

**UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI**

**IMPACT OF SITE MANAGERS' MANAGERIAL SKILLS ON
CONSTRUCTION PROJECT SUCCESS (CPS):
(A CASE STUDY OF CONSTRUCTION FIRMS IN ACCRA AND
SEKONDI-TAKORADI)**



ALEX KOW BENTIL

NOVEMBER, 2016

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**A Dissertation in the Department of CONSTRUCTION AND WOOD
TECHNOLOGY EDUCATION, Faculty of TECHNICAL EDUCATION,
Submitted to the School of Graduate Studies, University of Education, Winneba
in partial fulfillment of the requirements for the award of Master of Philosophy
(Construction Technology) degree.**

NOVEMBER, 2016

DECLARATION

STUDENT'S DECLARATION

I, Alex Kow Bentil declare that this Dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE.....

DATE.....



SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: Dr. Nongiba A. Kheni

SIGNATURE.....

DATE.....

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DEDICATION

This dissertation is dedicated to Almighty God for his unflinching support and also to my dearest wife (Yaa Agyapomaa) and also to my Mum (Aba Amoaduwaa), my brothers as well as my beloved sister (Patience Otchere Turkson).



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LIST OF ABBREVIATIONS

GDP	–	Gross Domestic Product
SM	–	Site Manager
H	–	Hypotheses
MWRWH	–	Ministry of Water Resources Works and Housing
GSS	–	Ghana Statistical Service
USD	–	United State Dollar
SMs	–	Site Manager Skills
C	–	Conceptual
H	–	Human
P	–	Political
T	–	Technical
EI	–	Emotional Intelligence
IQ	–	Intellectual quotients
MQ	–	Managerial quotients
EQ	–	Emotional quotients
SPSS	–	Statistical Package for Social Science
PMCC	–	Project Moment Correlation Coefficient
PCA	–	Principal Component Analysis
HND	–	Higher National Diploma
CTC	–	Construction Technician Course
CPS	–	Construction Project Success
EPA	–	Environmental Protection Agency
NFSA	–	National Fire Service Act
OHS	–	Occupational Health and Safety
NBC	–	National Building Code

ABSTRACT

Several developing countries at various levels of socio- economic development have recognized the need and importance of taking measures to improve the performance of their construction industry. One of the means to this end has been the use of effective site managers in project execution. The aim of this study was to empirically examine the impact of site managers' managerial skills on construction project success. The study employed quantitative survey approach. Questionnaire was the main data collection tool. Simple random sampling technique was used to select the site managers from Accra and Sekondi-Takoradi metropolis. The total sample size for the study was 84. The data was analyzed using descriptive and inferential statistics such as factor analysis, Pearson product moment correlation coefficient as well as multiple regression techniques for analyzing relationships between variables. The findings of the study suggest that site managers in Ghana possessed technical skill such as the ability to assimilate and use technical information; as well as the ability to use project management tools, and methods to carry out project. The study's findings further revealed that leadership skills, administrative skills, communication skills, team building/delegation skills, and problem solving/decision making skills have greater impact on project success. Also, the technical skill element provides synergistic enhancement to construction project success. The findings also suggest that, soft skills (human skills) of site managers have greater impact on project success than the hard skills. Additionally, site managers' experience and training acquired have influence on their effectiveness and project success. In conclusion, practicing site managers who choose to embark on self improvement should be more concerned and focus their efforts on soft skills than hard skills. The study recommends effective and regular training of site managers to enhance their effectiveness.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The construction industry globally plays a major role in the development and achievement of the goals of society. Many studies indicate that it is one of the largest contributors to Gross Domestic Product (GDP), and plays an important role in determining a country's economic growth (Ofori, 2012; Willar, 2012; Kheni & Ackon, 2015). The sector currently accounts for more than 11% of global GDP (Betts et al., 2011). According to Kheni and Ackon (2015) the construction industry is the engine of growth of the Ghanaian economy. The productivity of the industry stimulates growth of other sectors and thereby goes a long way to spur growth of the national economy and also provides direct employment to the populace. Very few projects comprise the unique character that construction projects have. The product from construction processes are rarely similar with each having unique set of characteristics and qualities that set them apart from other projects. Hence the management of the production processes demand creative and often times imaginative managers for the achievement of successful outcomes (Mouchi et al., 2011).

According to Atout (2008) the success of the projects in the contracting sector depends on experience and capability of the contractor's site manager who is supposed to manage and direct the project, based on a full understanding of the requirements and the vision; and he should have a strong experience and confidence to delegate responsibilities and to stand by decisions.

In recent years, several developing countries at various levels of socio- economic development have recognized the need and importance of taking measures to improve the performance of their construction industry (Gyadu-Asiedu, 2009). One of the means to this end has been the use of effective site managers (SM) in project execution (Shi & Chen, 2006; Valencia, 2007; Price, 2009; Syed, 2012, Windapo et al., 2015). Many authors have opined that Site Manager (SM) is vital for every construction project success (Gharehbaghi & McManus, 2003; Atout, 2008; Price, 2009; Jha & Iyer, 2006; Syed, 2012).

There are a whole lot of factors which influence project success; however, the crucial one among them is the site manager and his influence in delivering a successful project (Syed, 2012). Site manager (SM) is therefore an essential part of the success of the project, and the inputs that he applies in different stages of the project signify that he is an integral part of the outcome of the project. From the project team perspective, the site manager is expected to guide his or her diverse team of people (Turner & Müller, 2005). Other responsibilities include building the project team, planning and evaluating the work, interfacing with the client, and proper allocation of the firm's project resources (Valencia, 2007). The site manager must also be able to forecast project needs, assess project risks, communicate plans and priorities, assess progress and trends, and get quality and value for the money invested in a project (Smith, 1995).

