


2017

Relationship Between Budget and Project Success Factors in the Ghanaian Building Construction Sector

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Walden University

College of Management and Technology

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Kenneth Aggor

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2017

Abstract

Relationship Between Budget and Project Success Factors in the Ghanaian Building
Construction Sector

by

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MS, Alcorn State University, 2010

BS, University of Cape Coast, 2000

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Business Administration

Walden University

October 2017

Abstract

In developing countries, 60% of project management professionals appear to lack knowledge that timely completion, budget fidelity, and high quality are critical success factors for completion of construction initiatives. Based on the theories of iron triangle, accident causation, scientific management, and strategic management, the purpose of this correlational study was to examine the relationship between project budget and the independent variables of time, quality, safety, environmental impact, and site disputes in the Greater Accra Region of Ghana. One hundred and sixteen project managers, randomly selected from the population of construction professionals in the Greater Accra Region of Ghana, completed the survey entitled the Six Key Performance Indicators developed by Ngacho and Das (2014). The results of the multiple linear regression analysis indicated a weak positive correlation exists between the independent variables (time, quality, safety, environmental impact, and site disputes) and project budget, $F(1, 114) = 37.08, p < 0.001$. Time recorded the highest beta ($\beta = .50$) followed by site dispute ($\beta = .29$), environment ($\beta = .22$), quality ($\beta = .06$), and safety ($\beta = .04$). Attention to key performance indicators associated with time, dispute, and environmental impact could improve project outcomes in the Ghanaian construction sector. The study findings could be useful to improve the quality of projects and may benefit the lives of professionals and community members in the area.

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Dedication

I dedicate this study to my God and family. Almighty God, I thank you for giving me the intellectual ability and discipline to complete this work. Thank you to my wife, Bridget Aggor who motivated and patiently displayed listening to me endlessly as I talk about this study anytime at home. Thank you to my children, Kaitlyn M. Aggor, Neria M. Aggor, and Nadine M. Aggor who were patient with me as I avoided them by closing the door to my office anytime to work on the study.

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Section 1: Foundation of the Study

Background of the Problem

Mir and Pinnington (2014) stated that researchers have conducted studies to conceptualize what constitutes project success. Many researchers hold the view that it is important to overcome the limitations of the traditional performance evaluation criteria of time, cost, and quality (Ngacho & Das, 2014) typically used to assess project success in the construction sector. Practitioners and researchers have expressed concern about the isolated study of factors that may influence project management success, such as the environment, site disputes, and customer satisfaction (Ngacho & Das, 2014). There could be value in studying the major factors influencing project success together rather than in isolation.

Project managers and leaders in construction companies often lack the knowledge in understanding successful project outcomes. The lack of knowledge may affect the ability of construction companies to improve business performance and increase revenues with successful contract bids (Lu & Hao, 2013). The findings of the current study could be of value to the quest of project managers and leaders to gain a better understanding of the implications of project success in the building construction companies of Greater Accra, Ghana. I used the research instrument known as the Six Key Performance Indicators developed by Ngacho and Das (2014) to examine project success in the construction sector of Greater Accra Region, Ghana.

Problem Statement

In developing countries, 60% of project management professionals appear to lack knowledge (Mousa, 2015) that the projects completed on time, within budget, and meeting quality requirements represent the critical success factors to ensure successful completion (Drury-Grogan, 2014). In Africa, 87% of all construction projects have experienced time overruns (Ngacho & Das, 2014). The general business problem was that project managers and leaders do not use one acceptable standard to define project success (Ngacho & Das, 2014). The specific business problem was that some project managers and leaders in Ghanaian construction companies do not adequately assess the relationship between time, quality, safety, environmental impact, site disputes, and budget.

Purpose Statement

The purpose of the quantitative correlational study was to examine the relationship between time, quality, safety, environmental impact, site disputes, and budget. The predictor variables were time, quality, safety, environmental impacts, and site disputes. The dependent variable was budget. The target population for the study was the 158 building construction companies in the Greater Accra region of Ghana. The findings from the study may raise awareness among project managers and leaders in construction companies regarding the appropriate and comprehensive estimation of building project success. The findings of this study may also contribute to the success for all stakeholders by conferring construction companies with financial abilities to offer more affordable and better quality homes for Ghanaian residents.

Nature of the Study

The aim of the quantitative study was to examine the possible relationship between budget (dependent variable) and time, quality, safety, site disputes and environmental impact (predicting variables) in Ghana. The use of the quantitative methods facilitated the assessment of the relationship between the predicting variables and the dependent variable (Ngacho & Das, 2014). The objective for researchers using qualitative methods is to probe for why and how answers pertaining to the phenomenon rather than providing conclusive results from statistical or mathematical testing (Yin, 2014). The latter was more important for the study and was the reason for not using the mixed-methods approach because there was no need to collect qualitative data.

The design for the study was correlational, the intent, to examine the strength of the relationship between time, quality, safety, site disputes, and environmental impact (predicting variables) and budget (dependent variable) (see Ngacho & Das, 2014). Regression and correlation are useful for testing a null hypothesis and for examining the relationship between the dependent variable and predictive variables (Nimon & Oswald, 2013). After evaluating various quantitative designs, I chose correlation over regression as the logical choice for the study. With this correlational design, there was the possibility of computing the correlational coefficient to measure the strength of the linear association between the dependent variable and the predicting variables (see Puth, Neuhauser, & Ruxton, 2014). Relationships of cause and effect require quasi-experimental and experimental designs (Orcher, 2014). The objective in the current study was to determine

the relationships between variables, not to evaluate cause and effect; therefore, quasi-experimental and experimental designs were inappropriate for the study.

Research Question

The overarching research question for the study was: What is the relationship between time, quality, safety, environmental impact, site disputes, and budget?

Hypotheses

Null hypothesis (H_0): There is no relationship between time, quality, safety, environmental impact, site disputes, and budget.

Alternative hypothesis (H_a): There is a relationship between time, quality, safety, environmental impact, site disputes, and budget.

Theoretical Framework

The combination of appropriate theoretical postulations relevant to the variables under the study served to underpin the study for deeper analysis. Barnes's (1956) theory of the iron triangle, Heinrich's (1931) domino theory of accident causation, Taylor's (1998) theory of scientific management, Drucker's (1954) theory of strategic management, and Edward's (1984) stakeholders' theory were relevant because the proposition in each had a bearing on the variables and helped to sharpen the underlying principles of project process in various organizational systems. Barnes proposed the iron triangle as consisting of time, cost, and scope or quality as a useful model to illustrate the consequences of change to key project stakeholders. Project time refers to the scheduling and duration of the project with time bounded by the completion agenda. Cost represents the budget and resources of the project. Project cost is bounded by the scheduling of the

expenditure. Project scope entails the extent of project requirements and work of the project. Project quality constitutes an integral dimension of project management and is supported by the iron triangle. Heinrich (1931) condensed the accident causation theory into two points: People are the main reasons for accidents, and management has the responsibility, power, and authority to prevent accidents.

Edward (1984) proposed that the stakeholder's theory might help ensure a company's survival and prosperity. The stakeholder's theory includes a focus on environmental protection, management, communication, and cooperation. The stakeholder's theory may be beneficial when applied to balance the needs of internal and external stakeholders. Taylor (1998) proposed the scientific management theory to improve on labor productivity. The four principles of scientific management envisioned by Drucker (1954) include determining and implementing a standardized and systematic way of performing a task. The principles of scientific management include the strategies to select, train, and develop each employee scientifically; to direct and motivate the workforce by instituting rewards and punishment; to divide work between managers and workers and apply the scientific method of planning; and to control systems to perform the task. Drucker introduced the discipline of modern management practices. The principles cover effective time management, strategic decision-making that can contribute to the growth of the organization, the knowledge and understanding of where and how to mobilize strengths for optimal results, setting the right priorities, and linking management variables with effective decision-making. Barnes (1956), Heinrich (1931), Taylor, Drucker, and Edward noted that theories and peer-reviewed articles when used

extensively help to optimize and simplify job performances. Barnes's theory of the iron triangle, Heinrich's domino theory, Taylor's theory of scientific management, Drucker's theory of strategic management, and Edward's stakeholder's theory could be valuable sources of reference. The aim of using these theories was to supplement the quantitative data analysis and use the theoretical propositions to understand successful project outcomes considering project manager estimations as applied to building construction companies in Greater Accra, Ghana.

The objective of the study was to gain an understanding of the challenges that project managers in the construction businesses face when executing jobs. I used the quantitative approach with the statistical correlation design supplemented the interpretation of the data analysis with a theoretical lens. The findings from the study could contribute to the existing body of knowledge on the building construction sector and bridge the gap about project manager's estimations of project success in the building construction sector of Accra, Ghana. The findings from the study could also serve to pinpoint other areas in the building construction sector that need further examination.

Operational Definitions

Environmental impact: Human activities make use of a variety of services provided by stocks of capital and consumer goods. The production, operation, maintenance, and disposition of these stocks could cause material and energy flows that interact with the environment (Han, Fei, Tanikawa, Shi, & Huang, 2013).

Project outcome: Project outcomes represents measurement in terms of unit cost, construction speed, delivery speed, cost growth, schedule growth, and several quality

metrics including owner's satisfaction and owner's administrative burden (Ma & Ling, 2014).

Project success: Successful project execution includes completion on time, within budget, meeting quality requirements, meeting design requirements, and meeting stakeholders' satisfaction (Chou & Yang, 2012).

Site disputes: One of the main factors that prevent the successful completion of the construction project. Disputes typically occur when associated with distinct and justifiable issues, and often require resolution using mediation, negotiation, and arbitration (Cakmak, & Cakmak, 2014).

Assumptions, Limitations, and Delimitations

Assumptions

The assumptions of the study related to facts that are verifiable and hold true about the study. The principal assumption was that respondents would not have any reason to not truthfully and honestly complete the survey. The principles of anonymity and confidentiality were in place, and respondents could withdraw from the study at any time without any negative ramification. The second assumption was that quantitative research would be an appropriate method to explore the project outcome of building construction workers in Greater Accra Ghana. The Greater Accra region, the capital city of Ghana, is an important financial hub that experiences a high influx of rural migrants. This region merited research given its strategic importance in Ghana compared to other regions in the country.

Limitations

Limitations relate to the weaknesses of a study and are outside the researcher's control (Leedy & Ormrod, 2010). The findings from the study could enhance understanding of the impact of time, quality, safety, environmental impact, and site disputes on project success in Greater Accra, Ghana. Studying only the building construction sector in the Greater Accra region helped with the required focus necessary for a doctoral study. The time required to complete the surveys and the willingness of some project managers in the building construction sector to reveal information that could enhance the quality of the research data also constituted limitations.

Delimitations

Delimitations refer to the characteristics that define the scope and the boundaries of the study (Vladu, Mătiș, & Salas, 2012). Delimitations are within the control of the researcher. Limiting the scope of the study to project management projects in the construction sector for housing, commerce, and community in Greater Accra, Ghana, ensured a narrow focus. This study included the dependent variable of budget and the independent variables of time, quality, safety, environmental impact, and site disputes to assess project success in the building construction sector in Ghana. Project leaders and managers from the Greater Accra region were the only professionals who took part in the study.

Significance of the Study

The findings of the study could be of significance to project managers and leaders in construction companies to gain a better understanding of project outcomes and

success. The study findings could also increase the knowledge of project managers and leaders on project success criteria in construction companies. The results of the study could enable project managers and leaders to execute projects more efficiently within stipulated budgets and time and per customer specifications. The outcome of the study was to answer the research question: What is the relationship between time, quality, safety, environmental impact, site disputes, and budget? The findings from the study could potentially reduce the inefficiencies in construction project management and performance in Ghana. The project managers and leaders in the construction companies could gain more knowledge to improve services and win bids to increase revenues from business ventures.

The findings from the study could also serve the aims of project management professionals to increase project success. The success of construction companies could translate into better quality and lower costs of housing for residents. The results of the study could also contribute to improving environmentally friendly practices by construction companies in Accra Ghana, including lowering environmental degradation and indiscriminate deforestation and promoting sustainable practices such as the use of reusable and recyclable materials. Other stakeholders could become informed about the fact that using recyclable materials from the environment could lead to an affordable cost of buildings and at the same time prevent natural resources from being depleted. Construction companies could invest surpluses and provide affordable homes to stimulate economic growth through the creation of jobs for the local inhabitants. The findings from the study could also contribute to bringing about positive social change because the

standard of living of the building contractors could improve through successful business bid wins (Lu & Hao, 2013). Residents of Greater Accra, Ghana could become enlightened about environmental degradation and pollution and ensure that building constructors adopt proper disposable processes of toxic construction waste. Institutions and organizations could also gain from the project knowledge by promoting afforestation and the construction of septic disposable waste systems, which could reduce the contamination of local sources of drinking water.

A Review of the Professional and Academic Literature

The literature review component of the study aligns with the purpose of the research. Many of the journal articles reviewed relate to project management and performance. The organization of the literature review includes themes addressing a unique aspect of the study. The purpose of the quantitative correlational study was to examine the relationship between time, quality, safety, environmental impact, site disputes, and budget. The following research question guided the study: What is the relationship between time, quality, safety, environmental impact, site disputes, and budget? The hypotheses were as follows:

Null hypothesis (H_0): There is no relationship between time, quality, safety, environmental impact, site disputes, and budget.

Alternative hypothesis (H_a): There is a relationship between time, quality, safety, environmental impact, site disputes, and budget.

To understand project success in the construction sector, I used Barnes's (1956) theory of the iron triangle, Heinrich's (1931) domino theory of accident causation,

Taylor's (1998) theory of scientific management, Drucker's (1954) theory of strategic management, and Edward's (1984) stakeholders' theory because the proposition in each had a bearing on the variables which helped to sharpen the underlying principles of project process in various organizational systems. Barnes proposed the iron triangle as consisting of time, cost, and scope or quality as a useful model to illustrate the consequences of change to key project stakeholders. Project time refers to the scheduling and duration of the project with time bounded by the completion agenda. Cost represents the budget and resources of the project. Project cost is bounded by the scheduling of the expenditure. Project scope entails the extent of project requirements and work of the project. Project quality constitutes an integral dimension of project management and is supported by the iron triangle. Heinrich condensed the accident causation theory into two points: People are the main reasons of accidents, and management has the responsibility of preventing the accidents.

Edward (1984) proposed that the stakeholder's theory may help ensure a company's survival and prosperity. The stakeholder's theory includes postulations useful to apply to environmental protection, management, communication, and cooperation. Stakeholders theory can be used to assess the needs of internal and external stakeholders. Taylor (2012) founded the theory of scientific management on four principles:

- determine and implement a standardized and systematic way of performing a task;
- select, train, and develop each employee scientifically;
- direct and motivate the workforce by instituting rewards and punishment; and

- divide work between managers and workers and apply the scientific method of planning and control systems to perform the task.

Drucker proposed the modern management practices to improve on project success. The five modern management practices are effective time management; strategic decision-making that will contribute to the growth of the practical organization; knowledge and understanding of where and how to mobilize strength for the best optimal results; setting right priorities; and linking management variables together with effective decision-making. The postulation of these theories had relevance to the objectives of the study and served as the theoretical framework underpinning the effort to understand the underlying principles of the project process in various organizational systems.

The aim of the literature review was to link the findings of the study to current practices in project success outcome, identify the budget (dependent variable) and time, quality, safety, site disputes, and environmental impact (predicting variables) that could enhance the quality, validity, and reliability of the instrument. The division of the literature review into 10 categories, served the purpose of achieving organization and clarity of the study. The categories are the iron triangle (time, cost, and quality), safety, project dispute, environmental impact, project failure, motivation and project success, project knowledge, knowledge retention, stakeholder, and leadership. The description in this chapter includes details on the common variables widely used as effective tools for the project initiation phase to the closeout of the project. Identifying the appropriate literature necessitated using various search strategies to generate topics aligned with the objectives of the study. The literature search included peer-reviewed articles selected

from Science Direct, ProQuest, Academic Search Premier, ABI/INFORM Global database, Business Source Complete database, EBSCO, PMI online, and professional websites. The purpose of using journal articles included the selection of studies in published and professional peer-reviewed journals and magazines on project management. The key words used in search of the relevant literature included *project outcome*, *project success*, *project management* and *effectiveness*, and *project failure*.

Theoretical Literature

The combination of appropriate theoretical postulations relevant to the variables in the study served to underpin the study and to infuse practitioner and theory-based evaluation of the research findings for deeper analysis. The propositions of Barnes's (1956) theory of the iron triangle, Heinrich's (1931) domino theory of accident causation, Taylor's (1998) theory of scientific management, Drucker's (1954) theory of strategic management, and Edward's (1984) stakeholder's theory were relevant because each had a bearing on the variables and helped to sharpen the underlying principles of project process in various organizational systems. Barnes (1956) proposed the iron triangle as consisting of time, cost, and scope or quality as a useful model to illustrate the consequences of change to key project stakeholders. Project time refers to the scheduling and duration of the project as it is bounded by the completion agenda. Cost represents the budget and resources of the project. Project cost is bounded by the scheduling of the expenditure. Project scope entails the extent of project requirements and work of the project. Project quality constitutes an integral dimension of project management and is supported by the iron triangle. Heinrich condensed the accident causation theory into two

points: people are the main reasons of accidents, and management has the responsibility, power, and authority of preventing the accidents.

