree

(f) Other

4. Which industry are you predominantly operating?

(a) Agriculture

(b) Constructions

(c) Finance and Banking

(d) Information Technology

- (e) Manufacturing
- (f) Pharmaceutical
- (g) Retail and Wholesale
- (h) Other

5. How long have you been working in this industry?

- (a) Below 5 years
- (b) 5 -10 years
- (c) 11-15 years
- (d) 16-20 years
- (e) Above 20 years

6. Are you professionally certified to practices in this industry?

- (a) Yes
- (b) No

7. When was your last project management experience in Nigeria?

- (a) None *
- (b) 1-4 years ago
- (c) 5 + years ago

- The individual will not be eligible for the study.

Shenhar and Dvir (2007) provided permission to use the following survey questions.

Instructions: Please choose the option. Scales are 1- Strongly Agree (SA), 2-Agree (A), 3-Neither Agree nor Disagree (UD), 4-Disagree (D) to 5-Strongly Disagree (SD).

Project Success Survey

S₃ Impact on the Team

- S₃₁ The project team was highly satisfied and motivated.
- S₃₂ The team was highly loyal to the project.
- S₃₃ The project team had high morale and energy.
- S₃₄ The team felt that working on this project was fun.
- S₃₅ Team members experienced personal growth.
- S₃₆ Team members wanted to stay in the organization

S₄ Business and Direct Organiz

- S₄₁ The project was an economic business success.
- S₄₂ The project increased the organization's profitability.
- S₄₃ The project has a positive return on investment.
- S₄₄ The project increased the organization's market share.
- S₄₅ The project contributed to shareholders' value.
- S₄₆ The project contributed to the organization's direct performance.

S₅ Preparing for the Future

- S₅₁ The project outcome will contribute to future projects.
- S₅₂ The project will lead to additional new products.
- S₅₃ The project will help create new markets.
- S₅₄ The project created new technologies for future use.
- S₅₅ The project contributed to new business processes.
- S₅₆ The project developed better managerial capabilities.

S₆ Additional success dimension Write in and assess success

- S₆₁
- S₆₂

S₇ Overall Success

- S₇₁ Overall the project was a great success.

S₁ Project Efficiency

- S₁₁ The project was completed on time or earlier.
- S₁₂ The project was completed within or below budget.
- S₁₃ The project had only minor changes.
- S₁₄ Other efficiency measures were achieved.

S₂ Impact on the Customer/Use

- S₂₁ The product improved the customer's performance.
- S₂₂ The customer was satisfied.
- S₂₃ The product met the customer's requirements.
- S₂₄ The customer is using the product.
- S₂₅ The customer will come back for future work.

Instruction: Please choose the option. Scales are 1- Strongly Agree (SA), 2-Agree (A), 3-Neither Agree nor Disagree (UD), 4-Disagree (D) to 5-Strongly Disagree (SD).

Formative constructs

Output control

1. In this organization, employees are clear about their roles and objectives.
2. In this organization, the extent to which objectives are met is monitored.
3. In this organization, if objectives are not met employees are required to explain why.
4. In this organization, feedback is given to employees concerning the extent to which they achieve their objectives.

Process control

1. In this organization, there are written rules concerning many organizational activities.
2. In this organization, written rules are strictly enforced.
3. In this organization, written rules and procedures are followed.
4. In this organization, there are clear formalized procedures for resolving conflict in this organization.

Normative control

1. When employees violate important norms, peer pressure is used to correct their behavior (e.g., if an employee is known to free ride, his colleagues will try to change her or his behavior).
2. Violations of unwritten norms are punished (e.g., employees who always gossip are shunned).
3. Employees who violate important organization values/ethics are disciplined (e.g., they get issued a caution).

Reflective constructs

Organizational trust: $\alpha = .93$; CR = 0.94; AVE = 0.61

1. This organization is capable of meeting its responsibilities.
2. This organization is known to be successful at what it tries to do.
3. This organization does things competently.
4. This organization is concerned about the welfare of its employees.
5. Employees' needs and desires are important to this organization.
6. This organization will go out of its way to help employees.
7. This organization would never deliberately take advantage of employees.
8. This organization is guided by sound moral principles and codes of conduct.
9. Power is not abused in this organization.
10. This organization does not exploit external stakeholders.

Employee performance: $\alpha = .93$; CR = 0.95; AVE = 0.84

1. Adequately complete the assigned duties.
2. Fulfill the responsibilities specified in job description.
3. Performs tasks that are expected of them.
4. Meets the formal performance requirements of the job.

Organizational citizenship behavior: $\alpha = .76$; CR = 0.83; AVE = 0.51

1. Accepts added responsibility when you are absent.
 2. Helps others out when they can see they have a heavy workload.
 3. Assists others with their work, even when they do not even when not directly asked.
 4. Attendance at work is above the norm.
 5. Gives advance notice when unable to come to work.
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