Nauman and Khan (2008) identified people as the most essential project management resource. Appropriate management approach puts subordinates' performance into good shape and facilitate construction project to go on smoothly (Price,

2009). According to Edum – Fotwe and McCaffer (2000), the managerial skills of a site manager influence the performance of a project in terms of cost, schedule, quality, safety and stakeholders' satisfaction requirements.

According to Hagberg (2006) leadership continues to impact the success or failure of a project. Zimmerer and Yasin (1998) found that positive leadership contributes about 76% to the success of projects while Nauman and Khan (2008) found that negative or poor leadership contributes 67% to the failure of projects. For a site manager to be successful, he needs to possess certain skills and characteristics that allow him to complete his work professionally and in a successful manner (Gharehbaghi & McManus, 2003; Valencia, 2007; Price, 2009; Syed, 2012). Literature suggests that effective administration of a project depends on three skills, namely the conceptual skill, the human skill (soft skill), and the technical skill (hard skill) (Katz (n.d) as cited in Syed, (2012)). According to Sampson (2007) the skills required for project management are now often divided 50/50 into traditional 'hard' skills, such as risk management and scheduling, and 'soft', people-oriented skills, such as interpersonal communication. However not every person has all the skills, and hence there is a need to understand the skills that are possessed by an individual as well as acquire even more skills for personality development.

Also given the critical and challenging role the site manager fills, it becomes extremely important for an organization to systematically select a site manager to maximize opportunities for success. Hence, the impact of site manager managerial skills on the project's ultimate success or failure cannot be underestimated.

1.2. Statement of the Problem

According to Crawford (2000) the current state of the literature on site manager managerial skills, with a few exceptions, is largely anecdotal. Awan, et al (2015) supported this assertion by indicating that studies to measure the direct impacts of site manager managerial skills on project success are scarce. Some of these exceptions might include work done by Hauschildt et al. (2000) and Valencia (2007) where specific attributes (skills) of site managers are measured and compared against of project management performance – but such studies are very few. While there is general agreement that a project's success or failure hinges on the abilities of the site manager, there remains a difference of opinion as to what factors are the most important indicators of an effective site manager. Some, though seemingly a declining number, still cling to the opinion that the technical expertise (hard skills) of the site manager is of paramount importance for success (Thamhain, 2004; Hyvari, 2006; Mantel & Meredith, 1987 as in Gillard, 2009); others suggest that human skills are the primary determinant of success (El-Sabaa, 2001; Watts & Watts, 2008 as cited in John, 2009, Awan, et al., 2015), and still others hold that both technical skills and human skills are necessary for project management success (Syed, 2012; Mouchi et al., 2011; Valencia, 2007). The empirically suspects or inconclusive character of research findings in this area suggests the need to investigate further the nature of the relationship between site manager's managerial skills and project success. Additionally, although, studies regarding most essential skills required by Site Managers (SMs) and the direct impact of site managers' managerial skills on project success/performance have been performed elsewhere (Anderson & Tucker, 1994; Shi & Chen, 2006; Windapo et al., 2015; Thamhain, 2004; Chan, et al., 2005; Syed, 2012; Valencia, 2007; Awan, et al., 2015), yet, there is paucity of similar research in Ghana.

This void needs to be filled in order to increase the depth of our understanding of the effects of site managers' managerial skills on construction project success in the context of Ghana. The aforementioned arguments underscore the aim and objectives of this study.

1.3 Aim of the Study

The aim of this study is to evaluate the impact of site manager's managerial skill on construction project success in Ghana.

1.4 Specific Objectives of the Study

The specific objectives of the study are as follows:

- to identify the key managerial skills of construction site managers in Ghana;
- to examine the relationship between the site managers' managerial skills and construction project success;
- to determine the influence of demographic characteristics of site managers on construction project success.

1.5 Research Questions

The major research questions to enable the researcher achieve the objectives of the study are outlined as follows:

- What are the key managerial skills possessed by site managers in Ghana?
- What are the effects of the site managers' managerial skills on construction project success?
- What are the effects of demographic characteristics of site managers on construction project success?

1.6 Hypotheses

The following hypotheses will guide the study;

H1.The site manager's Communication skills affect the construction project success.

H2.The site manager's Leadership skills affect the construction project success.

H3.The site manager's Technical skills affect the construction project success.

H4.The site manager's Team building/delegation skill affects the construction project success.

H5. The site manager's Problem solving/decision making skills affect the construction project success.

H6.The site manager's Administrative skills affect the construction project success.

H7.The site manager's Personal skills affect the construction project success.

1.6 Significance of the Study

The results of the study have the following benefits and implications:

- Clients: will realize their cost, quality and time objectives.
- Contractors: help the contractors to identify and employ effective site managers to supervise their work in order to motivate workers to put their maximum best to increase productivity and enhance their reputation.
- Site managers: will understand and acquire more skills for personality development.
- Construction organisations: the findings will help facilitate better site manager selection by construction organizations so they can maximize their opportunities for project success.
- The research will contribute to knowledge and serve as reference material for other researchers.

1.8 Scope of the Study

Research scope refers to the boundaries of the research or the specific areas that the particular researcher wants to cover in the study. For this research, the scope included the following:

The site managers managerial skills necessary for construction project success only and not in all organisations. Finally, although the study was conducted for Ghana, data was collected only from respondents in Accra, and Sekondi-Takoradi because these two cities are among the major cities in Ghana where contractors and construction activities are highly concentrated (Ankomah et al., 2010).

1.9 Limitation of the Study

Financial and time constraints restricted the scope of the study to two major cities of Ghana and thus generalisation of the study's findings to construction site managers operating in other regions or cities must be done with caution. Also, the small sample leads to a reduced power of statistical tests performed which leads to the possibility that some statistically significant results might have been due to chance.