Edward (1984) proposed that the stakeholders' theory may help to understand how a company negotiates performance to achieve survival and prosperity. The stakeholder's theory served to focus on environmental protection, management, communication, and cooperation. Stakeholder's theory was valuable to understand the balance between the needs of internal and external stakeholders. Taylor (2012) proposed the scientific management theory to improve on labor productivity. The four principles of scientific management encompass determining and implementing a standardized and systematic way of performing a task. The principles extend to selecting, training, and developing each employee scientifically, directing and motivating the workforce by instituting rewards and punishment, dividing work between managers and workers and applying the scientific method of planning, and controlling systems to perform the task. Drucker (1954) introduced the discipline of modern management practices of effective time management. Drucker's postulations indicated that strategic decision-making can contribute to the growth of the organization. The knowledge and understanding of where and how to mobilize strength for the optimal results, setting the right priorities, and the linking of management variables together with effective decision-making also constituted the theoretical propositions. The extensive invocation of Barnes's, Heinrich's, Taylor's, Drucker's, and Edward's theories and peer-reviewed articles has helped researchers and practitioners to find ways to optimize and simplify job performances. Barnes's (1966) theory of iron triangle, Heinrich's (1931) domino theory, Taylor's (1998) theory of

scientific management, Drucker's (1954) theory of strategic management, and Edward's (1984) stakeholders' theory were valuable points of reference to understand project managers' estimations of successful project outcomes regarding building construction companies in Greater Accra, Ghana.

Iron Triangle (Time, Cost, and Quality)

Project managers have traditionally measured project success using the iron triangle of time, cost, and quality. The approach to assessing project success has evolved substantially over the past three decades (Davis, 2014) from the primary iron triangle of cost, time, and scope/quality (PMI, 2013). Various researchers focused on new dimensions of project success (Carvalho & Rabechini, 2015). Carvalho and Rabechini (2015) noted that project success is a multidimensional construct, and different stakeholder groups have a personal understanding of project success (Davis, 2014). In recent years, customer satisfaction and client relationships have emerged as additional criteria for assessing project success (Williams, Ashill, Naumann, & Jackson, 2015). Gemunden (2015) cited the value in the explicit recognition of project success when viewed from the perspective of various stakeholders. The most valuable of these stakeholders is the client (William et al., 2015). Some experts have suggested that customer satisfaction is a critical dimension of project success (Davis, 2014; Serrador & Turner, 2015).

Ebbesen and Hope (2013) argued that although the iron triangle is a traditional method, it is still important in evaluating project success; it is also imperative to consider the triple constraints measure of project efficiency, which includes setting priorities

during the project life cycle. Contemporary views expressed in the literature distinguish between project efficiency and overall project success. Serrador and Turner (2015) defined project efficiency as the necessary action to complete a project. Ebbesen and Hope (2013) defined project success as more focused on business objectives, meeting customer satisfaction, and sustainability. Mir and Pinnington (2014) emphasized that it is essential to adopt a more aggregate approach in measuring project efficiency (time, budget, scope) to include a package of five drivers of total project success (business success, preparing for the future, project efficiency, team satisfaction, and impact on the customer). Verner, Babar, Cerpa, Hall, and Beecham (2014) argued the historical importance of a project completed on time. Projects completed late create a variety of financial and operational problems for the customer, suggesting that the project was a failure (Pinker, Szmerekovsky, & Tilson, 2014; Verner et al., 2014).

Cserhati and Szabo (2014) stated that the theory of relationship concerning performance drivers has a significant influence on both relationship quality and customer satisfaction. Project performance drivers such as interpersonal relationship during the different phases of the project have a direct influence on customer satisfaction (Hornstein, 2015; Serrador & Pinto, 2015). Zou, Kumaraswamy, Chung, and Wong (2014) indicated that active customer management is significant for project success, especially during the different phases of the project. According to Suprpto, Bakker, Mooi, and Moree (2014), relationship management is the main driver of the project success criteria of customer satisfaction. Projects completed late have a profound effect on customer perceptions of the project management performance criteria. Late

completion of a project has a negative influence on how the customer perceives performance levels and on how the customer rates management during the project (Williams et al., 2015).

Hornstein (2015), Mir and Pinnington (2014), and Suprpto et al. (2014) opined that the iron triangle is expandable to include customer satisfaction and relationship quality as dimensions of project success. Williams et al. (2015) noted that among the project management process of initiation, planning, execution, monitoring and control, and close (PMI, 2013), the project management execution process is the only phase that has an impact on customer satisfaction and an indirect impact on relationship quality. Williams et al. (2015) urged project managers to incorporate effective communication in planning, scheduling, and executing deliverables for the customer.

Project management criteria such as scheduling, cost, and profitability often adopted by some project managers aid in the assessment of project success in an industry and a country (Carvalho, Patah, & Dido, 2015). Project success has a significant impact on profitability and schedule (Carvalho et al., 2015). Project success has been the purpose of useful discussions in the project management studies (Carvalho & Rabechini, 2015) that relate to the social and political background of project management performance (Sage, Dainty, & Brookes, 2014). Carvalho and Rabechini (2015) stated that the sustainable dimension of project success as it relates to the impact on social and environmental aspects is more coordinated with the time, cost, and quality. Some researchers have studied the effects of incorporating project management practices on performance (Besner & Hobbs, 2013). Useful methodologies and techniques developed

in the project management knowledge profession and institutions have advanced the understanding of all (PMI, 2013). The PMI (2013) focused on the importance of hard skills, emphasizing the need for documentation, measurement, and control of the project during its life cycle. Carvalho (2014) also emphasized the importance of soft skills in project management, especially as these relate to communication, stakeholders' management, and expertise. Project management failure, often assumed as evidence of unsatisfactory management on the part of the project manager, is avoidable with good management practices (Sage et al., 2014). Carvalho et al. (2015) noted that implementing a project successfully necessitates more effort put into the soft side and combining both soft and hard skills to deal with the various stakeholders within the organization. Takey and Carvalho (2015) stated that other authors have collaboratively included education and training as key factors in project performance.

The environment in which a project takes place also plays an important role in project performance (Carvalho et al., 2015). In a country where project management is at a more advanced level concerning activities such as project management associations and regulations, the opportunity to execute project management successfully is high (Carvalho et al., 2015). Prasad, Tata, Herlache, and McCarthy (2013) suggested that cultural issues of the country in which the project is taking place merit consideration, including the aspects related to projects being more vulnerable to political corruption. Prasad et al. (2013) proposed that project managers should also consider features such as flexibility and autonomy, infrastructure, and stakeholders' diversity when working on international development projects.

Safety

Sousa, Almeida, and Dais (2015) noted that there has been a growing concern about occupational risk by various bodies in the construction sector. The health rate risk continues to be higher in the construction industry despite the tremendous improvement made in the industry. Sousa et al. (2015) stated the two reasons attributed to the issue: (i) the inherent nature and the characteristics of the construction project; and (ii) the lack of finance and economics resources needed to implement the additional required to measure safety issues (Sousa et al., 2015). Some universal factors identified in terms of safety and health performance in the construction sector are: the uniqueness of the construction project, the dispersion and type of work conditions and locations, the diversity and culture of labor structure, the kind of contract established with workers, job stability and work team, and the lack of training and information (Sousa et al., 2015).

Swuste, Frijters, and Guldenmund (2012) defined safety as an organizational guarantee that an acceptable level of safety secured for a specific process, or for the duration of the project lifecycle. Safety management in construction companies characterized as an organic structure. The organic structure of the companies could manifest low standardized work performance and a culture of opposition to rules and procedures (Swuste, Frijters, & Guldenmund, 2012). Projects in the construction industry have a short span of duration and project site are distant apart from the employee. Relatively few workers in the building construction sector receive education on safety, and it negatively affects employees' loyalty to fellow employees. During accidents, bonuses for employees while often affected, in most cases, the cause of an accident also

shifts to sub-contractors. The human factor receives widespread recognition as the cause of most accidents in the construction sector. The external factors influence management decisions on safety are laws and regulations, costs of accidents, and national safety campaigns (Swuste et al., 2012).

Yau (2014) stated that residents' satisfaction with housing remains readily identifiable from the personal appreciation and expression for the house design, construction, and neighborhood quality. Governments and residents around the world, however, have worried about the unacceptable behavior of unscrupulous contractors (Yau, 2014). Countries have taken preventive measure to curb nuisances of residents in a community. Some living in public housing often seem incompetent in taking care of themselves, and thus pose problems to administrators and housing authorities (Yau, 2014). The safety of employees at the worksite, considered critical to the security of the workplace (Yau, 2014), reflects an accepted premise in the construction industry. Employee and employer positive attitude toward safety plays a significant role in the achievement of safety compliance as outlined by the Occupational Safety and Health Administration (OSHA). The legislation on safety enacted has enabled an organization to practice safety culture by eliminating any form of an unsafe act within the workplace (Faridah & Zin, 2012). Employers need to enforce behavioral safety compliance to achieve the goal of organizational safety compliance in the construction sector. The cause of an accident in the workplace often attributed to noncompliance represents a challenge; however, compliance with safety facilitates the undertaking of work efficiently and safely. Effective communication is an essential consideration to a safe and efficient

workplace (Yau, 2014). Senior management should actively lead the organization and employees towards consequent activator behavior. Training and education programs play a significant role in the enhancement of safety in construction. The training and education can significantly increase safety awareness (Faridah, & Zin, 2012) and change the behavior of employees (Tabassi, Ramli, & Bakar 2012). Insufficient safety training for the employees is the general cause of accidents on the construction sites. Many supervisors and employees do not have the knowledge, education, and skills to recognize potential hazards at the construction site (Yau, 2014).

Occupational stress is noticeable, often affects the health of employees in workplaces, and the situation is acute in the construction industry. Cattell, Lingard, Edwards, and Bowen (2014) recognized occupation stress as primarily attributed to the existence of work and lifestyle imbalance. In industries, construction workers rank the lowest in the organizational structure and may have limited control over what they do. Construction workers though often not rewarded and could lack the needed training required to excel (Cattell, Lingard, Edwards, & Bowen, 2014). Occupational stress adversely affects construction workers reaction to safety. Errant behavior of construction employees, who disregard the rules of safety is often troublesome; unsafe behavior is the leading cause injuries (Yu, Leung, Chan, 2012). In Africa, the situation is exacerbated due to economic hardship inequality on the ground of gender and crime. Among the professional construction workers in Africa, architect experience more stress compared to surveyors, engineering, project team, and managers (Yu et al., 2012).

Female employee professionals often experience more stress than professional male counterparts in the work environment (Lingard, Edwards, & Bowen, 2013). The panacea to construction job stress sometimes requires management justification for the need to work extended hours. Management should provide support to construction professionals in daily operation. However, care needs taken by management when working on team building activities (Lingard et al., 2013). Yu, Leung, and Chan (2012) stated that goal setting is a significant factor in the reduction of an unsafe work environment.

Project Disputes

Conflicts in projects are imminent, and can escalate into a dispute if members of a project team refuse to solve personal differences (Pan, Zhang, & Lu, 2015). Parties involved in a dispute typically go through the resolution process of negotiation, mediation, arbitration, and litigation. The cost associated with project consists of the money paid in settlements and transaction costs. The transaction costs represent pre-contract and post-contract costs (Li, Arditi, & Wang, 2013). One damaging effect of a transaction, is the lack of future cooperation from both parties involved in the project. In the construction industry, owners wield power (Lu & Hao, 2013) as such during times of dispute, buyers suffer the most loss. The buyer may discontinue the service of the seller by seeking the service of other contractors. The reputation of the seller normally is at stake and requires spending a large sum of money to gain a competitive advantage in the industry. In such circumstances to regain competitiveness, necessitates contract firms to cut down on a bidding price that potentially affects profitability (Pan et al., 2015).

Mahamid (2013) categorized the causes of the project site related disputes as; owner, contractor, design, contract, human behavior, project, and external factors. The most common disputes in the construction industry are contractor related and include quality of work, tendering, and delay in work (Cakmak & Cakmak, 2014). Mahamid listed five causes of delay of the magnitude of the building construction as progress payment by the owner; unrealistic contract duration, change orders; poor quality of completed works; and labor inefficiencies. Mahamid also listed other causes of project disputes as inadequate contractor's experience, lack of communication between construction parties, ineffective planning and unrealistic scheduling, cash problems during the execution phase, and a poor estimate of labor and material. The failure of owners to make progress payment is the most common form of construction dispute and sometimes leading to the cause of less work carried out on the site (Mahamid, 2013). The delay on a project could affect the revenues anticipated from the project. The owners' ability to promptly make progress payments on time and contractor plan and utilize cash flow from the project could speed up work on project sites. Mahamid recommended the following to mitigate project dispute on building projects: Owners should check for the availability and competence of bidders before awarding bids. Adequate time for planning, information communication, cost estimate, tendering, and scheduling is critical. Owners must also make prompt payment to contractors to also finance the project diligently. There should be communication and coordination between owners, contractor, consultants, and suppliers throughout the project. Providing training and education cost estimators to come up with realistic estimates.

Bari, Yusuff, Ismail, Jaapar, and Ahmad (2012) stated that market and economic conditions and contractors' attributes are common factors that influence construction costs of Industrialized Building Systems (IBS) projects. This assertion agrees with other factors such as project size as the highest determinant factor affecting project costs and widely used in the construction of cost models. Some of the factors considered to affect the cost of IBS projects are repeatability and standardization of plan; repeated use of design mold and construction techniques; economies of scales; speed of the process; and the comprehensiveness of IBS principles (Bari et al., 2012). The integration of supply chain in IBS, the constant demand, and repetition and standardization of works are essential to the sustainability of IBS players. Construction companies gain some form of mastery, accuracy, cost savings, and sustainability through the continuous application of the above factors. Comprehensive principles require measuring, convention, and standardization to ensure adhering to in IBS design. Companies achieve economies of scale by companies by lowering the average unit cost of production through the entire production system. More fundamentally, the challenge for the estimator is to prioritize various competing factors in the problem of potential cost overruns (Bari et al., 2012).

The factors relevant to the achievement of sustainable social (public) housing estates' provision relate to four critical project management success factors (CPMSF). These factors are the project managers' performance; the organization that owns the development project; the characteristics of the team members; and the external project environment (Ihuah, Kakulu, & Eaton, 2014). In the developing countries, the critical factors such as social, economic and environmental receive recognition as the three key

objectives to ensure sustainable economic growth in the development of the country (Ihuah et al., 2014).

Environmental Impact

The construction industry generates an enormous amount of construction material waste, and it has raised concerns because on the environment (Zillante, Chiveralls, Zuo, & Udawatta, 2015). The construction industry depends mostly on the natural resources for survival and cannot continue operating when resources on which it survives depletes. The amount of waste also generated affect the productivity and profitability due to extra time and overhead cost required to clean the accumulated waste created. The estimated material waste generated in the construction industry ranges from 21% to 30% and often contributes to cost overruns (Ameh, & Daniel, 2013). The waste decreases the profitability. Researchers have suggested increasing landfill disposal cost for disposing of construction waste to deter the construction industry from increasing waste (Poon, Yu, Wong, & Yip, 2013). In a study in Hong Kong, with the increased cost of landfill disposal of construction waste, over a period of three years, construction waste reduced drastically. Poon, Yu, Wong, and Yip (2013) noted that the increase in landfill disposal of construction waste did not significantly reduce the construction site material waste. Poon et al. (2013) recommended the use of financial incentives to motivate the reduction of construction site waste.

Researchers have advocated the application of lean principle with emphasis on the production system to eliminate waste. Zillante, Chiveralls, Zuo, and Udawatta (2015) emphasized education and training of employees as another strategy to eliminate waste.

Yuan (2013) stated that an effective way of educating and training was to make employees understand how waste can affect productivity and profitability of the business. The oversight of critical stakeholders helped manufacturing waste control. Stakeholders should understand the impact of waste on their environment and raw material needed to work. Yuan (2013) advocated the establishment of recycling market to recycling raw material waste. Zillante et al. (2015) suggested an attitudinal change as one of the possible ways to curtail construction waste. Through attitude change, employees will understand and display wariness about the environment by safeguarding it against the fast rate of depletion of the natural resources on which all depend on (Zillante et al., 2015).

The sustainability of the construction industry is imperative for overall improvement in developing countries. Mousa (2015) indicated that 76% of contractors, consultants, engineers, and developers have some level of knowledge about the durability of building projects. Only 40% of the contractors, engineers, consultants, and developers have claimed to understand the concept of sustainability with respect to impact on cost, the environment, and durability (Mousa, 2015). The concept of sustainable construction development includes architectural design, durability, the environment, governmental policy, structural design, and lifecycle. The acceptance of sustainable construction development had received low patronage (Samari et al., 2013). The lack of sustainable beliefs attributed to poor communication and ignorance have contributed to the environmental impact on cost (Serpell, Kort & Veral., 2013). Other common barriers to the sustainable transformation included factors such as the lack of incentive for new developers, lack of demand, and the high cost of resources (Samari et al., 2013). In

Ghana, the lack of awareness by the public and cost constitute the major barriers to sustainable development in the construction industry (Ametepey, Aigbavboa, & Ansah, 2015). Some developers see environmental sustainability as something beyond individual capacity, but rather something for intellectuals to handle as an academic discipline. The absence of technical knowledge to manufacture sustainable materials required by the industry has been a major setback (Ametepey et al., 2015). At the national level, inadequate knowledge about sustainable material has furthered hindered the progress of sustainable transformation of the construction industry (Ametepey et al., 2015). To stakeholders, justifiably the idea of sustainability often perceived as an added cost, luxury, and unnecessary, as it increases the cost of investment (Mousa, 2015).

Mousa (2015) postulated that national campaign on the awareness of sustainable needs embraced by stakeholders. The media, symposia, and science forum are to serve as the media to make the populace understand the ramification of using obsolete building practices. The government through the Ministry of Housing and Development monitor the issuance of permits to developers (Mousa, 2015). Governments in developing countries must support the transition by providing incentives to developers, and fund academic institutions and students to conduct research that will require using local materials (Mousa, 2015).