1.10 Organisation of the Dissertation

The dissertation is organised in six chapters. Chapter one is the introduction to the study which included the background to the study, the problem statement, aim of the study, the objective of the study, research questions, hypothesis, limitation of the study and the organisation of the study. Chapter two covers the review of relevant literature in relation to the research topic. Chapter three dwells on the methodology employed for the study. This includes research design, the study population, sampling techniques and sample size, the instruments used for the study. This chapter also talks

about data collection procedure, and data processing and analytical tools employed. The fourth chapter contains the research data presentation and analysis. The fifth chapter focuses on the discussions of the result in relation to the specific objectives set out in the study. Chapter six deals with the major summary of the major findings, conclusion and recommendations, and suggestions for further research as shown in Figure 1.1:

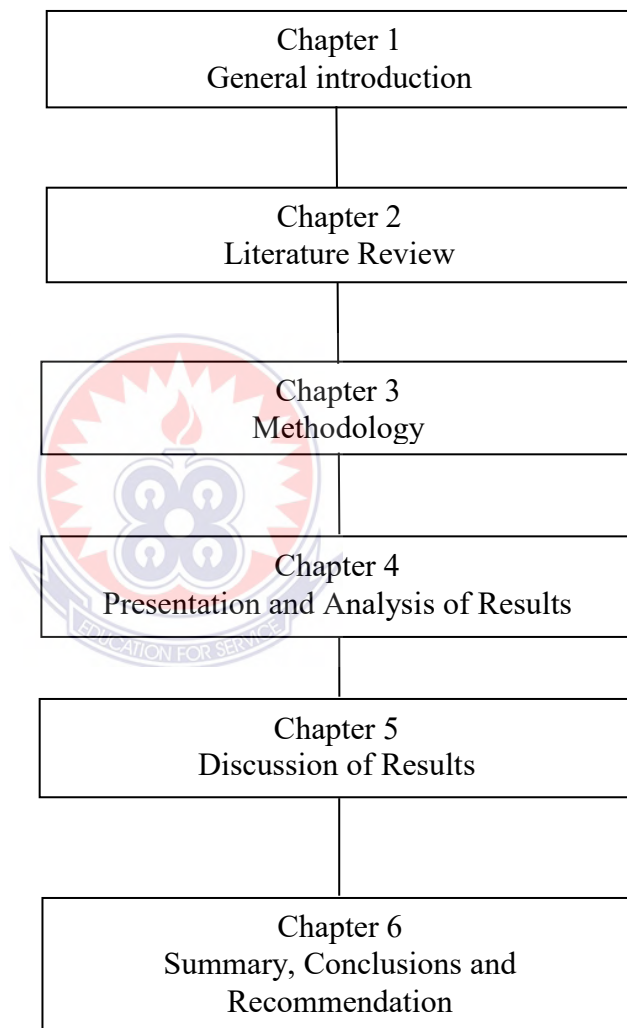


Figure 1.1: Structure of the Dissertation

CHAPTER TWO

LITERATURE REVIEW

This chapter provides an overview of the construction industry in Ghana, its significance in terms of Gross Domestic Product (GDP) in relation to the economy, challenges facing the industry, the future prospects of Ghanaian construction industry; extensive review of relevant literature pertaining to construction project, project management, the role and responsibility of site managers, literature directly related to project management skills; it also covers discussion on the site manager's managerial skills; its importance and associations; construction projects success, determinants of project success; and the constraints that site managers must overcome in order to achieve a successful project performance. The final part consists of conceptual framework and hypotheses for the study.

2.1.0 Overview of Construction Industry in Ghana

In Ghana, the agency responsible for the registration of contractors (i.e., building or civil contractors) is the Ministry of Water Resources, Works and Housing (MWRWH). The MWRWH does this in collaboration with the Registrar General's Department under Act 179 (1963) of the companies' registration code (Amoah et al., 2011). The MWRWH has two main classifications for contractors: Category 'D' for general building works and category 'K' for civil works. According to MWRWH bulletin (as cited in Amoah et al., 2011), inclusion of a contractor's name in the Ministry's classification register is not compulsory, but then it is only those who are duly registered who can tender for government contracts.

The contractors for the categories (D, K) are sub-divided into four classes, ranging from class D1, D2, D3, D4 for building contractors and K1, K2, K3, K4 for civil works. The classification is based on factors such as technical and managerial expertise, financial capacity, equipment and plant holding, previous performance and human resource capacity (Eyiah & Cook, 2003; Danso, 2010). The D1K1 class of contractors is termed as larger firms, whereas D2K2 construction firms are medium and D3K3 and D4K4 are small firms (Danso, 2010; Amoah et al., 2011).

The larger firms, according to MWRWH are registered as financial class 1, capable of undertaking projects of any value, class 2 (the medium firms) are capable of undertaking projects up to US\$500,000 or GH¢1,500,000.00, while the small firms (financial class 3) are also capable of undertaking projects up to US\$200,000 or GH¢600,000.00 or class 4 to undertake projects up to US\$75,000 or GH¢225,000.00 (Danso, 2010). The large and medium Ghanaian construction firms form about 10% of the total number of construction firms registered with the Ministry of Water Resources, Works and Housing and the remaining 90% are the small firms or small contractors (Egmond et al., 2007 cited in Danso, 2010; Amoah et al., 2011; Kheni & Ackon, 2015).

2.1.1 Contributions of the Ghanaian Construction Industry

The Ghanaian construction industry holds the key to the development of the nation. The construction industry in Ghana contributes immensely to the national socio-economic development by providing significant employment at skilled or non-skilled levels which help to lift many of the citizenry from poverty and it accompanied social vices such as armed robbery and prostitution (Kheni & Ackon, 2015). Beyond that,

the industry provides the infrastructure and facilities required for other sectors of the economy to flourish such as; schools for education and training, factories and shops for commercial and business activities, housing for basic human needs , hospitals for health care and buildings for the national communications network (Ahadzie, 2009). The construction industry in Ghana is also involved in the construction of urban and feeder roads and bridges in the country. These facilities serve as arteries for the facilitation of productive activities by enabling goods and services to be distributed within the country and beyond.