Project Failure

In the past, the criteria for assessing project success based on the “triple constraint” consisting of cost, schedule, and scope, and evaluated based on project management performance using KPI indicators, could have suffered limitations in

covering the entire spectrum of factors influencing project success (Eduardo, Serra, & Kunc, 2015). The most important of these set of indicators is the one related to costs, followed by time. Conversely, Tobal, Marly, and Carvalho, (2015) stated the iron triangle as composed of time, cost, and technical performance while neglecting customer satisfaction. Tobal et al., (2015) indicated that variables such as project manager and top management support play a significant role in project success by completing the project on time. Quality indicators are the ones that present more differences in their perceived relevance. Sustainability and satisfaction indicators present lower significance than the performance indicators and are more relevant to top management than for the other stakeholders (Bernardo, 2014). The key performance indicators have measured the adherence to budget, schedule, and quality (Shenhar, Milosevic, & Patanakul, 2012). However, a complete evaluation of success requires a value related component. Absolute evaluation of process success should include an assessment based on the projects' contribution to the business strategy (Shenhar et al., 2012).

Eduardo, Serra, and Kunc, (2015), identified benefits realization management (BRM) as the relationship between business strategy and project execution. Benefits Realization Management (BRM) is a set of processes structured to close the gap between strategic planning and execution by ensuring the implementation of the most valuable initiatives. However, there is no empirical evidence of its effectiveness. The BRM practices can be adequate to support the successful execution of business strategies. Although the relevance of these BRM practices on influencing the perception of project success, knowledge about has still seemed to be lacking (Eduardo et al., 2015). In the last

decade, project management research has given increasing significance to topics such as strategic alignment and organizational outcomes. Eduardo et al., (2015) identified the alignment between project management and organizations' strategies as imperative. The main performance issue of a project is misaligned governance structure. Projects that lack sufficient upper management support are unable to deliver the desired business gains to an organization. Institutional measures and arrangements promote the union between executive management and project teams (Sanderson, 2012). The BRM practices have become relevant to integrating project, program, and portfolio management (Breese, 2012).

Doloi (2013) described cost overrun as a chronic problem and inherent in most projects. Stakeholders such as suppliers, an end-user, and facility managers in modern construction projects face difficulty in providing an accurate estimate on cost budgets. The difficulty emanated from the unavailability of data to estimate project cost accurately. With cost estimates established correctly, senior management have sometimes classified these costs as high thereby reducing the estimate without adjustments in a corresponding decrease in the scope of a project (Doloi, 2013). Senior management often provide a top-down cost estimate starting with an understanding of how much there is to allocate to a given project. The end-users often bear the burden of cost overruns in the form of an extra cost imposed on the output. The socio-economic infrastructure projects are most vulnerable to cost overruns (Doloi, 2013).

In Africa, the problem could be that the frequent categorization of the causes of construction time and cost overruns are governed by seven principal factors:

incompetence; design; market and estimate; slowness and lack of constraint; financial capability; government; and workers (Shehu, Endut, Akintoye, & Holt, 2014). The policy of the government of the United Kingdom represents an integrated project insurance policy. The policy covers an excessive cost overrun, and it provides cost-effective financial security to any supply chain members (UK Government, 2012). The management of the construction industry often plays a vital role in a country's development (Low & Babatunde, 2013). The management of the construction companies may contribute to the economic development of the country through the provision of employment (Shehu et al., 2014).

Quality practitioners in organizations allocate significant resources in the form of time and money to improve organizational performance (Jamison & Mairani, 2012). Researchers have stated that 70% of all projects have failed and of which 60% to 80% of these projects are in the realm of Total Quality Management (TQM). The three causes attributed to the failure of quality initiative projects are the lack of support from management implementing the action, lack of attention to change management during the implementation stage, and failure to execute the quality function of the project efficiently (Jamison & Mairani, 2012).

Motivation and Project Success

Paydar, Faisol, Endut, and Rahman, (2014) argued in favor for the effective management of projects regarding the factors of time, cost, quality, and collaboration. Concerning project teamwork, Paydar et al. (2014) confirmed that in situations involving multiple parties, the importance of trust, cultivated and planned as it cannot be self-

generated. A knowledge-based trust established through frequent interaction is necessary for acquiring mutual understanding and meaningful communication (PMI, 2013).

Goodwill between firms relates to the normative standard governing openness of commitment and reciprocation in exchange (Paydar, Faisol, Endut, and Rahman, 2014).

The development of sufficient goodwill, warrants shared normative values as well because trust cannot happen at will. Goodwill is a by-product of familiarity and friendship. Efficiency requires competent and motivated people who can respond quickly to problems, but the will to act and the capacity to elicit flexible responses depend much on mutual trust (Paydar et al., 2014).

Davi (2014) stated that project success when measured based on sponsor's view, should also include the project manager's and client's or customer's views respectively. A measure of success could be discernible in the satisfaction expressed by at least one of the three viewpoints (Davi, 2014). The satisfaction expressed in evaluating specific criteria such as personal growth; technical innovativeness; efficiency of project execution; managerial and organization implication; project termination; and business performance (Davi, 2014). Nixon, Harrington, and Parker (2012) noted that to determine the effectiveness of project success and failure, it is important to understand the difference between project management and project leadership. Project management involves planning and organizing of project activities through the decision-making processes to improve the efficiency and effectiveness of a project (Davi, 2014). Leadership is about guiding others toward the attainment of project objectives, and helps people realize personal potential to achieve tougher and challenging organizational goals

(Sam, Chernyshenko, Marilyn, & Chan, 2015). Successful leaders convince people by stimulating them to think of about a new way of solving problems by working together with other project teams to accomplish other complex project tasks (Sam et al., 2015).

Ika, Diallo, and Thuiller (2012) supported the five critical success factors (CSF) for project success as monitoring, coordination, design, training, and institutional environment. The coordinating factor is a major determinant of project success, especially when handling national projects. An efficient design and implementation can also lead to project failure. Training for team member and other stakeholders is a crucial contributor to project success and recognized as a CSF for international development projects. Ika et al. (2012) stressed the importance of documentation, design, training, monitoring, coordination, and institutional environment in projects.

The Benefits Realization Management (BRM) described a set of processes designed to narrow the gap between strategic planning and execution by implementing the most beneficial initiatives (Eduardo, Serra, & Kunc 2014). Business strategies call organizations to go through changes, by identifying and executing projects. Organizations often fail in implementing strategies even though there is the employment of project, program, and portfolio management techniques. There is however no empirical evidence of its effectiveness. Results, therefore, have suggested that BRM practices can be useful to support the successful implementation of business strategies (Eduardo et al., 2014).

Eduardo, Serra & Kunc, (2014) adopted two approaches in analyzing project success. The approaches are, project management performance, also referred to as efficiency and project success. Project management performance measures project

success based on budget, schedules, and requirement goal (Eduardo et al., 2014). The project success measures how well the business delivers its benefits required by the business strategy to create value for the organization (Serrador, 2013). Most organizations have claimed that project benefits are hard to measure, and as such continue to evaluate project success using only by efficiency (Glasson, 2017).

Organizations measure project success in the short run, which is right after completing the project (Eduardo et al., 2014). The approach is a narrow way of evaluating project performance using efficiency. Besides encouraging project managers to focus on short-term and tactical measures rather than on long-term and strategic improvements in performance, this approach also challenges any attempt to implement BRM practices. Organizations need to redesign their success criteria to maximize value required for achieving a successful BRM (Eduardo et al., 2014). As argued by Eduardo et al. (2014), businesses failing to determine success criteria, face failure in initiatives aimed at maximizing the success rates of the most strategically oriented projects. The BRM practices have relatively little ability to predict the overall perception of project success, in comparison to the much higher strength they have a balanced combination of dimensions (Eduardo et al., 2014).

Project Knowledge

Hung, Fry, Cooke, and Chumg, (2015) acknowledged that sharing as an intangible asset in every organization because it is through communication that organizations have the capacity to execute personal values. Without information, organizations cannot function, and that can hamper effectiveness Hung et al. (2015). The

lack of knowledge management in a project environment is the poor project success analysis and the documentation of the previous project (Bushuyev, Obradovic, Mihic, Petrovic, & Todorovic, 2015). Effective organizations and leaders can encourage employees to share knowledge effectively, and this prevents entrusting knowledge to only a few people. In this regard, it enables a free flow of knowledge exchange and transfer (Hung, Cooke, & Chung, 2015). Leaders' expectation and supportive behavior are keys to shaping the behavior context in which members share information (Almeida & Soares, 2014).

The five groups of obstacles, found useful in the discussion of project implementation processes are the issues concerning follow-up and control of the implementation process, quality of the decision, cooperation needed for effective implementation, necessary backing by the person of authority, and an "Act of God" in terms of events not predictable in advance (Shetach, 2011). The Capi model refers to proposing coalesced authority, power, and influence, to leading a project to successful completion. The revised decision square model (RDSM) proposed, also refers to asking what, who, when, and how as a solution to common mishaps of follow-up and control of decision-implementation processes (Shetach, 2011). The CAPI model and RDSM together, provide tight control over potential problems, as well as ensuring the eventually aspired results (Shetach, 2011). The team managerial coping flowchart (TMCF) is a comprehensive diagram that can lead the team, project manager, and team members to efficiently and effectively lead team processes toward achieving their goal. The TMCF combined with CAPI and RDSM serve as effective tools that could help management

toward high-level thinking in potentially ensuring a high probability in achieving project success (Shetach, 2011).

The evaluation of project success criteria varies depending on the view of stakeholders. The selection of the project portfolio management depends on the formulation, selection, and implementation of the project to meet the strategic needs of the organization (Ahlemann, Arbi, & Kaiser, 2015). Project portfolio management is a significant step in deciding on projects based on pre-determined selection criteria and achieving the strategy of the organization by diligent execution. In information gathering, the project team can create actions to align with the strategic objectives of a portfolio (Petro & Gardiner, 2015).

Patanakul (2015) suggested six benefits of effective portfolio management. The benefits are: the alignment of projects with strategic organizational goals, the predictability of project portfolio performance, the adaptability to internal and external changes in the company, the visibility of projects in the portfolio to stakeholders, the portfolio will provide high benefits, and transparency in portfolio decisions that can help promote collaboration, integrity, and morale (Patanakul, 2015).

Weaver and Too (2014) noted that an organization could make tremendous benefit from its investment when there is a link between the proceeds generated from the project and the requirement for the organization's business strategy. From a review of literature, the need for an organization to put parameters in place that outline project deliverables with the organization's goal of a project defined by the organization's overall strategy seemed apparent (Weaver & Too, 2014). Weaver proposed four elements

for organizations to improve the performance of their projects and organizational strategy. The four essential elements are, select projects and program the will create value for the organization, direct link between project executive and project or program leader must focus on the entire project life cycle, project management office, and supporting project and programs effectively (Weaver & Too, 2014).

In an organizational context, knowledge often identified as an asset (Tweed, Toulson, & Abdul-Jalal, 2013) represents one of the major competitive requirements for an organization. Knowledge, when managed effectively within an organization, can reduce project time, improve quality as well as minimizing the need to ‘reinvent the wheel.’ Projects are a rich source of knowledge for an organization and especially suited for learning. Yang, Chen, and Huang (2012) suggested, that pre-project planning could contribute to project performance relating to cost, scheduling, and operational features. Requirement definition management (RDM) is the process of eliciting documenting, analyzing, agreeing to the requirements of the projects and then controlling, managing, and overseeing changes, and risk (Yang, Chen, & Wanga, 2015). Yang et al., (2012) asserted that project requirements specification is the process of defining and preparing projects for execution. Poor project requirements definition and management (RDM) are one of the leading causes of project failure. Project knowledge deals with knowledge of resources, functional requirements, work products, budget, timing, milestones, deliverables, increments, quality targets, and performance parameters in construction projects, knowledge includes data, information, lessons learned, best practices required to understand, develop, prepare, realize, and terminate a project (Yang et al., 2015).

Knowledge in the construction sector is divisible into three categories, domain, organizational, and project knowledge (Yang et al., 2015). Simply stated, it is imperative to re-use experience and apply lessons learned in future construction projects, and that proper preparation of works contributes substantially to the success of the execution phase (Fuller, Ruikar, & Carrillo, 2013).

Risks have a significant effect on project management performance in terms of time, cost, and quality. The consequences of risk in the construction sector are extremely high and acute in the developing world including Sub-Saharan Africa (Chan & Ameyaw, 2015). The prevalence of the magnitude of risk in the construction industry has raised the essence of project risk management by the construction contractors in Sub-Saharan regions (Low & Babatunde, 2013). In project management, problems could arise due to incompetence on the part of an employee, machine malfunctioning, and specification change in a project resulting from an unforeseen change in the market condition. Cavaleri, Firestone, and Reed (2012) classified problem-solving approaches into vertical and horizontal, also lends itself to the following four problem-solving patterns (PSP); open, closed, frozen, and mobilized.

Project life cycle is the most important value driver of Public-Private Partnership (PPP) (Chan & Ameyaw, 2015). The three dimensions that influence risk management activities are the life cycle considerations and long-term risk allocation; stakeholder perspectives; and project risk management (Chan & Ameyaw, 2015). The application of integrated risk management system (IRMS) will improve the transparency and credibility of risk management within PPP projects. The application of IRMS could lead to

assigning appropriate procedures in the risk management process over the various phases of the project life cycle for each contracting party. IRMS can also increase the general awareness of risk management and possible risk control measures for public and private contracting parties (Chan & Ameyaw, 2015).

Hanafizadeh and Osouli (2011) established that “control addition” and “re-sequencing” are the two selected practices for accomplishing business processes re-engineering projects. The “control addition” requires a significant role of a workforce in the organizations, recruitment process for an efficient redesign. Designing a recruitment process requires the accurate estimation of the quantity and quality of the companies required workforce (Hanafizadeh & Osouli, 2011). The identification of individuals with the requisite qualifications for a specific job, and selection of individuals who have the best capabilities, per the desired jobs specified criteria are necessary (Hanafizadeh & Osouli, 2011). Theorists and practitioners recommend for the improved performance of all steps, central recruitment by the human resources management division, where competent and skilled experts are working (Hanafizadeh & Osouli, 2011). Re-sequencing processes to improve the recruitment process entails the establishment of a human resource team in each organizational unit. These human resource teams, often may consist of experts, entrusted to perform activities related to the recruitment of qualified and competent specialists in their organizational unit (Hanafizadeh & Osouli, 2011).

Project managers need to perform administrative activities, engage in knowledge sharing, and find how to separate or integrate the brands (Thommie, 2012). The administrative role requires project managers to collect information on projects regarding

similarities and differences and then arrive at solutions. Knowledge sharing becomes imperative in inter-organizational multi-project setting due to a high degree of ambiguity within the projects. The path of communication in the organization is the team and in the line organization (Thommie, 2012).

Knowledge Retention

Johansen, Halvorsen, Haddadi, and Langlo, (2014) stated that projects have uncertainties viewed as positive effects and adverse effects. Risk management in a project should begin as early as possible in the project lifecycle. Johansen, Ekambaram, and Hald (2014) supported this view and indicated the three different ways that uncertainties in projects can manifest. These are operational uncertainty (internal uncertainty), strategic uncertainty (external uncertainty), and contextual uncertainty (external uncertainty). These uncertainties can increase and decrease throughout the project due to external uncertainties. The attribution to the root causes of uncertainties often points to the lack of available information, available knowledge, or competence (Johansen et al., 2014). The first uncertainty in project management relates to the decisions made in the planning and execution phase. The next, attention shifts to the selection of the appropriate concept to deliver the product. After accomplishing the previous step, the next step becomes how to deliver the project per the contract. From these views, therefore, it behooves project stakeholders hired to manage and deal with different uncertainties in every phase of the execution process (Johansen et al., 2014).

Johansen et al., (2014) suggested a nine-step framework for identifying, analyzing, and following up on uncertainty management. The first two steps of the

framework are for preparing the process. Steps 3-7 are for organizing workshops required in identifying, analyzing, and developing measures to deal with uncertainties of the project. The steps 8-9 are follow up on the uncertainty over the project lifecycle. In sum, the purpose of these processes is, to establish and update the key stakeholders that own the objectives; identify, evaluate and decide action on opportunities; identify, assess and decide on an action on threats; and implement and follow-up activities from the workshop. The human factor is an important part of the practical uncertainty management approach. There is a need, therefore, to involve the right people in the process and must have the urge to deal with risks (Johansen et al., 2014).

Ramazani and Jergeas (2015) recommended three main areas that the educational institution should consider when developing and preparing future project managers. These three areas are, developing critical thinking to deal with complexity, develop the interpersonal skills and leadership as opposed to just technical skills, and prepare project managers for engagement within the context of projects. Ramanazi and Jergeas stated that professionals and scholars after selecting the right individuals to manage projects, the next most important thing is continuous education and training for these persons. Modern project management is always dealing with complexity, uncertainty, and continual technological and organizational changes. The need for adaptability, good interpersonal relationship, and technical competence becomes necessary (IPMA, 2014). The results of the study by Ramanazi and Jergeas indicated that project management graduates need to have strong critical thinking and leadership competencies such as communication and team working skills, but as it stands, they do not have the necessary competence in these

fields. Traditional project management education has excelled in providing an extensive knowledge base for learners, but it is not always sufficient in many areas of management education and corporate training (Ramazani & Jergeas, 2015).

The project-based organization (PBO) is becoming a common practice most industries. The presence of PBOs' poses some complication arising from information and knowledge management due to the complexities that exist in different organizational types (Soares & Almeida, 2014). Knowledge sharing is essential in supporting organizational growth. An organization that has continuously increased its knowledge-based stands the advantage of better dealing with uncertainties of the future such as technological, market, and economic changes. Unfortunately, effective knowledge sharing has remained a challenge to project-based organizations (Bartsch, Ebers, & Maurer, 2013). Ineffectiveness in knowledge management is an impediment to organizations to share knowledge desired to work in PBO (Soares & Almeida, 2014). The intention of knowledge sharing and integration with an organization is to avoid reoccurring error on the project (Pemsel & Wiewiora, 2013). It is prudent for PBO to capture continuously the knowledge learned from past projects to improve on other future projects. Knowledge retention in organizations is crucial in supporting the strategic goals of the organization through project selecting and execution. Holzmann (2013) indicated that knowledge management and transfer in the field of project management would gain popularity in future research studies.