The construction sector in Ghana also contributes significantly to the GDP of the country. According to Ghana Statistical Service (GSS) (2010) the construction industry and real estate services in Ghana together contributed 3,809 million Ghana cedi (2,265m USD) to the country's GDP in 2009. The construction industry, between 2008 and 2012 contributed an average GDP growth of 9.08% to the national economy (Kheni & Ackon, 2015). Above all, the sector was the second highest contributor to the national GDP in 2012 (GSS, 2014).

2.1.2 Future prospects of the Ghanaian Construction Industry

As the economy and the population explode, there is a high demand for private and public housing and other infrastructure development. According to the Ministry for Water Resource, Works and Housing, Ghana needs to develop 140,000 housing units annually but the delivery is around 40,000. This has led to a housing deficit of approximately one million units (Sultan & Kpentey, 2012). Besides, there is also a strong demand of government for major infrastructure and road projects expansion such as dams, road/ highway, interchanges, hospitals, schools, modern markets,

factories and other programs as the nation aspires to attain the millennium development by 2015. It is hoped that, the revenue from the oil sector will strengthen the government budget to fund these programs.

With the stage set for a golden era for development, the challenges in the Ghanaian construction industry are still higher. A cultural and behavioural shift in the mind-set of all participants in the construction process especially top management is necessary if the construction industry in Ghana is to improve its performance and competitiveness. The indigenous construction companies in particular need to strategize towards competing and playing a more influential role in the much needed socio-economic development that is exploding!

2.2. Construction Project

Project is a complex, non-routine, one-time effort limited by time, budget and resource and performance specifications designed to meet customer needs (Babu & Sudhakar, 2015). The construction industry is dynamic in nature due to the increasing uncertainties in technology, budgets, and development processes (Jari & Bhangale 2013), Construction project has two essential characteristics: it has a beginning and an end; and produces a unique product (Verzuh, 2008). With each project, unique tasks are completed in a specified period and contribute to the final result.

According to Mouchi et al. (2011) people assigned to a specific project may come from different parts of an organization or even from outside the organization; after completion of the project, these people will go to other projects or back to the original functions in their organizations (Levy, 1994, as in Mouchi et al. 2011). The product

from construction processes are rarely similar with each having unique set of characteristics and qualities that set them apart from other projects.

The increasing demands of the construction industry to make the world a better living place for people has established it as a frontier of an ever advancing world. As a result construction projects are considered with wider perceptions, with project objectives requiring more extensive efforts. These complex, demanding, and dynamic requirements call for site managers that can manage the construction process from inception to successful completion (Leung et al., 2009).

2.3 Project Management Development

Project management emerged as a unique discipline and organizational role in the late 1950's (Kloppenborg & Opfer, 2002; Meridith & Mantel, 2006; Morris, 1998; Urli & Urli, 2000). Early research in the field focused on technology and techniques to support project planning and control. Software tools were developed and network diagramming methods proliferated to help plan and control these large contracts (Valencia, 2007).

Recently the project management literature has developed further (Jugdev & Thomas, 2002), emphasizing the unique roles that the individual charged to lead these endeavours must have. Human resource issues, such as team building and leadership, and general managerial topics, such as risk and quality management have come to the forefront (Crawford et al., 2006; Kloppenborg & Opfer, 2002). These issues have been difficult to resolve because of the unique role the site manager plays within an organization.

Today's organizations typically have a hybrid structure that revolves around functional areas of expertise (e.g., accounting, engineering) and projects (e.g., technology development team). The project teams are often a group of individuals from functional areas that are brought together for the duration of the project. This structure (commonly termed a matrix) presents problems for the two types of managers in the organization, the site manager and the functional manager. Common sources of contention include acquisition and allocation of project resources; functional manager involvement in planning, performance, and direction; and site manager authority and accountability of functional resources (Valencia, 2007).

Terming project management as the "accidental profession," Zielinski (2005) reinforce the notion of this adversarial relationship. Site managers rarely possess any formal authority and must usually work outside the firm's traditional hierarchy. Obstacles exist before the site manager begins work and soon after beginning the site manager discovers how little power he or she has. Focusing on the site manager, Syed (2012) offer two reasons why site managers encounter such difficulty:

- lack of structure in site manager selection and training; and
- the unfamiliarity of the site manager career path.

These two reasons contribute to why the role of site manager is generally forced onto people, rather than being sought after, thus the term the "accidental profession."

2.4 Role of the Site Manager in the Construction Industry

According to Jari and Bhangale (2013) the site manager is the key person in a project. He is the professional who is responsible for completing the project and project management would not exist without the site manager. Furthermore the site manager is the communication hub for most reports, requests and complaints.

The successful site manager is able to imbue team spirit and confidence that drives the team toward excellence or when the project becomes stressful and frustrating (Ma et al., 2014).

The success of the projects in the contracting sector depends on experience and capability of the contractor's site manager who is supposed to manage and direct the project, based on a full understanding of the requirements and the vision; and he should have a strong experience and confidence to delegate responsibilities and to stand by decisions (Atout, 2008). Jari and Bhangale (2013) opine that the site manager must demonstrate multi-dimensional abilities including interpersonal, technical and administrative skills.

2.5 The Site Manager as Leader

Leaders can be defined as persons who recognise the need for and implement change, establish direction, align people, motivate and inspire, communicate a vision of where the organisation is headed, build teams and share decision making, mentor and coach subordinates, and demonstrate a high degree of integrity in their professional interactions (Kouzes & Posner, 2002 as cited in Skipper & Bell, 2006). Gharehbaghi and McManus (2003) emphasised the fact that leaders must know themselves and seek self improvement. Seeking self improvement means continually strengthening one's attributes (Archer et al., 2008). Good leaders develop through a never-ending process of self analysis and the utilisation of education, training and experience to improve.

The best leaders are continually working and studying to improve their leadership skills (Gharehbaghi & McManus, 2003). According to Burger and Verster (2009) leaders need to be competent. Leaders need technical knowledge, interpersonal skills and project management skills (Archer et al., 2008). A leader can make a difference in terms of the end-result factors such as performance and goal attainment (Ivancevich, 1996 cited in Burger & Verster, 2009). Impliedly, a person would lead people in accordance with his or her personality characteristics (Lewis, 2003). Lee-Kelly and Loong (2003) indicated that the leader's personality and motivation are affected by the degree of perceived control and the degree of uncertainty surrounding the situation. Burger and Verster (2009) indicated the importance for site managers to improve their ability to communicate, organise, build teams and provide leadership; they also need to have a unique and authentic leadership skill that is coherent with their personality and is consistent with their personal values and motivations (Toor & Ofori, 2008). Ideal project leaders are able to engage the team members at a personal level and encourage them, empower them and inspire them to participate in the project (Burke & Barron, 2007) and hence, able to gain commitment from people (Lewis, 2003).

A leader should influence people toward the attainment of organisational goals and should be able to manage conflicts whenever disputes or crises arise (Mintzberg, 1980 cited in Sunindijo, et al., 2007)

Toor and Ofori (2008) identified the need for a shift in the way site manager's function and lead projects. The construction industry is in a new period of a

challenging socio-economic, cultural, political, and business environment. They stressed the urgency for:

- A fresh perspective of implicit leadership drives;
- Suitable leadership behaviours for construction projects;
- Practical and authentic performance standards;
- Effective leadership interventions that can help to accelerate leadership development;
- Influence of leadership on project outcomes, and
- Influence of leadership on followers and organisational outcomes in the long-term.

They also suggested that site managers need to develop as authentic leaders to successfully operate in the increasingly complex working environment. Moreover there is a need to promote a positive culture in the construction industry and to develop leaders who possess positive values and practice high levels of moral and ethical standards (Archer et al., 2008). These leaders should be capable of changing the conventional paradigm of management in the industry and set exemplary standards for others to follow (Toor & Ofori, 2008).

According to Toor and Ofori (2008), authentic project leaders are not only good managers of projects, but they are also leaders of people and visionaries of the future by demonstrating commitment, devotion and dedication they become the role models. Authentic leaders are confident, hopeful, optimistic, resilient, transparent, and ethical and future oriented (Garden et al., 2005, May et al., 2003 cited in Toor & Ofori, 2008).

Leaders have good comprehension of cultural sensitivities and are highly motivated and self-aware. They possess high levels of integrity, deep sense of purpose, courage to move forward, passion and skill of leadership (George, 2003 cited in Toor & Ofori, 2008). Authentic leaders are influential in enhancing others' ability to perform better by providing support and creating conditions that stimulate the individuals to work hard even extraordinarily hard to perform at one's very best (Gardner, 2004 cited in Toor & Ofori, 2008). According to Lewis (2003), no one will follow a person who is not trusted, and to be trusted the leader must be credible in the eyes of a follower. When the designated leader lacks credibility, people may turn for guidance to someone else in the group whom they trust and respect.

The leader must be viewed as having the right to lead, the qualification to lead and to be going in a direction that followers want to move in themselves. According to Gharehbaghi and McManus (2003) a good leader must:

- Know and understand his/her people and look out for their well-being
- Keep her/his people informed and know how to communicate with them;
- Help others exert their influence and must share leadership;
- Have good communication skills;
- Have good judgement;
- Be persuasive, patient and persistent;
- Be a professional who possesses good character traits such as honesty, trustworthiness, competence, commitment, integrity, courage, straightforwardness, imagination, and
- Be loyal to the organisation, perform selfless service and take personal responsibility.

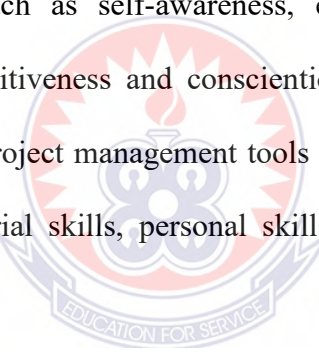
Nicholas (2012) also stated that the site manager is ultimately accountable whether the project succeeds or fails. In the delivery of successful projects, certain knowledge, skills and personal attributes are required for a site manager to be effective. This refers to the site manager's competence. Their competence is clearly a vital factor in the success of projects, yet it remains a quality that is difficult to quantify (Crawford, 2000). The authority of the individual site manager depends on the status of the particular project and their reputation and influencing skills.

The role of the site manager is changing from being an administration position into a much more managerial one (Ma et al., 2014). Holzle (2010) asserted that capabilities and competencies are required for site manager. As suggested by El-Sabaa (2001) human skill is primarily concerned with working with people. By developing high level human or interpersonal skills, the site manager will be sufficiently sensitive to the needs and motivations of others in his or her project when communicating through behavioural norms what has to be achieved in certain contexts. He found that the human skills of site managers have the greatest influence on project management practices rather than technical skills.

Knowledge, skills and personal attributes of site managers are the factors that contribute to completion of successful projects (Crawford, 2000). Competent site managers are those who consistently deliver, on time and within budget, projects that meet or exceed stakeholders' expectations. Understanding of leadership principles and people skills are even more important to good project management. Muller et al. (2009) concluded that developing the site managers' leadership styles so that these target profiles are achieved will contribute to better project results and the personal

success of individuals. Thus, leadership competencies should be taken into account when assigning site managers to projects. Dolfi et al. (2007) agreed that the important contributor to an organization's ability to achieve its strategic goals is the competency of the manager.