Verhoeven, Gruis, and Venselaar, (2015) found numerous studies conducted in supply chain management; however, the focus centered on the formal aspect of

implementation within the organization. The inclusion of the workplace social aspect appears relegated to the background although considered as crucial to the success of SCP implementation in the construction sector (Verhoeven, Gruis, & Venselaar, 2015).

Leadership and trust often lead to the shared understanding of the strategic goal of the organization (Boies, Fiset, & Gill, 2015). The understanding of the management of the social interactions in the workplace, influence trust required for the successful implementation of supply chain collaborating (Verhoeven et al., 2015).

The absence of shared understanding between leadership and shop-floor employees has shown to be a serious obstacle in the development towards SCP, and leadership role is important to overcome that nuisance. Management attention to processes is important on the shop-floor level by stimulating shared visions on strategic needs and promoting leadership and trust. The procedure can help professional in developing fruitful SCP. Leadership and trust go hand in hand, and that is a truthful description and reflection of actual shop-floor experiences (Verhoeven et al., 2015). Assey (2012) stated that the supply chain management (SCM) includes all activities and network with partners, such as suppliers, mediators, third party service providers, and customers. Verhoeven et al. suggested that as much as SCM is important to the world's trade, it is not complete. To ensure efficiency in SCM, it is important to understand the principal function, and the role played by each function in the SCM.

Organizations have been battling with effective business-to-business (B2B) services (Hawkins, Gravier, Berkowitz, & Muir, 2015). However, the limited research on examining the impact of procurement process on the supplier's ability to deliver service

quality could denote a significant gap in current knowledge. The buyer outlines the requirement definition for the vendor, and communication between the customer and vendor concerning B2B service quality occurs as well. Regardless of the communication, there is still no effective monitoring of the supplier. The internal customer's level of commitment to the procurement and the allocated procurement lead-time affect how adequately the buyer defines the requirement for the supplier (Hawkins et al., 2015). Internal customers' commitment to monitoring supplier risk management appears to enhance performance outcomes more than focusing on individual risk monitoring and mitigation strategies (Hoffmann, Schiele, & Krabbendam, 2013). In public service commitment, the greater the perceived risk, the higher the dedication to administrative oversight and monitoring. The result leads to the improved buyer and supplier collaboration (Grudinschi Sintonen, & Hallikas, 2014).

Stakeholders

Li, Arditi, and Wang (2013) noted, that stakeholders could differ from one group to the other and in many instances; stakeholders seek to prevent jeopardizing vested interests. Governments emphasize the potential economic benefits generated by the project while the community focuses on sustainable land use. Pressure groups have the motive of maintaining ecological and environmental sustainability, and project-affected groups mainly consider tangible compensation (Li et al., 2013). To satisfy a particular vested interest, stakeholders usually employ strategies to affect project decision-making in a way that matches their specific goal. The knowledge of stakeholder's entrenched interest strategies is helpful for project managers in predicting stakeholders' likely

behaviors and managing the stakeholder environment more systematically (Sun, Yung, Chan, & Zhu, 2016). Stakeholders can increase the attention of project managers by using an appropriate strategy in satisfying their claims and thereby influencing project success (Li et al., 2013).

The purpose of stakeholder management is often to gain stakeholder support in project implementation and to make project activities issue-driven rather than stakeholder driven (Mok, Shen, & Yang, 2015). To achieve this purpose, education, communication, mitigation, and compensation are essential the activities that the project team should continuously undertake during the entire stakeholder management process (Mok et al., 2015). Stakeholders' engagement in the planning, decision-making, and implementation stage reduce conflict. Stakeholders' engagement is a management tool to champion ensuring collaboration and establishing shared goals. Shen and Yang (2015) noted that engagement increases stakeholders' knowledge of the project, participation, and limiting their ability to be an obstacle to the project's success. The four critical stages in mega construction projects are stakeholder identification, classification, analysis, and strategy development (Mok et al., 2015). The purpose of stakeholders' management in a mega development project is to the project as practical as possible. Continuous communication, education, mitigation, and rewards are the key to achieving stakeholders' engagement (Mok et al., 2015).

Stakeholder structure and interests vary with personal spatial distance from the project, with stakeholders gaining higher salience as they become geographically closer to the project (Mok, Shen, & Yang, 2015). The interests and actions of stakeholders at

different spatial scales undeniably seem influenced by locational factors such as local culture, media, political systems, and regulations. In massive construction projects, Chou and Yang (2012) suggested that placing focus solely on the stakeholder management process at early project phases is insufficient to manage stakeholder claims in complex project environments. Fully illustrating the stakeholder management process at every project stage along the entire life cycle of construction projects undertaken by the government remains a critical undertaking in such projects (Chou & Yang, 2012).

Stakeholder, individual, and organizations play unique roles in construction projects. Stakeholders provide resources needed by the organization and often have controlled the flow of resources in the process. Stakeholders influence the survival of the organization (Trigunarsyah, Coffey, & Heravi, 2014). Project managers and owners should adopt improved decision-making strategies by creating a plan that will effectively involve stakeholders from the start of the project to the completion phase. The early identification and effective involvement of different stakeholders and members in projects are paramount during the project life cycle (Trigunarsyah et al., 2014). Early identification and involvement of stakeholders in the initial phases of the project is the key to success (PMI, 2013). There is the need for management to involve stakeholder in every stage of the project management plan. The number of stakeholders in a project introduces some level of complexities especially when the number is large (Bal, Bryde, Fearon, & Ochieng, 2013). The six steps to consider when engaging stakeholders are identification, relating stakeholders to different sustainability-related

targets, prioritization, managing, measuring performance, and putting targets into action (Bal et al., 2013).

Trigunarsyah, Coffey, & Heravi, (2014) proposed adding a temporal dimension to the stakeholder management theory and assess the implications for firm-level competitive advantage. Verbeke and Tung (2013) argued that an organization's competitive edge primarily depends on its content for stakeholder management related, transformational shift over time. Stakeholders provide resources at the start of the business to the fund. The stakeholders' agenda for projection to businesses changes later to institutional theory thinking. The PMI (2013) stated that to conduct a successful project from the inception stage to the completion stage it is generally acceptable that multi-stakeholders are involved to contribute to the project in a fashion manner. Stakeholders' contribution on a high-level, often leads to high project performance and customer satisfaction. The expeditions resolution of conflicts often also results in high project performance (Trigunarsyah et al., 2014). However, there is the need for a consistent level of participation for every stakeholder. Stakeholders, such as executive sponsors and project managers accept the criticality of project completion on time, meeting customers' specification and ensuring commercial success. Arguably, it is important for stakeholders to form a partnership with each other party appropriately and reciprocally to contribute to the development and success of every project (PMI, 2013).

Leadership

Mohammed, Othman, and D'Silva (2012) stated that the transformational leadership theory was about developing people. Organizations judge effective leaders by

their action to bring changes to their organization. The binding of a leader and follower towards a common purpose therefore serves to achieve the goals and vision of the organization (Aga, Noorderhaven, & Vallejo, 2016). Kissi, Dainty, and Tuuli (2013) indicated that the transformational leadership of portfolio managers has a positive and significant relationship with championing behavior. Lee, Almanza, Jang, Nelson, & Ghiselli (2013) supported the contention as consistent with innovating behavior among immediate followers. The claims hold true in project environments in which portfolio managers demonstrate transformational leadership to drive innovation-championing behavior among project managers. Followers have the perception that individual managers will offer support if there is a failure in implementing innovative solutions. The assumption made could lead to improved project performance in the organization (Kissi et al., 2013).

Transactional leadership consists of rewards and recognition, and such leaders emphasize the use of extrinsic motivations to shape goal setting to strengthen organizational culture, structure, and strategy (Mohammed, Othman, and D'Silva, 2012). The leadership styles such as transformational, transactional, when adroitly adopted by the team leader has an operational effect on the development of learning since there are strategic resources within the team and the organization (Mohammed et al., 2012). When concomitantly displayed, transformational and transactional leadership approaches demonstrate a caliber and ability akin to an ambidextrous individual. The ambidextrous leaders often offer the necessary direction for goal achievement required by the team. Diligent leaders show interest in the team, which is helpful in creating a collectivist and

positive work environment and successful team (Deichmann & Stam, 2015). Charismatic leaders typically display an assured, supportive, argumentative, precise, and verbally non-aggressive communication style. Supportive communication of a leader enhances knowledge donating behaviors to the leader and knowledge collecting behaviors from the leader.

Charismatic leaders often can give a team direction and purpose (Naaranoja, Kazmi, & Asiya, 2015). Senior managers who use a transformational leadership style can better rally the support of followers to make changes. Transformational leadership styles and abilities are necessary for successfully managing organizational change. Charismatic leaders have specific personality traits that allow them to articulate the vision and appeal to the project team members to make their commitment (Aga et al., 2016). Charismatic leaders also look beyond individual interests to the pursuit of organizational benefits, such as ERP project success. Executive managers displaying charismatic leadership have a significant influence on the improvement of organizational performance (Naaranoja et al., 2015).

The adoption of leadership knowledge when linked to customer knowledge management, advances knowledge management overall. The implementation of customer knowledge management influences organizational performance through project performance due to the close relationship existing between the two (Yang, Huang, & Hsu, 2013). The improvement in project performance also leads to the improvement in organizational performance. The implementation of customer knowledge management influences organizational performance through project performance. Projects with a high

level of data complexity are more likely to be successful in training and education performance when there is a high degree of knowledge sharing than projects with a low level of data complexity. Projects with a high level of data complexity could involve complicated tasks, coupled with uncertainty, and high risk (Yang et al., 2013).

Conversely, it is hard to manage the knowledge for projects with high complexity and uncertainty. Knowledge storage and sharing enhance team communication and an essential ingredient for integrating knowledge from different sources. Projects with a low level of data complexity, on the other hand, are more likely to be successful in delivery performance when they experience formal methods for knowledge acquisition than projects with a high level of data complexity (Yang et al., 2013).

Hoffmeister et al. (2014) stated that idealized influence, inspirational motivation, individualized consideration, and intellectual as the four dimensions of transformational stimulation relevant to the improvement of workplace safety. Idealized influence encourages leaders to become role models by doing what is right by focusing on safety, instead of profitability (i.e., focusing on performance pressures). Hoffmeister et al. (2014) indicated that when leaders demonstrate inspirational motivation, they challenge individuals to go beyond personal needs for the collective good and to achieve a level of safety performance that surpasses the minimum safety standards. Intellectual stimulation encourages leaders to challenge employees to develop innovative solutions to safety related issues (Hoffmeister et al., 2014). Finally, individualized consideration encourages leaders to show personal concern for employee safety and well-being. Transformational and transactional leadership style linked to positive safety successes, such as

improvement in safety climate, increased safety behavior lifestyle, the decrease in injuries and accidents. Leadership programs aimed at core values, solid skill, and behaviors, enhances the competencies of employees (Hoffmeister et al., 2014).

Shetach (2011) classified the full scope of hazards in the way to effective project and decision-management in teams, and to present team leaders with a practical set of guidelines for coping with those obstacles, towards achievements. Shetach noted that it is important to identify the challenges that stand in the way of implementing an effective decision. An understanding of the nature of potential disturbances can enable taking suitable precautions toward coping with them and managing the implementation processes more efficiently (Shetach, 2011).

Summary and Transition

The purpose of this quantitative study was to examine the correlation of critical variables of time, quality, safety, environmental impact, and site disputes with budget. The dependent variable for the study was budget and the predicting variables were time, quality, safety, site disputes, and environmental impact. Barnes' theory of "iron triangle", Heinrich's domino theory, Taylor's theory of scientific management, Drucker's theory of strategic management, and Edward's stakeholders' theory helped to sharpen the understanding of the underlying principles of project process in various organizational systems. The literature review encapsulates project failure, motivation and project success, project knowledge, stakeholders, knowledge retention, leadership, safety, project dispute, and environmental impact. The findings of this study could be of significance, as

the knowledge could help bridge the practitioner and academic deficit in understanding on project success.

Section 2 encompasses a restatement of the purpose statement, the role of the researcher in data collection process, and participant specifics, including eligibility criteria to participate in the study. The rationale for the research method and design, and details on the population and sampling procedure presented in Section 2 provide further details specific to this research. A description of the instrument for data collection, and the pertinent information on the statistical analysis, also represent important aspects of this section. Section 3 represents the execution of the study, expressed with a description of the research steps and the data collection and analysis of the study followed by the presentation and findings of the study results.

Section 2: The Project

The purpose of this quantitative study was to examine the association between predictive variables of time, quality, safety, environmental impact, and site disputes and the dependent variable budget. The study may be of significance to bridge the current practitioner and academic knowledge deficit on the definition and estimation of project success. The findings of the study may also contribute to the identification and reduction in the inefficiencies in project management and performance. In addition, the findings contribute to positive social change as project managers and business leaders use the knowledge to maximize the use of time and budget to provide affordable buildings to the community.

Purpose Statement

The purpose of the quantitative correlation study was to examine the relationship between time, quality, safety, environmental impact, site disputes, and budget. The predictor variables were time, quality, safety, environmental impact, and site disputes. The dependent variable was budget. The target population for the study was the 158 building construction companies in the Greater Accra region of Ghana. The findings from the study may raise the awareness of project managers and leaders in construction companies regarding the appropriate and comprehensive estimation of building projects success. The knowledge from the findings of this study may contribute to increasing the success for all stakeholders. Society may also benefit from the findings as greater project success potentially confers construction companies with financial abilities to offer more affordable and higher quality homes for Ghanaian residents.

Role of the Researcher

The role of a quantitative researcher is to select participants, collect data, analyze data, and present findings (Kyvik, 2013). The data collection for this study commenced after I received approval from the Walden University institutional review board (10-21-16-0306753). After receiving a participant appointment, I visited the designated place in person with a hard copy of the questionnaire with the view toward obtaining responses through a direct face-to-face administration of the survey (see Callaert, Londoni, Looy, & Verganti, 2015). The Walden University IRB has rigorous ethical guidelines and protocol to protect the participating in studies, which I adhered to in the current study.

All participants received respectful and ethical treatment with protection from breach of confidentiality and anonymity and physical harm. Per the Belmont Report (1979), the researcher needs to provide the participants a consent form to sign as an indication of willingness to participate in the study. The consent form for this study included information about the research to facilitate participation, pursuant to full disclosure. Participants could withdraw at any time from the study without any consequence (The Belmont Report, 1979). Ensuring the confidentiality and personal information of participants necessitated using codes, which also helped in the analysis of data. To ensure the protection of participants, the data from this study will be stored in a safe place for at least five years from the completion date of the study. Such safety measures will ensure compliance with university guidelines. After this period of five years, the provisions include destroying all text data, shredding and recycling paper data records, and deleting computer files using software from computer and storage devices

associated with this study. These measures will safeguard the data in keeping with guidelines of The Belmont Report (1979).

Participants

The selection criteria for the participants in the study included only project managers and leaders in the building construction sector in Greater Accra. The inclusion criteria entailed project managers and leaders with a minimum of 5 years experience and those who handled multiple building construction projects. The other eligibility criteria included project managers and leaders with PMP (project management professional) or any other project management qualifications and/or certifications. The GREDA database served as the resource for the retrieval of contact numbers, e-mail addresses, and postal addresses of all 158 respondents from the registered list of members. Eligible, qualified, and screened participants recruited through telephone calls and e-mails were scheduled for an appointment on a date and time of their convenience, a principle suggested by researchers (James, 2015).

After appointments were scheduled, field data collectors visited the designated place in person with a hard copy of the questionnaire to gather responses through face-to-face administration of the survey (see Liu & Wang, 2015). The assistants included graduates from universities in the region who were trained and deemed qualified to assist in administering the survey. For this study, the traditional approach of a pen-and-paper survey to collect data from the participants was necessary because in Greater Accra Ghana Internet connectivity is not as advanced as it is in the United States. I did not anticipate any problem getting access to the participants (see Campbell, Cherry, Ryerson,

& Jones. 2014). In the study, informing the participants about the purpose of data collection and treating such information as confidential was important (see Burgess-Proctor, 2015). Instead of identifying participants with personal names on the survey paper, I used codes and numbers to ensure anonymity. There was no incentive offered to participate in the study other than communicating the possible positive social change and other associated benefits that could result from the study.

Research Method and Design

Research Method

The research methodology chosen for this study was quantitative. The rationale for choosing quantitative methodology over qualitative methodology hinged on the need to assess the relationship between the identified predicting variables and the dependent variable (see Nimon & Oswald, 2013). The examination of the relationship between research variables required data collection and analysis using a specific instrument that aligned with the research objectives. The Six KPI instrument developed by Ngacho (2014) was used to measure the relationship between the dependent variable and predicting variables. Unlike qualitative methodology, a quantitative study requires the use of statistical analysis (Carayon, Kianfa, Li, Xie, Alyousef, & Wooldridge, 2015). The Pearson product-moment correlation coefficient was used to analyze the responses from the survey administered to project managers in Accra, Ghana. Because the research involved a relatively large sample, the findings could be generalized to building construction companies in Ghana and to other developing countries with a similar project management environment. The reason for choosing the quantitative method over mixed

methods and qualitative research was that it was an efficient way of gathering information from a large sample drawn from the population (see Masue, Swai, & Anasel, 2013). With quantitative methodology, the researcher can apply a statistical test to analyze the data (Carayon et al., 2015).