Dolfi et al. (2007) pointed out that success in project management is dependent on many variables, the most important being leadership and interpersonal skills. Muller and Turner. (2005) found that competency can be segregated into a number of classifications, such as leadership being a managerial competency imbued with personal characteristics. They concluded that successful site managers must have emotional intelligence such as self-awareness, emotional resilience, motivation, sensitivity, influence, intuitiveness and conscientiousness rather than being a pure tactician. Knowledge of project management tools and techniques are built upon and enhanced by the managerial skills, personal skills and learning skills (Blackburn, 2002).

The logo of the University of Education, Winneba, is a circular emblem. It features a central figure holding a torch, surrounded by a sunburst pattern. The text 'UNIVERSITY OF EDUCATION, WINNEBA' is written around the top inner edge, and 'EDUCATION FOR SERVICE' is written around the bottom inner edge.

According to Pant and Baroudi (2008) the focus of most project management training has been on the technical skills (time, cost and quality) deemed essential to achieve project success because technical skills are easier to deal with when compared to the more difficult areas of soft skills. They concluded that project management practices need to emphasize training and relevant education for up and coming professionals. Regarding the career path, the site manager needs to be clear about expectations of competencies and know how to acquire them (El-Sabaa, 2001). The personality of the site manager strongly influences the decision concerning which career path to choose

(Tremblay et al., 2002) and how to succeed in a project management work environment.

Holzle (2010) found that the qualification of the site manager has to be aligned according to the chosen career path levels. He suggested the needs of providing the continuity development to site managers by their organizational recognition and the needs of supporting project organization by site managers.

2.6. Site Managers' Skills

Site managers face varied and complex tasks on daily basis. They are the key persons who are responsible for the success or failure of every aspect in the construction projects (Heerkens, 2002). Furthermore, construction projects require a collaboration of individuals from different backgrounds and teamwork to achieve project objectives. Consequently, site managers also need to manage and lead these people (Lewis, 2003). Adequate skills are vital for site managers to manage these multifaceted tasks. Sunindijo and Zuo (2013) argue that site managers need four skills, namely conceptual (C), human (H), political (P), and technical (T) skill to perform their job. These skill sets are discussed in details below:

2.6.1 Conceptual Skill

Conceptual skill is the ability to envision the project as a whole. The skill recognises that various functions in the project depend on one another where changes in one part could affect other parts (El-Sabaa, 2001; Syed, 2012). Site managers need conceptual skill to think about abstract situations, to see the project in a big picture, to understand the relationships between different departments, and to imagine how the project fits into its broader environment (Robbins et al., 2009).

According to Sunindijo and Zuo (2013) three competencies form conceptual skill construct. The first competency is integration, which includes all processes required to ensure that all project components are properly coordinated. The second competency is scoping, which limits and controls the works included in the project. Scoping is critical to ensure that all the works of the project is included (Project Management Institute, 2008). The last competency is visioning, which is simply the competency to observe the project as a whole and visualise the relationship of the project with the company, the construction industry and the community. This competency is particularly important to address abstract and external issues as well as constraints that could jeopardise the completion of the project (Goodwin, 1993).

Syed (2012) asserted that conceptual and organizational skill includes understanding how the different functions of a project are interdependent, and how changes to a single part can have an adverse effect on other. Syed postulated that points that are included in conceptual and organizational skill are:

- Planning
- Organizing
- Having a strong goal orientation
- Ability to see the project as a whole
- Ability to visualize the relationship of the project to the industry and the community
- Strong problem orientation

2.6.2 Human Skill

Human skill is the ability to work with and through other people (Goodwin, 1993). There are many stakeholders involved in a construction project, such as the client, consultants, sub-contractors, upper management, team members, and community. A stakeholder is a person or organisation that has an interest in the project or the outcome of the project. In this case, a stakeholder may affect or be affected by project processes or outcomes (Sunindijo & Zuo, 2013). Each stakeholder has different expectations and site managers need to manage these expectations (Rosenau & Githens, 2005). Managing stakeholders' expectations requires sufficient human skill on the part of the site managers.

Furthermore, during the construction process, it is people who perform the works, thus an understanding of human skill to manage these people is vital. Sunindijo & Zuo (2013) argue that there are three competencies, namely leadership, emotional intelligence, and interpersonal skill that form human skill construct.

The first competency, leadership, is the process of influencing a group of people to achieve goals. Leadership is important because leaders in organisations are people who make things happen (Robbins et al., 2009). Leadership is vital for site managers to bring different stakeholders together and influence them to do what must be done to achieve project objectives (Lewis, 2003).

According to Burke and Barron (2007), trust and respect are the foundation of leadership. They further indicate that honesty, integrity, moral courage, justice, fairness, ethics and dependability are also vital leadership qualities required of site managers. Fellows et al. (2003), indicate that leadership concerns the ability to

influence the behaviour of others to accord with the desires of the leader. Lewis (2003) also supports that leadership is essentially an influence process, so the more the manager knows about how to persuade people to do something, the more likely he will be to get results. According to Toor and Ofori (2008), the people side of project management or what many would call leadership, is paramount to the successful delivery of desired results. Leadership is the ability to persuade others to accomplish pre-defined goals with zeal, enthusiasm and willingness (Shi & Chen, 2006). Leadership is a complex process by which a person influences others to accomplish a mission, task, or objective and directs the organisation in a way that makes it more cohesive and coherent.