Research Design

The correlational design was needed for the study. The statistical technique of correlation aided in examining the relationship between budget (dependent variable) and time, quality, safety, site dispute, and environmental impact (predicting variables) and in measuring the relative strength of association between these variables (see Washburn, 2012).

Regression and correlation were useful for testing the null hypothesis and discerning any association between the dependent variable and predicting variables (see Ngacho & Das, 2014). Careful consideration prompted choosing the analytical technique of correlation over regression. Computing the correlational coefficient was a useful approach in measuring the strength of the linear association between the dependent variable and the predicting variables (see Puth et al., 2014). Examining relationships of cause and effect requires quasi-experimental and experimental designs (Orcher, 2014). Because my objective was examining the associations between variables, not cause and effect, quasi-experimental and experimental designs were inappropriate for this study.

Population and Sampling

The population of the study was property developers from the Ghana Real Estate Developers Association (GREDA). The GREDA is the umbrella body for the housing

development companies in the construction industry of Ghana. Opting for simple random sampling helped meet the objectives of the study as this technique ensured the focus of collecting data from the cross-section of appropriate and qualified participants in the building construction in Greater Accra. The GREDA database that contains the study population in Accra included 158 project managers. Using the sampling function of Excel helped me to randomly select and administer the survey to participants. Researchers have used the 2013 version of the Microsoft Excel RAND sampling function to randomly select participants in a study (Heist, 2011), and this feature aided in random participant selection drawn from the population of project managers. Administering the survey only to randomly selected participants ensured every member of the population had an equal chance for selection. Simple random sampling of participants from a population ensures that every member stands an equal chance of selection (Acharya, Prakash, Saxena, & Nigam, 2013). A large randomly selected sample also makes study findings generalizable to other populations with similar characteristics (Aune-Lundberg & Strand, 2014).

The factors considered when calculating the sample size for the study were the power of a test, test effect, significance level, tail test, and model (test). Power analysis was critical in calculating the sample size required so that I could reasonably detect the effect of a given size. The power is the probability that the researcher correctly rejects the null hypothesis when the alternative hypothesis is true (Ellingson, 2013). Using the power analysis helped me to calculate the minimum sample size required in a study of construction project management professionals in the Greater Accra Region. The factors that determine power are the sample size, alpha, and magnitude of the effect in the given

population. Tabachnick and Fidell (2007) stated that to determine the proper sample size, statistical tests and power are imperative. Statistical power when set at 0.8 or 80% generally means there is a 20% chance of accepting the null hypothesis in error. The conventional medium power used was 0.8, with a medium effect size of 0.3, to measure the magnitude of the correlation between the predicting and dependent variables. The hypotheses were nondirectional, which necessitated the use of the two-tailed test. The level of significance was 0.05 (see Ellingson, 2013). I used the G*Power 3.1 software to determine the minimum sample size. When using the G*Power to calculate the sample size with the Point Biserial model for correlations at a two-tailed level, an effect size of 0.3 (medium), an α of 0.05, and a power of 0.80, the minimum sample size was 82. A type II error can occur when the researcher fails to reject a false null hypothesis attributed to too small a sample size. Collecting data from 82 participants minimized the probability of committing a type II error. The G*Power calculation indicated the participation requirement of at least 100 project management professionals, and the recruitment of these individuals from the Greater Accra Region denote alignment with the study objectives. With the expected response rate from the participants, the number was more than adequate to meet the minimum sample size and minimized the probability of committing a type II error in the statistical analysis.

A typical survey response rate is around 7% (Malicki & Marusi, 2014); therefore, calculating the sample size for 7% response rate based on the 82 minimum required sample size was 5.7, which was considered low. Administering 150 surveys, generated a 72% response rate, which was in keeping with the minimum required sample size

determined using the G*Power 3.1 software. The analysis of the data from the completed surveys followed using appropriate statistical techniques. The return rate of 72% was possible because meeting with the project managers on an agreed date helped to ensure participant completion of surveys. With this data collection strategy, meeting the required response rate did not pose any difficulties.

Ethical Research

Ethics in research is about protecting the individuals and organizations involved in the study. Researchers must follow all procedures when conducting research. Adhering to ethical guidelines is critical throughout the research process (Mathew, Miles, & Huberman, 1994). There were no challenges in ensuring conformance to ethical research, including procedures outlined by the Walden University IRB to protect the rights of the participants. Participation was voluntary, and none of the participants was in any way coerced to take part in the study. The purpose of the study communicated verbally and in writing ensured full disclosure, and participants signing the consent form before completing the questionnaire (see The Belmont Report, 1979). Data collection commenced after IRB approval. The identity and responses from the participants and the organizations will remain confidential (Taylor, 2012). The data storage and safekeeping measures included locking the consent forms in a cabinet that only I had access to. I also stored electronic data on a password-encrypted computer with a backup copy in a locked cabinet. The data storage and safekeeping of the data for at least five years after completing the study will ensure compliance with the protection of data as required by

the university, after which the researcher must destroy the data (see The Belmont Report, 1979).

Data Collection Instruments

The quantitative instrument known as the Six KPIs' developed by Ngacho and Das (2014) served as the data collection instrument for the study. The estimation of project success originally guided the development of the instrument to collect data and examine the relationship between time, quality, safety, site disputes, environmental impact, and budget (Ngacho & Das, 2014). The high level of validity in predicting general project success represented adequate justification for choosing the Six KPIs' as the research instrument for the study. The rationale for choosing the Six KPIs' as the research instrument for the study stemmed from its high level of validity in predicting overall project success. The Six KPIs' is a 5-point assessment scale from "strongly disagree" to "strongly agree" was used to rate the overall project success using Six KPIs'. The project managers as participants in the study recorded responses to the survey. Survey statements were based on a Likert scale of 1 (strongly disagree) to 5 (strongly agree) for each statement/question in the survey. The score from the overall survey statements from the participants provided the numerical data for analysis in respect of examination of degree and extent, or lack thereof in correlation between the six main factors, identified as Key Performance Indicators by the authors of the research instrument (Ngacho & Das, 2014). The response choice of not applicable, for any non-response indicated missing data, possibly when the participant did not have an answer to a survey statement or question. Addressing the missing data included the approach of

using an educated guess as to why the data was missing, and the use of median replacement function in SPSS served to reduce potential biases. The smaller the score for each survey question may suggest the result of the project as less desirable, and a larger score may indicate that the project has a higher beneficial effect on the business and expectedly the same propositions envisioned by the authors of this instrument would similarly hold true in this study (Ngacho & Das, 2014).

The purpose of this quantitative study with a correlation design was to examine the degree and strength of any relationships between the critical variables of time, quality, safety, environmental impact, and site disputes with budget, Neuhauser, & Ruxton, 2014). The dependent variable was budget, and the predicting variables were time, quality, safety, site disputes, and environmental impact. The Six KPIs' research instrument developed by Ngacho and Das (2014) used in a study to understand project success in the building construction companies in Kenya, was also used for data collection in the study.

Researchers have viewed the traditional performance criteria using time, cost, and quality as a limiting in assessing project performance. Erickson and Westerberg (2011) suggested the inclusion of environmental impact; and land dispute in the study of project success in the construction sector (Ngacho & Das, 2014). The performance measures that merited consideration include safety of the project site, land dispute, and environmental impact, (Erickson & Westerberg, 2011). Researchers have expressed concern of the frequent study in isolation of factors attributed to project management success, such as the environment, site disputes, and customer satisfaction frequently (Ngacho & Das,

2014). Ika, Diallo, and Thuiller (2012) introduced the criterion known as the five pillars (cost, time, quality, land dispute, and safety) of a development project to evaluate development projects construction. The five pillars initially appeared inadequate in the assessment of project success in the construction industry because these parameters did not include the environmental impact, considered important when embarking on developmental projects to cater for economic and social needs of the population (Ngacho & Das, 2014).

Ngacho and Das (2014) introduced the Six KPIs' to overcome the limitation in project execution in respect of cost, time, and quality, universally recognized as critical success factors in successful project completion, and since frequently used as the yardstick to measure the performance of development projects in the construction industry. The Six KPIs' is a multidimensional approach to study project success in the construction sector. In this approach, the researchers Ngacho and Das incorporated environmental, ecological sustainability and objectivity often considered necessary to assess project performance in developing countries and overcame the limitation of previous researcher led studies. In the survey "A performance evaluation framework of development projects: An empirical study of Constituency Development Fund (CDF) construction projects in Kenya" by Ngacho and Das (2014), the stakeholders were involved in meeting early in the identification, planning, implementation, and monitoring and control phase of the developmental projects. The Six KPIs'' is a relatively new instrument, constructed and used by Ngacho and Das (2014) in a study in Kenya, Africa.

The purpose of validity and reliability is to provide relevant details of the dependability of the instrument, processes, and the study. Validity relates to how well a test measures what is intended to be assessed (Alwin, 2015). Reliability is the degree to which an assessment tool produces stable and consistent result over time (Rindskopf, 2015). The use of Cronbach alpha as a statistical tool helped to estimate the validity and reliability of the research instrument. Schiphof, de Klerk, Koes, and Bierma-Zeinstra (2008) expressed reliability in terms of inter and intra-rater agreements, kappa, percentage agreement or correlation coefficient. An instrument with a correlation coefficient above 0.8 garners recognition as very good, while between 0.6 and 0.8 rates in the range deemed good, and between 0.4 and 0.6 as moderate (Schiphof, de Klerk, Koes, & Bierma-Zeinstra, 2008).

To ensure adequate validity and reliability of Six KPIs', Ngacho and Das (2014) used the Cronbach's alpha coefficient to test budget (dependent variable) and time, quality, safety, site disputes, and environmental impact (predicting variables). The scale of the research instrument may receive the stamp of reliability when the Cronbach's coefficient alpha is above the threshold of 0.70 and greater than an acceptable minimum of 0.60 (Schiphof et al., 2008). Ngacho and Das (2014) conducted a pilot test on the reliability of the Six KPIs'. The pilot test consisted of 30 respondents. Ngacho checked the scores obtained from survey result data through the scores of the standard deviation. The standard deviation of each of these variables found was greater than 1 except on two variables, namely, "All stakeholders supervised project quality" and "proper medical facility provided" (Ngacho & Das, 2014). The relevance in the literature prompted

retaining of the two variables that maintained low standard deviations in the questionnaire. Ngacho and Das (2014) used the Cronbach coefficient to test the internal consistency of the Six KPI instrument, and the result was above the threshold value of 0.70 and a minimum 0.60 at 0.751 for the 35 variables.

The choice of Cronbach's alpha coefficient of 0.70 complies with Nunnally and Bernstein's (1994) assertion that alpha scores of 0.70 and above as an acceptable reliability score for any quantitative instrument. The Cronbach alpha coefficient score of 0.70 is desirable as the recommended minimum (Vogt, 2007). To determine the validity of the findings, the design of the Six KPIs' based on the project's success variables such as time, quality, safety, site disputes, environmental impact, and budget. The validity of the construct, Ngacho (2014) achieved the validity of the construct by working with respondents in the building construction sector to seek the expert opinion on the 35 variables of the Six KPIs'. Ngacho sent the same instrument to professionals with similar expertise to seek for the appropriate coverage of all the items affecting the building construction sector. Testing the user-friendliness and workability of the questionnaire led the experts to recommended minor changes to the instrument to accommodate the educational level of the respondents. In the study, a minimum of 0.75 alpha coefficient received consideration as acceptable. Ensuring the validity of the questionnaire required working with the respondents for appropriate coverage of all the items affecting the performance of the construction sector (Ngacho & Das, 2014).

The authors of the instrument granted permission to use the instrument for this study. The permission letter is presented in Appendix A. Combining the survey with a

series of demographic questions, helped to create a unique questionnaire, as shown in Appendix D. Participants selection did not pose any challenge, as the GREDA database included many project managers. The administration of pen and paper survey aided with the assistance of assistants, helped to gather data (Campbell et al., 2014). The analysis of data collected in this study, included using the quantitative data analytical software SPSS, presented in detail in the appendix.

Data Collection Technique

The GREDA database served as the resource for the retrieval of contact numbers, e-mail addresses, and postal addresses of all 158 respondents from the registered list of members. The efforts at securing appointments on a date and time of convenience of the researcher and potential study subject respectively involved recruiting eligible, qualified, and screened participants through telephone calls and e-mails, a strategy favored by researchers (James, 2015). After obtaining an appointment, visits with assistants in person with a hard copy of the questionnaire with and eliciting responses through direct a face-to-face administration of the survey (Liu & Wang, 2015).

Participant access through GREDA facilitated access, however, there was no prior personal association or acquaintance. To administer a paper and pencil survey, the help of assistants was in conformance with a common research practice (Campbell et al., 2014). Selecting educated and trained assistants helped to their services did not in way influence participant responses. The role of the assistants was mainly to assist in the distribution of the survey (Ngacho & Das, 2014). The assistance of external help was necessary in administering the survey due to the large sample size for the study. Conducting the data

collection in Accra, Ghana, was not possible to use electronic media because of limited access to the internet. With the limitation, to personally survey all participants, using assistants who were business graduates from accredited universities in Ghana aided in administration.

In a study, informing the participants about the purpose of data collection and treating such information confidential is important (Burgess-Proctor, 2015), followed in the research as well. There was no incentive offered to participants other than letting them know about the social and knowledge benefits that could result from the study. Providing clear instructions to participants on completing the survey also ensured accurate responses (Ward & Ponds III).

The aim of the study included collecting a considerable amount of information from a large group of people in a short period in a relatively cost efficient manner. The advantage of quantitative research is in the feasibility of rapid assembly and analysis of by the researcher by using advanced analytical statistical software packages, such as SPSS. Quantitative data analysis is more scientific and objective (Westerman, 2014) compared to other forms of research hence enabling the obtained usefulness in testing new hypotheses or to new theories. The quantitative research could be inadequate to understand information such as the emotions and feelings of the people. Carayon et al., (2015) stated that it is difficult to ascertain how honestly a respondent responds to the items on the questionnaire. After the university, institutional research Board (IRB) approval, the data collection commenced. The final study sample size of 82 drawn, adequately represented the population of 158 project management professional

(Johansen, Halvorsen, Haddadi, & Langlo, 2014). Each of the participants received and completed a survey questionnaire aligned with the objectives of the study, with approval obtained in advance from the developers of the instrument Ngacho and Das (2014).

Data Analysis

Research Question

The central research question for the study was: What is the relationship between time, quality, safety, environment, site disputes, and budget?

Hypotheses

The hypothesis framed for the study is as follow:

Null Hypothesis (H_0): There is no relationship between time, quality, safety.

Environmental impact, site disputes, and budget.

Alternative Hypothesis (H_1): There is a relationship between time, quality, safety.

Environmental impact, site disputes, and budget.

Regression and correlation are useful statistical techniques for testing the null hypothesis, in discerning the association and strength of the relationship between the dependent variable and predicting variables (Puth et al., 2014). With the invocation of the Pearson correlation (r), the data analysis included the appropriate level of statistical analysis. The r is a measure of the linear correlation (dependence) between two variables X and Y inclusive (Puth et al., 2014). The value of r lies between 0 and 1 and could be negative and positive. When r is zero, then it could indicate that there is no linear association between time, quality, safety, site disputes, environmental impact, and budget. In correlation, if r equals 1, that indicates a perfect positive linear relationship

between the variables. When there is a perfect correlation, all individuals sampled would lie exactly on the same straight line with a positive slope (Haerling & Prion, 2014). The interpretation of the strength of relationship entailed using the values -1.0 to -0.5 or 1.0 to 0.5 (Strong), -0.5 to -0.3 or 0.3 to 0.5 (Moderate), -0.3 to -0.1 or 0.1 to 0.3 (Weak), and -1.0 to 1.0 (perfect correlation). The first assumption usually made in using r as a measure of correlation is that the individuals in the sample are statistically independent of each other. The second assumption typically, is that the population for the sampling has a bivariate normal distribution for the two traits of interest (Puth et al., 2014; Haerling & Prion, 2014).

An overview of the data analysis included the characteristics of the projects and respondents' demographic profile and the related descriptive statistics. The principal component analysis used with varimax rotation helped to identify the underlying factors involved in the study (Hair, Black, & Babin, 2013; Malhotra & Dash, 2011). An explorative factor analysis (EFA) also served to assess the performance of the 35 measurement variables. Before carrying out the EFA, confirmation of the overall significance of the correlation matrix and its' factorability entailed testing with Bartlett's test of sphericity and Kaiser–Meyer– Olkin (KMO) measure of sampling adequacy respectively (Rogers, Dossa, & Bilala, 2014). Addressing any missing data in the study included the approach of using an educated guess as to why the data was missing, and the use of functions in SPSS to reduce potential biases. For this study, SPSS Version 20.0 served as the statistical tool to analyze the data.

There are different approaches to hypothesis testing in research. The invocation of the seven-step process statistical hypothesis testing approach ensured a systematic approach to analyzing the propositions in the study (Lane, 1999; Smaga, 2015). In the study, the null and the alternate hypotheses were:

Ho: $p = 0$ – There is no correlation

Ha: $p \neq 0$ – There is correlation

The study reflected a two-tailed test because the hypothesis was non-directional. The population of the study was 158 project management professionals from the GREDA from which randomly selected participants constituted the sample as explained under the topic, population and sampling. The aid of G*Power 3.0.10 software helped to determine the minimum required sample size. The factors considered when calculating the sample size in the study were the power of a test, test effect, significance level, tail test, and model (test) (Bong & Jeehyoung, 2013). The power is the probability that the test correctly rejects the null hypothesis when the alternative hypothesis is true (Ellingson, 2013). Using the power analysis helped to calculate the minimum sample size required in a study of construction project management professional in the Greater Accra Region. Conventionally, statistical power (P) set at 0.8 or 80%, meant, that there was a 20% chance of accepting the null hypothesis in error (Tabachnick & Fidell, 2007; Ellingson, 2013). For the analysis, using a medium effect size of 0.3, helped to measure the magnitude of the correlation between the predicting and the dependent variables. In the study, the level of significance, was set equal to 0.05. When using the G*Power to calculate the sample size with the Point Biserial model for correlations at a two-tailed

level, an effect size of 0.3 (medium), and $\alpha=0.05$, with a power of 0.80, the total calculated minimum sample size was 82. A Type II error could occur when running statistical analysis where the tests could provide results failing to reject a false null hypothesis attributed to too small a sample size. By collecting the 82 responses from participants, and achieving the computed sample size or more, minimized the probability of committing a Type II error.

A typical survey response rate is around 7% (Malicki & Marusi, 2014) hence calculating the sample size for 7% response rate, required estimation based on the 82 minimum required sample size was 5.7, albeit considered low, and warranted expanding the survey in administering to a larger number of participants. In the study, administering 150 surveys led to receiving a 55% response rate, which conformed to the minimum required sample size, determined by using the G*Power 3.0.10 software. Following the data collected using the survey, statistical analysis followed. The participant response rate of 55% was possible because of the personal meeting with the project managers on an agreed date to collect the completed survey. This strategy was critical to achieving the required response rate, and followed a strategy used by other researchers (Szolnokin & Hoffmann, 2013).

The r is a measure of the linear correlation (dependence) between two variables X and Y inclusive (Puth et al., 2014). The value of r lies between 0 and 1, and it could be negative and positive. If r is zero, then this indicates that there is no linear association between time, quality, safety, site disputes, environmental impact, and budget. In correlation, if r equals 1, that indicates a perfect positive linear relationship between the

variables. When there is a perfect correlation, all individuals sampled will lie exactly on the same straight line with a positive slope (Haerling & Prion, 2014). Comparing the p-value from the test to the significant level of 0.05 led to the decision to fail to reject, or reject the Null Hypothesis. The determination was following the decision rule: If $p > 0.05$, fail to reject the Null Hypothesis (H_0) that there was no significant statistical correlation between project budget and time. Conversely, if the $p < 0.05$, reject the H_0 . In the final step, describing the analysis, the outcomes, and the statistical conclusion helped in interpretation of the relationship or association, between the variables time, quality, safety, site disputes, and environmental impact, and budget (Lane, 2013).

The consequence of Type I and Type II error is often misinterpretation (Zhao, Sarkar, & He, 2015) of the study findings could inhibit project managers and leaders' ability to understand the relationship between project success and time. The minimum required sample size of 82 computed using G*Power 3.0.10 software expectedly considerably reduced the probability of committing Type II error in the statistical analysis, as opined by researchers (Tabachnick & Fidell, 2007; Djulbegovice, Hozod, & Ioannidisa, 2013).

Study Validity

The data collection for this descriptive quantitative research included using a random sampling of project managers and leaders from the real estate development from the Greater Accra, Ghana who have at least five years of active participation in project management. The instrument used by Ngacho and Das (2014) in the Kenyan's construction sector demonstrated construct validity of the questionnaire served as the data

collection instrument in the study. Ngacho and Das studied the construction industry and sought the expert opinions of participants on the 35 variables of the Six KPIs' of time, quality, safety, site dispute, environmental impact, and budget. Ngacho and Das administered the same survey to professionals with expertise that matched the sample for the study. The aim of Ngacho and Das was to examine project success in the building construction sector. A test conducted in the Kenyan construction industry on user-friendliness and feasibility of the questionnaire by the experts suggested some changes to accommodate the educational level of the participants. Participants in the study are in the building construction industry in Ghana, and included project managers from the real estate development sector having similar expertise in project management as seen in the Kenyan construction industry.

Ngacho and Das (2014) used a correlation matrix to assess the convergent and discriminant validity of the items on the instrument in the study conducted in assessing project managers in Kenya. The inter-item correlation of the scale in this research instrument, referred to as the Six KPIs', had a mean of 0.100, while the smallest inter-item correlation within each performance measure was as follows: time performance factor: 0.100, cost performance factor: 0.280, site disputes factor: 0.573, environmental impact factor: 0.438, quality performance factor: 0.875 and safety performance factor: 0.338. Correlation coefficient and p -values were as follows: $p > 0.15$ denotes p -value < 0.05 or significant at 5% level, $p > 0.20$ denotes p -value < 0.01 ; or significant at 1% level. The correlations were significantly greater than zero ($p < 0.000$), providing evidence for convergent validity. For discriminant validity to exist, the correlates of each

factor in the correlation matrix require counting by the researcher to determine the number of times each Six KPIs' had higher correlations with elements of other factors than elements of its factor in the correlation matrix. The count, when tallied, should be less than one-half of the possible comparisons of each Six KPI with elements of other factors than elements of its factors in the correlation matrix (Djulgobovice et al., 2013). The examination of the study result revealed that there were 88 violations of discriminant validity out of 378 possible comparisons, hence, indicating the presence of discriminant validity (Ngacho & Das, 2014). The result indicates that the Six KPIs' instrument measures what it purports to measure (Trochim & Donnelly, 2008). So, choosing the Six KPIs' instrument developed by Ngacho and Das (2014) was an appropriate means to collection data on time, quality, safety, site dispute, environmental impact, and budget.

The potential threats to statistical conclusion validity of the study are the Type I and Type II error. The null hypothesis was that there is no difference between project budget and cost. The Type I error occurs with the rejection of the null hypothesis, by concluding that there was a difference between budget and time. Type II error also occurs when the researcher fails to reject the null hypothesis and concludes that there was no difference between time and budget. The consequence of Type I and Type II error is that the misinterpretation (Zhao et al., 2015) of the study findings could inhibit project managers and leaders' ability to understand the relationship between budget and time. To curb Type I and Type II error, the population set at 95% confidence level and 5% alpha level met the accepted criteria considered appropriate to calculate the sample size for the study (Fidel, 2013; Djulgobovice et al., 2013). Since the research involved a relatively

large sample, the findings could possibly generalize to other building construction companies in Ghana, and to other developing countries with a similar project management environment.

Transition and Summary

The purpose of this quantitative study was to examine the correlation of critical variables of time, quality, safety, environmental impact, and site disputes with budget. The consent form included information about the research, and participants must understand the information and freely and willingly volunteer to participate in the study. After the University, Institutional Research Board (IRB) approval, the data collection began. The identity and responses from the individual and the organizations will remain confidential and undisclosed to safeguard the anonymity and identity of study participants. The statistical analysis principally entailed the invocation of the Pearson correlation technique.

Presenting the findings from the study using tables, figures, charts, and graphs helped to convey to the reader the nuances and finer points of the research and analysis. There was a detailed discussion on the applicability of the findings to the professional practice of business and the implication for social change in the building construction sectors of the Sub-Saharan Africa. From the detailed and comprehensive analysis of data, formulation of specific recommendations for action on approaches and strategies to minimize and potentially improve project success will follow in the next section. Recommendation for further study could also serve to contribute to improving revenues, and better business practices. Expressing limitations, and offering a recommendation on

overcoming the limitations of the present study in future research could serve to advance knowledge and continuous improvement in project management related to the construction industry in Ghana, and in other geographies where similar conditions prevail.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of the quantitative correlational study was to examine the relationship between time, quality, safety, environmental impact, site disputes, and project budget. The population of the study was the property developers from the Ghana Real Estate Developers Association (GREDA), and participants in the study included project managers and leaders in the building construction sector in Greater Accra. Data were collected from participants using a quantitative instrument known as the Six KPIs' developed by Ngacho and Das (2014). The objective was to collect data and examine the relationship between time, quality, safety, site disputes, environmental impact, and budget. The predictor variables for this study were time, quality, safety, environmental impacts, and site disputes. The dependent variable was project budget. The results of the analyses indicated that time, environmental impact, and site dispute were significantly associated with project budget.

The collection and organization of the data were followed by the analysis and interpretation of the results. The statistical correlation and regression models helped me to examine the relationship between each predictor variable and project budget. Prior to discussing the results of the statistical tests, I computed descriptive statistics of the demographic variables of the participants followed by a report of the study variables and measures of reliability.

Presentation of the Findings

The aim of the study was to examine the responses of participants to survey questions, which fell under the following research overarching research question of this study: What is the relationship between time, quality, safety, environmental impact, site disputes, and budget? The hypotheses below helped to guide the statistical analyses:

H₀: There is no relationship between time, quality, safety, environmental impact, site disputes, and project budget.

H_a: There is a relationship between time, quality, safety, environmental impact, site disputes, and project budget.

To test the hypotheses, I conducted correlation analyses and simple linear regression models to examine the associations between time, quality, safety, environmental impact, site disputes, and project budget. A final multiple regression model was used to determine whether a combination of time, quality, safety, environmental impact, and site disputes had a significant impact on project budget. Tests included normality and linearity assumptions as well as multicollinearity assessments for the multiple regression models. Before presenting the results of the analyses, I provide descriptive statistics of the demographics and study variables.

Tables 1 to 6 show a summary of demographic data of study participants and include details such as PMP certification, gender, age, highest education level, industry, and years with the company among the 116 study participants. Most participants, both men and women, were not PMP certified (84.5%, $n = 98$); 14.7% ($n = 17$) were PMP

certified. The distribution implies most project leaders in the construction industry in Ghana do not have project management certification or qualifications (see Table 1).

Table 1.

Summary of PMP Certification

	<i>N</i>	<i>Percent</i>
PMP certified		
Yes	17	14.7
No	98	84.5

Most project participants were male, which implies that the construction industry in Ghana is predominantly male. The male participants constituted 90.5% ($n = 105$) with 19.2% ($n = 10$) being female (see Table 2).

Table 2.

Summary of Gender

	<i>N</i>	<i>Percent</i>
Gender		
Male	105	90.5
Female	11	9.5

The largest age group was 31 to 40 and constituted 61.2% ($n = 71$) of the sample. The age group 21 to 30 constituted 19.8% ($n = 23$), and the participants over 51 years of age ($n = 4$) constituted the smallest age group (see Table 3).

Table 3.

Summary of Age Groups

	<i>N</i>	<i>Percent</i>
Age group		
Between 21 – 30	23	19.8
Between 31 – 40	71	61.2
Between 41 – 50	18	15.5
Age 51 and above	4	3.4

For highest level of education in construction engineering, 24.1% ($n = 28$) had an associate's or technical degree. Many of the participants, 62.9% ($n = 73$), had a bachelor's degree, 11.2% ($n = 13$) had a master's degree, and 0.9% ($n = 1$) had some other degree (see Table 4). The education level distribution implies participants with bachelor's degrees dominate the construction industry in Ghana.

Table 4.

Summary of Highest Education Level

	<i>N</i>	<i>Percent</i>
Highest education level		
Associate's or technical degree	28	24.1
Bachelor's degree	73	62.9
Master's degree	13	11.2
Other	1	0.9

When observing industry, almost all participants were in the construction industry (98.3%, $n = 114$), with 0.9% ($n = 1$) both in finance/banking and other (see Table 5).

Table 5.

Summary of Industry Affiliation

	<i>N</i>	Percent
Industry		
Construction	114	98.3
Finance and banking	1	0.9
Other	1	0.9

Finally, for tenure in the construction industry, 34.5% ($n = 40$) stated less than 5 years, 62.6% ($n = 61$) stated 5–10 years, 5.2% ($n = 6$) stated 11–16 years, 2.6% ($n = 3$) stated 16–20 years, and 4.3% ($n = 5$) stated more than 20 years (see Table 6). On average, most employees had been with the company for more the 5 years.

Table 6.

Summary of Tenure with Industry

	<i>N</i>	Percent
How long with company		
Less than 5 years	40	34.5
Between 5 and 10 years	61	62.6
Between 11 and 15 years	6	5.2
Between 16 and 20 years	3	2.6
Above 20 years	5	4.3

The measurement of each study variable entailed taking an average of specified survey responses. Participants completed survey responses to Likert-scale statements scored on a scale from 1 (strongly disagree) to 5 (strongly agree). The smaller score for each study variable indicated the result of the project as less desirable, and the larger score indicated that the project had a higher beneficial effect on the business. The

dependent variable of project budget factors was encapsulated in Survey Questions 1 through 6, and yielded scores that ranged from 1.67 to 4.67 with an average of 3.10 ($SD = 0.66$). For the independent variables of time, environmental impact, quality, safety, and site dispute, the factors related to site dispute were included in Survey Questions 7 to 11 and 16, and scores ranged from 1.67 to 4.67 with an average of 3.34 ($SD = 0.53$). The time factors were embedded in Survey Questions 13, 14, 15, 25, 26, and 28, and scores ranged from 2.00 to 4.50 with an average of 3.22 ($SD = 0.52$). Safety factors were included in Survey Questions 20, 21, 22, 33, and 35, and scores ranged from 1.60 to 4.80 with an average of 3.09 ($SD = 0.71$). The factors related to environmental impact were encapsulated in Survey Questions 12, 17, 18, 19, 23, 24, and 29, and scores ranged from 1.00 to 4.71 with an average of 2.76 ($SD = 0.57$). Quality factors were included in Survey Questions 27, 30, 31, 32, and 34, and scores ranged from 2.40 to 5.00 with an average of 4.02 ($SD = 0.43$). Overall, the average scores for quality factors were the highest and the lowest for environmental impact. Table 7 is a summary of the dependent and independent variables used for analysis.

Table 7.

Summary of Dependent and Independent Variables

	<i>N</i>	Mean	<i>SD</i>	Min	Max
Dependent variable					
Project budget	116	3.10	0.66	1.67	4.67
Independent variables					
Site dispute	116	3.34	0.53	1.67	4.67
Time	116	3.22	0.52	2.00	4.50
Safety	116	3.09	0.71	1.60	4.80
Environment	116	2.76	0.57	1.00	4.71
Quality	116	4.02	0.43	2.40	5.00

Cronbach's alpha was the measure used to assess the reliability of the scores that made up the dependent and independent variables in this study. The alpha value for project budget was 0.63, 0.33 for site dispute, 0.33 for time, 0.67 for safety, 0.63 for environment, and 0.34 for quality. Low alpha values implied that there may have been issues with reliability for each study variable.

Before running the correlation and regression analyses to answer the main research question, I conducted a test for normality to determine whether the dependent and independent variables were normally distributed. Assessing normality necessitated taking into consideration Shapiro-Wilk tests, along with observations of skewness and kurtosis. Table 8 shows the results of these tests. Although some of the Shapiro-Wilk p values were indicative of nonnormal distributions ($p < 0.05$), all the skewness and kurtosis values were within the acceptable range for normality (-3 to 3). This indicated satisfaction of the normality assumption for the study variables.

Table 8.

Normality Checks for Study Variables

	<i>Shapiro-Wilk pvalue</i>	<i>Skewness</i>	<i>Kurtosis</i>
Project budget	0.053	0.09	-0.03
Site dispute	0.002	-0.11	0.79
Time	0.059	-0.13	0.30
Safety	0.001	0.53	-0.22
Environment	<0.0001	0.67	2.61
Quality	0.002	-0.37	0.73

The research question asked, “What is the relationship between time, quality, safety, environmental impact, site disputes, and budget?” To answer this question, I used Pearson’s correlation coefficient to assess the degree and extent of linear association between time, quality, safety, environmental impact, site disputes, and project budget. Table 9 shows the results: Site dispute ($r = 0.29$ [weak correlation], $p = 0.002$), time ($r = 0.50$ [moderate correlation], $p < 0.0001$), and environment ($r = 0.22$ [weak correlation], $p = 0.017$), showed significant correlation with project budget. All correlations were positive, which meant that increases in site dispute, time, and environment scores were associated with an increase in project budget scores. The interpretation from a project management standpoint is that higher costs associated with expenses incurred in respect of the dependent variables elevated total project costs and necessitated an increase in budgetary allocations for completion. Site dispute and environment, however, had weak associations with project budget, whereas the association between time and budget was moderate.

Testing the significance of the correlations between site dispute, time, safety, environment, quality, and project budget entailed using bootstrapping procedures. Effects were computed for each of 2,000 bootstrapped samples, and a 95% confidence interval was computed by determining the effects at the 2.5th and 97.5th percentiles. The bootstrapped 95% confidence interval for site dispute ranged from 0.09 to 0.50. The bootstrapped 95% confidence interval for time ranged from 0.35 to 0.64. The bootstrapped 95% confidence interval for safety ranged from -0.19 to 0.27. The bootstrapped 95% confidence interval for environment ranged from 0.01 to 0.43. Finally, the bootstrapped 95% confidence interval for quality ranged from -0.15 to 0.27. The bootstrapped 95% confidence intervals for site dispute, time, and environment did not include zero. Therefore, site dispute, time, and environment were all significantly associated with project budget.

Table 9. *Pearson's Correlation with Project Budget*

	<i>Correlation</i>	<i>p value</i>	<i>Bootstrap 95% CI</i>
Site dispute	0.29	0.002	0.09 – 0.50
Time	0.50	<0.0001	0.35 – 0.64
Safety	0.04	0.707	-0.19 – 0.27
Environment	0.22	0.017	0.01 – 0.43
Quality	0.06	0.528	-0.15 – 0.27

To further explore the research question, Table 10 shows the results of the simple linear regressions (SLR), with site dispute, time, safety, environment, and quality used as independent variables, and project budget as the dependent variable. Like the correlation results, SLR results indicated significant association between site dispute, time, and

environment with project budget. Individually, these three study variables explained that 5 to 25% of the variability in project budget scores (R^2 values ranged from 0.05 for environment to 0.25 for time). The estimation of site dispute, time, and environment revealed a positive correlation ($\beta = 0.29$ (weak correlation), 0.50 (moderate correlation), and 0.06 (extremely weak correlation), respectively, all $p < 0.05$), which implies that a one unit increase in site dispute, time, and environment scores, will lead to an increase in project budget scores. From a project management scenario, this unit increase reflects the truth, which site dispute and environmental degradation and other issues can be financially debilitating to project expenses and management within budgets. For each model, additionally when observing a plot of the residuals by the fitted values, a histogram of the residuals, as well as a normal probability plot of the residuals, seemed evident and apparent, that all models satisfied the assumptions of normality and linearity.