Toor and Ofori (2006) state that the construction industry has been facing an undersupply of project leaders (cited in Toor & Ofori, 2008). The construction industry faces major leadership challenges such as those relating to the workforce (Toor & Ofori, 2008). Since construction work requires team efforts, leadership should have great impact on the performance of construction work (Odujami et al., 2003). According to Skipper and Bell (2006) leadership is about establishing direction, aligning people, and motivating and inspiring others. According to Kouzes and Posner (2002) as cited in Skipper and Bell (2006) the five Basic Leadership Practices include:

- Modelling the way;
- Inspiring a shared vision;
- Challenging the process;
- Enabling others to act, and
- Encouraging the heart.

Many projects fail to reach their optimum level of performance, not because of any lack of resources, equipment or systems, but purely because the human factors were not adequately addressed (Burke & Barron, 2007). If the goals are unclear, chaos will follow, because who wants to follow a leader who does not know where he/she is going. People will perform better if they are inspired, motivated, directed and supported by good leadership (Burke & Barron, 2007).

Emotional intelligence (EI) is the second competency of human skill construct and it is defined as “the capacity for recognising our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships” (Goleman, 1998). Many studies have shown the importance of EI in organisations (Sunindijo et al., 2007). Goleman (2001) identified four dimensions of EI: self-awareness, self-management, social-awareness, and relationship management. Self-awareness means to recognise oneself feeling at the moment and use it in decision making. Self-management is the ability to regulate distressing effects, such as anxiety and anger, and to restrain emotional impulsivity. People high in social-awareness can recognise other people’s feelings and read nonverbal cues for emotional currents from others.

Lastly, relationship management is the ability to attune oneself to or influence the emotions of others. The last competency is interpersonal skill. Some people in organisations suffer from relationship issues when they relate with their peers, subordinates, and even superiors because they have lack of interpersonal skill. Strohmeier (1992) identified four common interpersonal problems that need to be managed by site managers. The first problem is motivation because typically site

managers have lack of formal authority and influence, which can cause difficulties to motivate others. The second problem is conflicts, which are normal occurrences in every organisation. There are many stakeholders in a construction project, thus the potential of conflicts is much higher.

Communication is the third interpersonal problem. Due to the involvement of many stakeholders, communication problems, such as insufficient flow of information, the unavailability of information, and misunderstanding, are frequent in construction projects. The fourth and the last interpersonal problem are teamwork and cooperation. Many project stakeholders are suffered from egotism, which frustrates cooperation and communication. Within a project team, frequently there is lack of willingness to cooperate as well as an inability to cooperate.

Syed (2012) and El-Sabaa (2001) indicate that human skill elements should include:

- Mobilizing – The site manager is able to mobilize the mental and emotional energy of his subordinate
- Communication skills
- Coping with situations: The site manager is flexible, patient and persuasive
- Delegating Authority: Site manager gives people in his team the chance to participate in decision making.
- Maintaining high self esteem
- Demonstrating high self esteem

2.6.3 Political Skill

Ahearn et al. (2004) proposed that political skill is “the ability to effectively understand others at work and to use such knowledge to influence others to act in ways that enhance one’s personal and/or organisational objectives”. It also includes the ability of performing sensible environmental scanning to understand the complex social, legal, cultural, economical, and political systems that affect the achievement of project objectives (Sunindijo & Zuo, 2013). (Block, 1983 cited in Sunindijo & Zuo, 2013) defined project politics as “the actions and interactions between project team members and people outside the team that have impact on the success of the project”. In this case, site managers are the focal point of this interaction and political skill is particularly crucial for site managers to interact with people outside their direct control, but who have impact on project success. Some people deem that the conduct of politics is distasteful and organisationally damaging. However, several studies indicate that the effective use of political skill is important for site managers because projects are inherently political arenas where competing interests, limited resources, coalition building, and the exercise of power and influence happen all the time to get things done (Ferris et al., 2000; Pinto, 2000 (b)).

According to Sunindijo and Zuo (2013) the main difference between political skill and human skill is that political skill is specific to interaction aimed to achieve success in organisations (or projects). The interactions can take place anywhere, but the main goal is the organisational influence and success (Ferris et al., 2005).

Ferris et al. (2005) proposed four key competencies or dimensions of the political skill. Social astuteness is the first competency. It is argued that people with high

political skill are astute observers of others and they are keenly attuned to diverse social situations. They are sensitive to others, thus they are considered as ingenious and clever in dealing with others.

The second competency is interpersonal influence. Another characteristic of people high in political skill is their convincing personal style that exerts a strong influence to people around them. They are flexible and they can appropriately adapt their behaviour to each situation in order to extract certain responses from others.

Another important competency of political skill is the ability to develop and use diverse networks of people or networking ability. People included in the networks are considered to hold assets deemed as valuable and necessary for attaining successful personal and organisational functioning. People with high networking ability are often expert negotiators, deal makers, and at ease with conflict management.

The fourth and the last political skill competency is apparent sincerity. This competency is the key to influence others because it focuses on the perceived intentions of certain behaviour exhibitions. In this case, the influence attempts will be successful when there are no ulterior motives behind the behaviour exhibited. People high in apparent sincerity inspire trust and confidence because they do not appear to be manipulative or coercive. Furthermore, political skill is a clever way to achieve behaviour coordination and eliminate many barriers that might disrupt project performance. It inspires trust, confidence, and support. It also orchestrates and facilitates the interaction among team members that can boost project performance (Ferris et al., 2007).

2.6.4 Technical Skill

Technical skill is the job-specific knowledge and techniques that are required to perform specific tasks proficiently (Robbins et al., 2009). Sunindijo and Zuo (2013) identified six technical competencies that are essential for site managers (Fisk, 1997; Project Management Institute, 2008; Westney, 2001).

The first competency is scheduling, which involves an understanding to determine the dates when different activities will be performed, recognise activities that drive other activities, and determine when the activities are due. Budgeting and cost management is the second competency, which involves determining the types and quantities of resources needed to perform various project activities, developing cost estimation for all resources, allocating the budget to individual work activities, and controlling changes to project budget.