As demonstrated with the correlation results, these effects were tested using a bootstrap estimation approach with 2000 samples. The bootstrapped 95% confidence interval for site dispute ranged from 0.10 to 0.62. The bootstrapped 95% confidence interval for time ranged from 0.45 to 0.81. The bootstrapped 95% confidence interval for safety ranged from -0.17 to 0.23. The bootstrapped 95% confidence interval for environment ranged from 0.02 to 0.50. Finally, the bootstrapped 95% confidence interval for quality ranged from -0.23 to 0.41. The bootstrapped 95% confidence intervals for site dispute, time, and environment, did not include zero. Therefore, site dispute, time, and environment were all significantly associated with project budget.

Table 10.

Summary of SLR Analyses for Project Budget

Variable	<i>B</i>	<i>SE(B)</i>	<i>B</i>	<i>T</i>	<i>R</i> ²	<i>Bootstrap 95% CI</i>
Site dispute	0.36*	0.11	0.29	3.25	0.09	0.10 – 0.62
Time	0.63*	0.10	0.50	6.09	0.25	0.45 – 0.81
Safety	0.03	0.09	0.04	0.38	0.001	-0.17 – 0.23
Environment	0.26*	0.11	0.22	2.43	0.05	0.02 – 0.50
Quality	0.09	0.14	0.06	0.63	0.004	-0.23 – 0.41

* $p < 0.05$.

For the final analysis, Table 11 shows the results of the multiple regression model, with site dispute, time, safety, environment, and quality, as the independent variables, and project budget as the dependent variable. The results denoted that the predictors explained 29% of the variability in project budget ($R^2 = 0.29$, $F = 8.89$, $p < 0.0001$). When adjusting for all other factors in the model, time still significantly predicted project budget ($\beta = 0.46$, $p < 0.0001$), as did environment ($\beta = 0.22$, $p = 0.030$).

Standard multiple linear regression, $\alpha = 0.05$ (two-tailed), was used to examine the efficacy of site dispute, time, safety, environment, and quality in predicting project budget (Table 11). The independent variables were site dispute, time, safety, environment, and quality. The dependent variable was project budget. The null hypothesis was that site dispute, time, safety, environment, and quality would not significantly predict project budget. The alternative hypothesis was that site dispute, time, safety, environment, and quality would significantly predict project budget. The model as a whole was able to significantly predict project budget, $F(1, 114) = 37.08$, $p < 0.001$, $R^2 = 0.25$. The R^2 (0.25) value indicated that approximately 25% of the variability in

factors. Similarly keeping a tight rein on timelines, with a project schedule clearly emphasizing milestones and key dates can prevent the elongation of the project completion schedule, which has a bearing on project success and overall outcomes. Paying attention to environmental issues before, during and after the project can also potentially offset delays, recommended and suggested in site disputes, and the inference drawn from this research and analysis. A one-unit increase in site dispute, time, and environmental impact, will lead to a corresponding increase in the project budget, signifying the association and correlation, with the associated implications. Figures 1 through 5 display scatterplots for site dispute, time, safety, environmental impact, and quality, respectively, by project budget.

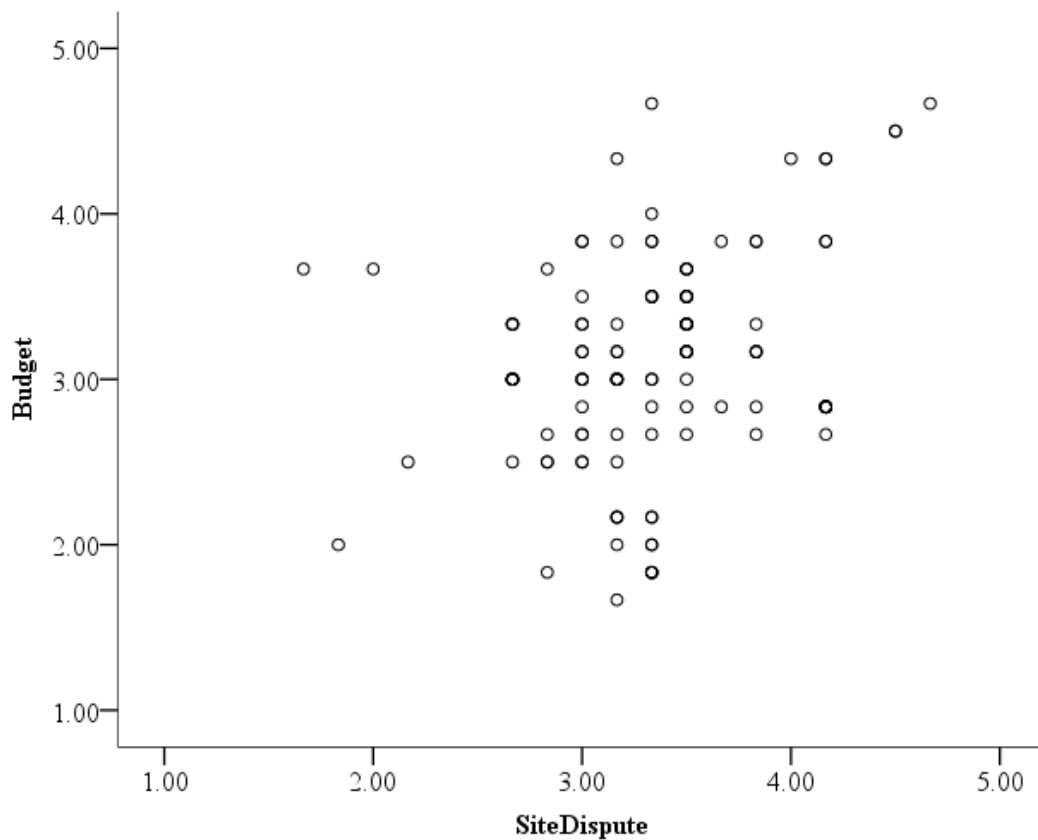


Figure 1. Scatterplot for site dispute by project budget.

As may be evident from Figure 1, the scatterplot for site dispute and budget shows a positive correlation ($r = 0.29$). As the values for site dispute increased, budget also increased. The interpretation is that one unit increase in site dispute will lead to an increase in the project budget. Although there was a positive correlation, because the points appear mildly scattered, nevertheless, represents the reason for the weak correlation.

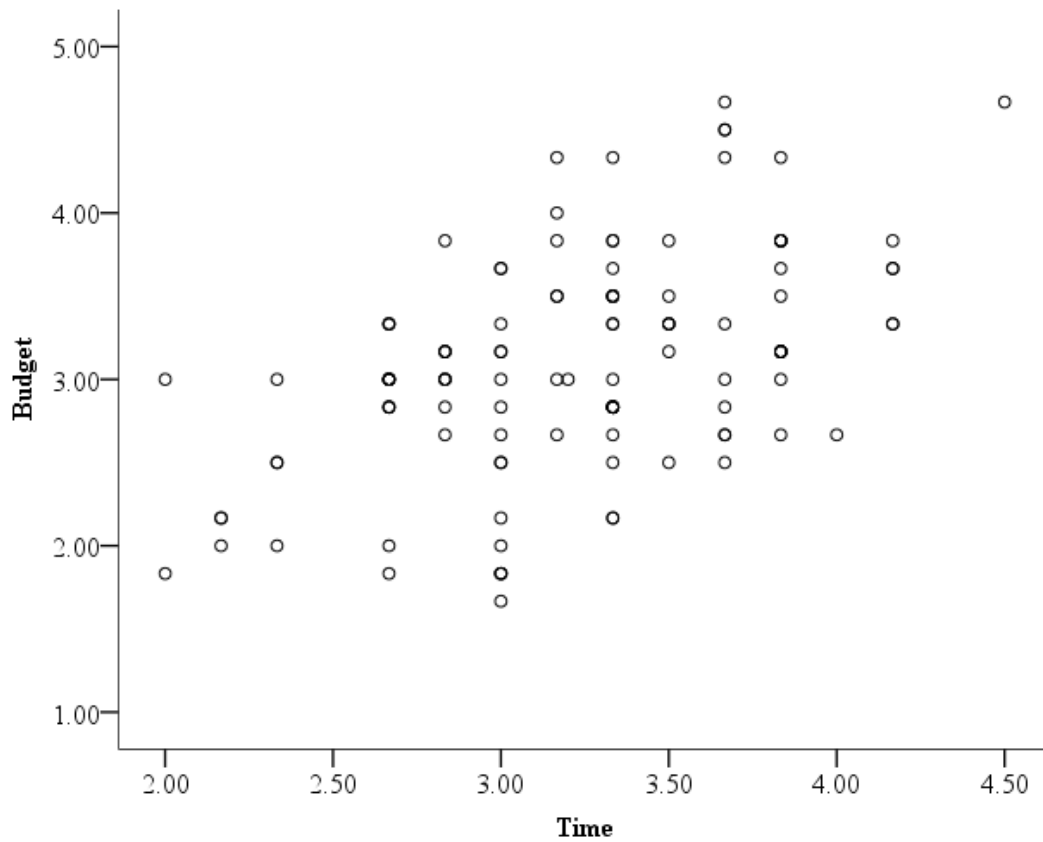


Figure 2. Scatterplot for time by project budget.

From Figure 2 above, a similar effect to Figure 1 seen in the plot for time against budget. Notably, as time increased, so did the budget, however, the points appeared somewhat scattered, indicating a moderate positive correlation ($r = 0.50$). The interpretation is that one unit increase in time will lead to an increase in the project budget.

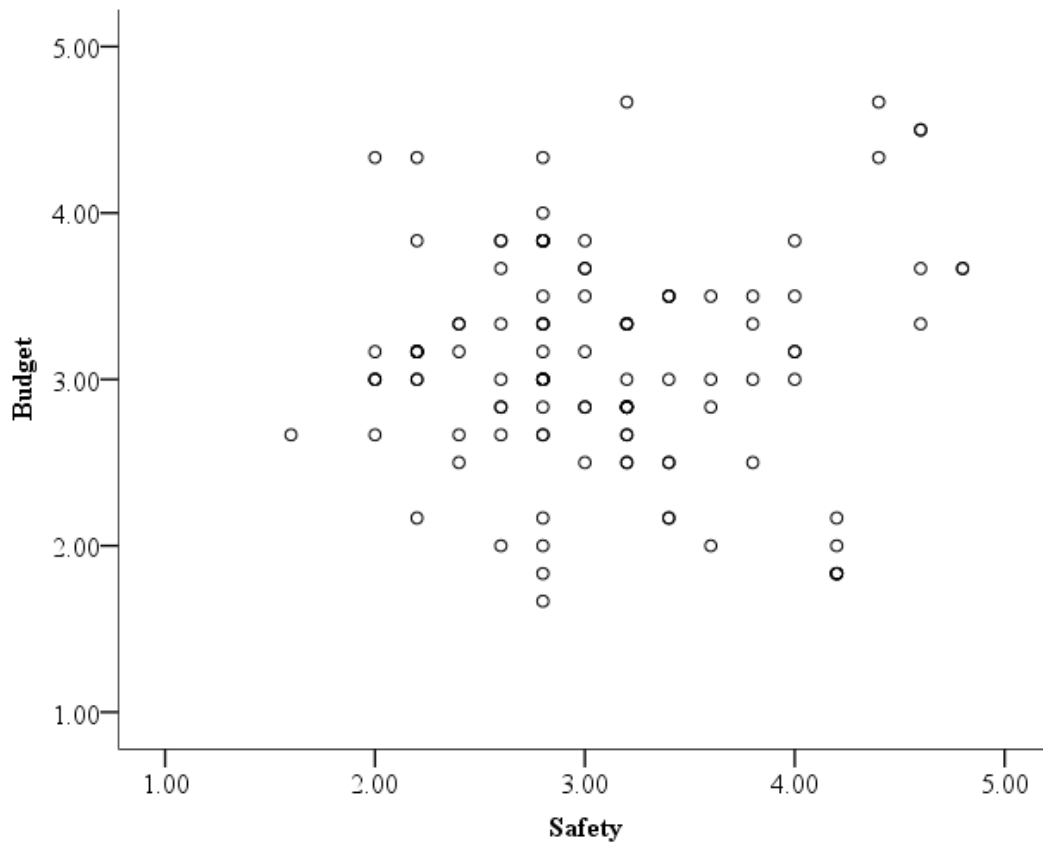


Figure 3. Scatterplot for safety by project budget.

From Figure 3, representing the plotting of safety against budget, there was no association found between the dependent and independent variable of budget and safety respectively. Budget therefore did not appear significantly correlated ($r = 0.04$) with safety. The interpretation is that one unit increase in safety will not lead to an increase in the project budget.

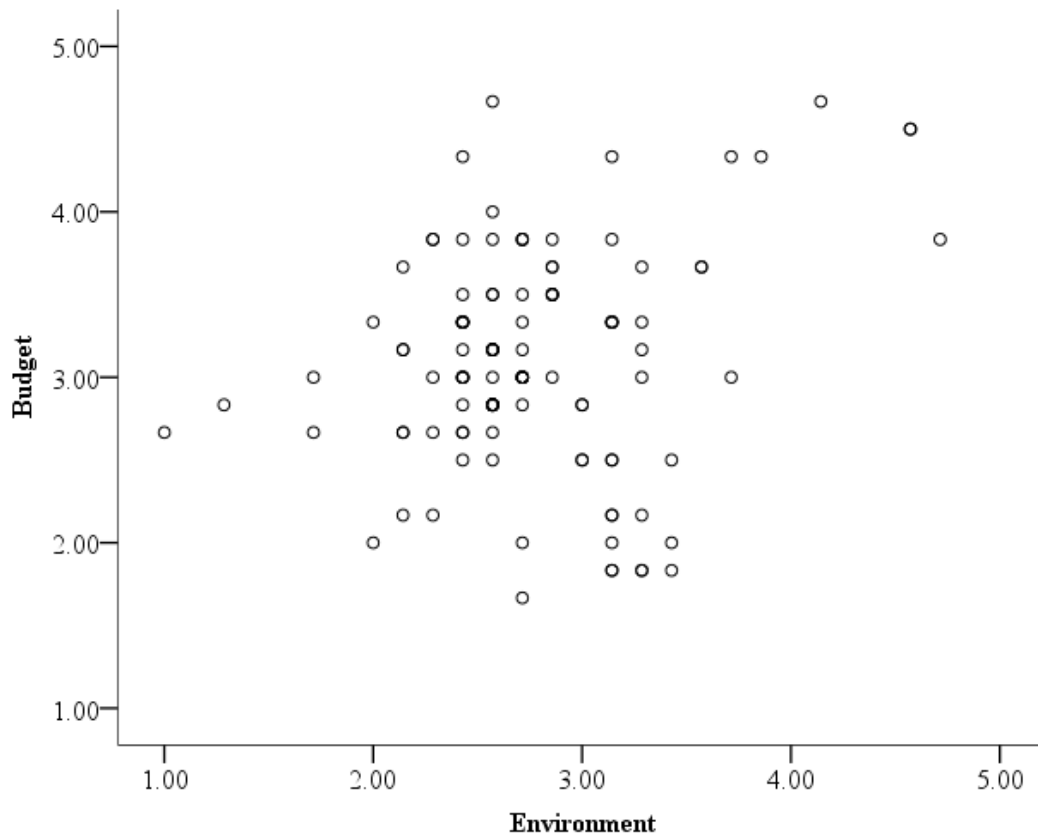


Figure 4. Scatterplot for environmental impact by project budget.

The scatterplot denoted by Figure 4, to assess environmental impact against budget, indicated that as environmental impact increased, so did the budget. The points appear scattered, demonstrating a weak positive correlation ($r = 0.22$) (see Figure 4). The interpretation is that one unit increase in environmental impact will lead to an increase in the project budget.

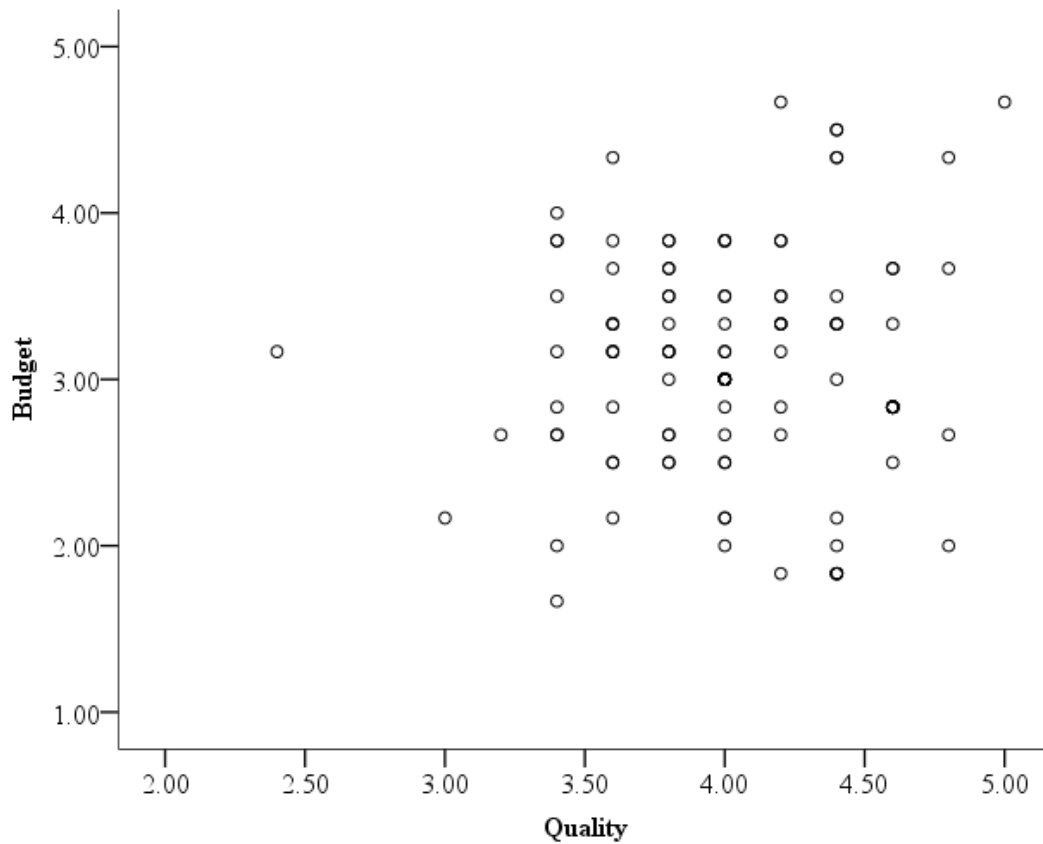


Figure 5. Scatterplot for quality by project budget.

From Figure 5, representing the plotting of quality against budget, there was no indication of association between the dependent and independent variable. Therefore, budget did not significantly correlate ($r = 0.06$) with safety or quality. The inference drawn is that one unit increase in quality will not lead to an increase in the project budget.

Applications to Professional Practice

Often, there is the lack of knowledge and understanding of the successful project outcomes on the part of project managers and leaders in the construction companies. The lack of knowledge and understanding of project success can be problematic because the project managers in construction companies need to have a sense of achievement of

performance, versus construction goals. The lack of knowledge can have a detrimental effect on the ability of construction companies to improve business performance and increase revenues with successful contract bids (Lu & Hao, 2013). The adverse effect of the lack of knowledge is that constructions companies fail to innovate, but the infrastructure projects also fail to be on a par with the modern standards of construction.

The findings of the study may hold value to project managers and leaders as may advance project leaders understanding of the implication of project success in the building construction companies of Greater Accra, Ghana. The research undertaken for this study involved using the research instrument with Six Key Performance Indicators developed by Ngacho and Das (2014) to examine project success in the construction sector of Greater Accra Region, Ghana. This study entailed the examination of the professional practice of project managers and leaders in the construction industry against a comprehensive system of performance indicators.

The findings from the study would have a contribution to the professional project management practice, as may raise the awareness of project managers and leaders in construction companies regarding the appropriate and comprehensive estimation of success in building projects success. The determination of project success by different factors, which in this study, represented the independent variables. The attention to key performance indicators and factors associated with time, dispute, environmental impact, and budget, can contribute to improving project outcomes and success. The findings would, in turn have potential effects to the increasing the success for all stakeholders.

Ika, Diallo et al. (2012) supported the five critical success factors (CSF) for project success. The success factors include monitoring, coordination, design, training, and institutional environment. The results of the study may contribute to the professional practice because the results showed that it is important to have proper coordination and monitoring of the projects. The coordinating factor is a major determinant of project success such as in construction and infrastructure projects. An efficient design and implementation can also lead to project failure. The results of the study can contribute to professional practice in project management, as the knowledge generated can aid in ensuring that professional practitioners and project managers focus on efficient design and implementation of a specific project. In this study, the results indicated, that training for team member and other stakeholders is a crucial contributor to project success and recognized as a CSF for international development projects. The results of the study can contribute to project management, and the findings, which emerged, present a clear indication, that project success is inextricably linked to proper training for staff and professionals in the industry. Ika et al. (2012) stressed the importance of documentation, design, training, monitoring, coordination, and institutional environment in projects. Project management competencies can significantly benefit from proper monitoring and documentation, as the repository of knowledge residing in the expertise and acumen of project managers holds the potential of transference from the possessors of information, to others in the project team, and organization, with astute knowledge management strategies.

Implications for Social Change

Projects management and construction projects that are successful have a substantial impact on positive social change because the output of a successful construction project would be beneficial to stakeholders, and society at large. The interests and actions of stakeholders in a construction project at different spatial scales appear affected by locational factors such as local culture, media, political systems, and regulations. To give an example, the construction project must also take into consideration the culture of the society. The results of the study have potential implications for positive social change since the quality of the finished project would also depend on how well the project can accommodate the different cultures of the individuals in the society. In massive construction projects, Chou and Yang (2012) suggested that placing focus solely on the stakeholder management process at early project phases is insufficient to manage stakeholder claims in complex project environments. The results of the study may indicate that the focus on the stakeholders coordinated with other success indicators such as quality of the project can be achieved within the timelines attributed to a certain project. Fully illustrating that it is critical, that the stakeholder management process at every project stage along the entire life cycle of construction projects undertaken by the government remains a critical undertaking in such projects (Chou & Yang, 2012). The results and findings of this study on project management in Accra, Ghana, will expectedly contribute to positive social change. The study results may have a bearing on the welfare and benefit of construction projects and society, and the results could connote the importance in initial planning and evaluating of the entire life

cycle of projects as this would also serve to measure goals, against the overall quality of the finished project.

Stakeholder, individual, and organizations play unique roles in construction projects. The results and findings of the study will serve in the dissemination of project management knowledge for stakeholders, individuals, and organizations, on the significant ways they can ensure successful implementation of and execution of project undertaken. Stakeholders provide resources needed by the organization and often have controlled the flow of resources in the process.

The results of the study indicated, that ample time and budget play important roles in the success of projects. Thus, taking these factors for granted by the project managers and leaders in the construction industry presents risks of lowered success and failing to come within the classic project management goals of within time and budget. The role and value of stakeholders after all influence the survival of the organization (Trigunarsyah et al., 2014). Project managers and owners should adopt improved decision-making strategies by creating a plan that will effectively involve stakeholders from the start of the project to the completion phase. Improved decision-making factors mean that the project's managers must be able to properly decide on the different choices such as the site of the construction project and the way of peacefully and efficiently settling disputes, whenever there may be. The early identification and effective involvement of different stakeholders and members in projects are paramount during the project life cycle (Trigunarsyah et al., 2014). The overall success in the life cycle of projects can beneficially result, with positive social implications with the designation of

actionable prioritization and the step-by-step details of the project, with appropriate milestones. Early identification and involvement of stakeholders in the initial phases of the project is the key to success (PMI, 2013). Positive and beneficial social implications may accrue from the findings of this study, because of the proven importance of the initial phases of the project, to be as important as the execution and finishing steps of a certain construction project. There is clear imperative and need for management to involve stakeholder in every stage of the project management plan. The number of stakeholders in a project introduces some level of complexities especially when the number is large (Bal et al., 2013). The study findings can confer and contribute to positive social implications because knowing the real factors that influence the success of the projects can also contribute to what the project managers must prioritize to achieve a certain goal.

Recommendations for Action

Based on the results and findings of the study, the recommendation is that future actions shall include an overall focus on the different factors that matter. The site of the construction project must be free from proprietary disputes, as much as possible, to avoid legal and other adjudication and settlements and payouts. The recommendation is since site disputes affect the time of completion, where possible, warrants settlement of disputes before the commencement of construction. The imperative in the planning of project completion timelines underscores the importance of realistic goals, compatible with the overall goals of the specific project. Paying emphasis to the safety of the project and construction details represents a significant and necessary resolve, as a lack of safety

may detrimentally affect the overall results of the study. The consideration to the protection of environment may also spell consistently progressive results, as the negative consequences of disregarding environmental and ethical norms can pose time, legal, and other challenges, which elongate project timelines and detract from project success. Environmental concerns may raise legitimate issues on whether the construction project may push through with meeting regulatory permissions, codes, and other licenses, as opposed to projects lead to delays. As with any other project, in ensuring the quality of the project prioritization aids in timely project execution. The reason is that the quality of a project may have a direct impact on whether current and future construction projects business and revenue generation. Finally, the services offered by the project managers must be constant and consistent. The implication is that the project managers should be able to deliver at least the minimum expected of them.

Recommendations for Further Research

The discoveries of the study may lead to the identification and reduction in the inefficiencies in project management and performance. The findings from the study may contribute to positive social change as project managers and business leaders could use the knowledge to maximize the use of time and budget to provide affordable buildings to the community. To increase knowledge on project management, further research may lead to the path of improvement in practices and strategy, specific to the construction industry, and the following are the recommendations for further research:

1. Conduct a qualitative study, which will facilitate future researcher led studies to focus on gaining insight into the experiences and perceptions of the

participants as to the impacts and effects of the different factors variables examined in this study;

2. Conducting a study across various jurisdictions would possibly allow the generalizability of the results of the study and would have a wider scope regarding actual data;
3. Undertaking a study based on data collected from stakeholders would garner a recommendation as part of further research because the evaluation of the data from external factors might help the current scenario in project management;
4. Focusing on certain types of structures vis-à-vis, other types of structures might also be beneficial since the system of project management might be different from one infrastructure to another.

Reflections

My reflection revolves around experience as a project management leader and an academic. Mohammed et al. (2012) stated that the transformational leadership theory is about developing people. The results and findings of this study have personal value to introspect and realize that the leadership or leaders such as the project managers matter because the success of the projects depends on these individuals. Organizations judge effective leaders by the capability to bring changes to the organization they affiliate with. The commitment of a leader and follower towards a common purpose, therefore, serves to achieve the goals and vision of the organization (Aga et al., 2016). After intense personal reflection, the conclusion is that compromising the goals and vision of the organization present dangers to limit and lower project success. To cite an example, the

priorities of a leader must consider the overall structure because it would ascertain whether the path that a project is currently taking is still proper and supported by the different factors that matter to a certain project and the different stakeholders.

Kissi et al. (2013) indicated that the transformational leadership of portfolio managers has a positive and significant relationship with championing behavior. The findings of the study led me to realize that the championing behavior as a leader also involves the desire to champion the cause of followers. Based on personal experience, proper conviction as a leader inspires and motivates followers to emulate management and other qualities. Lee et al. (2013) supported the contention as consistent with innovating behavior among immediate followers. A point worthy of mention, is that based on personal experience, it is deemed as important, that the project managers must be able to find the values held in high esteem by immediate followers. This perceived value in leadership by followers is also important in making project managers realize the inherent value of the project, as a source of revenues to the organization. The claims hold true in project environments in which portfolio managers demonstrate transformational leadership to drive innovation-championing behavior among project managers. My reflection includes the fact that the innovation must start from the top (i.e. the project managers), but innovation must also be present in other people associated with the project. Followers have the perception that individual managers will offer support if there is a failure in implementing innovative solutions. The assumption made could lead to improved project performance in the organization (Kissi et al., 2013). The improved project performance is a result of considering and implementing many factors and

exemplary project management principles and practices. Based on personal experience, the application and implementation of the theoretical knowledge serve best, when efficiently and effectively transferred into valuable contributions of value in project management.

Transactional leadership achieves results using rewards and recognition, and such leaders emphasize the use of extrinsic motivations to shape goal setting to strengthen organizational culture, structure, and strategy (Mohammed et al., 2012). The leadership styles such as transformational, transactional, when adroitly adopted by the team leader, has an operational effect on the development of learning since there are strategic resources within the team and the organization (Mohammed et al., 2012). This reflection also led to the realization, that a transformational leadership approach aids in visualizing proper implementation and execution of the project and the outcome of success, or otherwise. When concomitantly displayed, transformational and transactional leadership approaches demonstrate a caliber and ability akin to an ambidextrous individual. The adept leader often offers the necessary direction for goal achievement required by the team. From experience and knowledge acquired during this study, and during my professional engagement, the achievement of project success relates to the perception of quality by all stakeholders. The perception of project construction quality by stakeholders often commensurately correlates with the value and must deliver to the community. Diligent leaders show interest in the team, which is helpful in creating a collectivist and positive work environment and successful team (Deichmann & Stam, 2015). Being a collectivist would matter. From personal experience, a collectivist way of thinking would

readily consider the environment and the views of others, compared to a great individualist way of thinking. Charismatic leaders typically display an assured, supportive, argumentative, precise, and verbally non-aggressive communication style. The communication style would also be able to develop into a more interactive relationship between the members of the team. Supportive communication of a leader enhances knowledge sharing behaviors with employees and those associated with the project team.

Summary and Study Conclusions

The principle purpose of the quantitative correlation study was to examine the relationship between time, quality, safety, environmental impact, and site disputes, with project budget. The results of the statistical analyses of the data collected led to the conclusion that time, environmental impact, and site dispute were all significantly associated with project budget. Specifically, as time, environmental impact, and site dispute scores increase, so did scores for project budget. In conclusion, the strongest relationship between the dependent variable of budget and the independent variable of time, observed, and weaker relationships with environmental impact and site dispute present clear opportunities of focus for future construction project management in Ghana.

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Appendix A: Letter of Permission

Kenneth Aggor <kenneth.aggor@waldenu.edu>

5/10/14

to cngacho, ddas

Dear Ngacho and Das:

I am writing to request written permission to use the questionnaire on six key performance indicators (KPI) namely time, cost, quality, safety, site disputes, and environmental impact in an academic doctoral research study relating to project's success. This project is part of a graduate research in business administration course requirement at Walden University. The instrument would be used strictly for academic purposes, and you will be acknowledged appropriately in the study. My research is being supervised by my professor, Lionel de- Souza, Ph.D. at Walden University.

If you need further information, please contact me at Kenneth.aggor@waldenu.edu or 601-870-8391 (U.S.A.).

Thank you for your help and prompt attention to my request.

Sincerely,

Kenneth Aggor.
Christopher Ngacho <cngacho@yahoo.com>

5/10/14

to me

Dear Kenneth.

Thank you for willingness to use our instrument and more so thank you for reading our paper.

I am consulting my co-author on the same. However, I have no objection whatsoever to using the instrument so long as it is solely for academic purpose.

Thank you.

Sent from Yahoo Mail on Android
Dr. Debadyuti Das <ddas@fms.edu>

5/10/14

to me

Dear Kenneth,

You are most welcome to use our survey instrument for your doctoral work.

However, you are requested to acknowledge & cite the same in appropriate places.

Appendix B: Survey Instrument

Please respond to each of the following statements about your project. Indicate the degree to which you agree or disagree with the statements by marking one response for each item.

Table 1

Project Success Assessment

Project Success Codes	Strongly Agree	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree
PV1: There has not been any increase in the cost of raw materials during construction of this project.					
PV2: Labor costs more or less remained stable over the period of construction of the current project.					
PV3: The project experienced minimum variations and hence hardly any additional cost attributable to variations was incurred.					
PV4: The required equipment are available at pre budgeted rates.					
PV5: The amount/quantity of different type of resources required during the implementation phase matched with those estimated during planning stage.					

PV6: There were no incidences of fraudulent practices and kickbacks during project execution.					
PV7: There were no incidences of agitation by the trade unions in the current project.					
PV8: There was no serious dispute between the client and contractor due to non-adherence to the specifications.					
PV9: Disputes were observed due to the frequent changes in the design of the current project.					
PV10: Dispute resolution meetings were often held during project execution.					
PV11: At time of project completion, there were no financial claims that remained unsettled from this project.					
PV12: This construction project has adversely affected the quality of groundwater level.					
PV13: All required resources for the project were delivered on time during execution of this project.					

PV14: A clear plan was formulated and an efficient planning and control system was designed to keep the current project up-to-date.					
PV15: No changes were introduced in the designs of the current during project execution.					
PV16: Harmonious relationship between labour and management existed in the project land and hence no work disruptions were reported during project execution.					
PV17: This project has led to air pollution in the adjoining areas.					
PV18: This project has led to depletion of the precious natural and mineral resources in the surrounding areas.					
PV19: There has been an increase in solid waste due to the construction of the current project.					
PV20: Accidents were often reported during project construction.					
PV21: Near misses occurred quite often during construction.					
PV22: Fatalities did occur on this project during construction.					

PV23: The construction work utilized environmentally friendly technology.					
PV24: This project has led to the increased release of toxic material.					
PV25: No delays were experienced in securing funds during project implementation.					
PV26: At the time of handover, the current project was free from apparent defects.					
PV27: The project contractors were often called back during the Defects Liability Period to repair defects.					
PV28: Weather and climatic conditions did not have much impact on delaying the project.					
PV29: The current project has utilized reusable and recyclable materials in construction work.					
PV30: The right material was used for the construction work.					
PV31: Employees working in the current project possessed require skills and most of them had worked on similar kinds of projects in the past.					

PV32: A sound quality management system was strictly adhered to during project execution phase of the current project.					
PV33: Training was imparted to the workers in order to develop a positive attitude and also to enable them to apply the right method of work.					
PV34: All stakeholders associated with the current project supervised the quality of the project in all its phases.					
PV35: Proper medical facilities were available for people working on the project.					

Appendix C: Demographic Information

Please mark your appropriate opinion among the alternatives provided.

1. Are you PMP certified?

a. Yes ()

b. No ()

2. What is your gender?

a. Male ()

b. Female ()

3. What is the age group that you belong?

a. 21-30 years ()

b. 31-40 years ()

c. 41-50 years ()

d. 50 and above ()

3. What is your highest educational level?

a. High school or equivalent ()

b. Associate or technical degree ()

c. Bachelor degree ()

d. Master's degree ()

e. Doctorate degree ()

f. Other ()

4. What is your industry?

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 with this company?

- a. Less than 5 years ()
- b. Between 5 and 10 years ()
- c. 11-15 years ()
- d. 16-20 years ()
- e. Above 20 years ()