Quality management is the third competency of technical skill construct. The activities of quality management include identifying relevant quality standards and determining how to meet them, evaluating project performance periodically to provide confidence that the project will meet the standards, and monitoring specific results to determine their compliance with the standards as well as finding ways to eliminate unsatisfactory performance.

The fourth competency is document and contract administration, which is about the understanding of procedures for implementing construction contracts according to the accepted practices and regulations within the construction industry. In addition, the system for keeping records and reports of everyday activities should be managed

carefully (Sunindijo & Zuo, 2013). Also, the site manager should be able to use computer to carry out his project efficiently.

Risk management is the fifth competency of technical skill construct. To be competitive, an organisation must be proactive in managing the risks to ensure successful achievement of project objectives. There are four steps in risk management: risk identification where project team and stakeholders identify and categorise risks, risk assessment to assess the impact of each risk category to the project, risk analysis which indicates which cost or schedule elements require the most contingency and which risk categories contributed the most to contingency, and lastly developing risk mitigation steps and assign them to team members (Sunindijo & Zuo, 2013).

Procurement management is the sixth and the last competency. It includes the processes required to attain goods and services from outside the organisation or from external parties. Depending on the application area, these external parties can be consultants, subcontractors, vendors, or suppliers (Sunindijo & Zuo, 2013).

2.7. Skills According to the Leadership Competency Profile

Muller and Turner (2005) developed a competency profile skill identification questionnaire based on Dulewicz and Higgs' analysis and their results were divided into groups such that different skills represented intellectual, managerial or emotional quotients of the managers. Some examples of IQ are:

- critical thinking, vision and strategic perspective

Some examples of MQ skills included:

- development, managing resources, empowering
- Influencing and motivation

Some examples of EQ competency included:

- conscientiousness and self awareness

Intellectual competency included;

- Critical analysis and judgment: Important relevant information from a wide range of sources is gathered and facts, advantages and disadvantages are highlighted by the leader. Helps in decision making.
- Vision & imagination: Imagination and innovation of the leader comes into the picture here. Foresight of work, impact due to changes and business realities are included.
- Strategic perspective: Opportunities and threats are identified and studied on a broader scale and wider issues with their implications are the main points here.

Managerial competency includes:

- Resource Management: Organization of resources along with their coordination is to be done efficiently and effectively, and the manager addresses this.
- Engaging communication: The leader is approachable and accessible to others, and hence succeeds in garnering support through tailored communication skills.
- Empowering: Direct reports are given autonomy and the leader seeks to solve problems individually.
- Developing: Others' competencies and skills are harnessed by developing them, and putting them in ever-demanding tasks and roles.
- Achieving: The leader is unwavering and steadfast in achieving success and implementation of his decisions

Emotional competencies are:

- Self-awareness: The leader is in control of his feelings and controls them.
- Emotional resilience: Consistent delivery of performance in different situations. Even if faced with personal or emotional challenges, he or she retains concentration on his results.
- Intuitiveness: Rational and emotional perceptions are utilized to arrive at decisions, even if there is ambiguous information arriving at his side.
- Interpersonal sensitivity: Needs and perceptions of others are taken into account by the leader when taking decisions and proposing solutions to problems and challenges.
- Influence: Persuasion of others to change viewpoints based on an understanding of both the parties' positions on the matter and provides a basis for this change.
- Motivation: He possesses the drive and vigour to achieve clear results
- Conscientiousness: Clear commitment to a course of action even if faced with challenges is a hallmark of a leader, and he follows the same.

2.8 Skills Required at Different Stages of a Project Life-Cycle

Each phase in the construction projects are varied by its needs, characteristics and requirements (Morris, 1998). Apparently, each project phase requires formal decision point by the site manager. In order to assess the impact of site manager's managerial skills in construction projects, the project life cycle had been used as a yardstick on measuring the critical skills required of the project. As the success of project tends to be measured against cost, time and quality, it is important for the site managers to apply their skills and experiential knowledge during the project life-cycle (Muzani et

al., 2006). It is perceived that each project phase involves different tasks and appropriate knowledge and skills are needed to be performed by the site manager. Studies indicate that the role of the site manager is relatively crucial throughout the project phases from the pre-design stage until project completion. As project passes through its later phases and into routine operation, it requires the site manager to effectively plan, organise, monitor and control the tasks. In that, the site manager needs to rely and apply the knowledge and skills he/she possesses. At the planning stage, site manager focuses on breaking down projects into work package in order to allocate the resources to the project before executing it. Thereby, apart from site managers' experiential knowledge, skills such as effective leadership skills, technical knowledge and administrative skills are required at this stage (Syed, 2012; Muzani et al., 2006). Syed (2012) however, argues that effective leadership skills seem to be the most important at the initial stages of the project (the planning stage and the pre-construction stage in the project cycle). Syed (2012) indicates that the site manager needs to be a clear leader with the power to create objectives and plans, to handle contracting issues and to approve changes in work. These areas require the capability to make decisions, communicate with team members about the project and ignite a commitment among them to the project requirements.

Syed (2012) asserted that there is a strong relation between leadership and human nature skills indicated by statistical evidence, that the latter is more required during the early design and planning phases where decisions made affect project team incorporation, inspiration, and communication. He also supported that planning and organizational experience is always important along with an understanding of control systems and software required to get the project done.

With regard to the detailed design and construction phase of the project, Syed (2012), further opined that strong ties are indicated in project controlling, quality management, management of materials and safety. The common underlying factor among these is administration, and hence administrative experience is an important skill that is required during the detailed design and construction phase of the project.

Muzani et al.(2006) and Syed (2012) indicate that through the project lifecycle, meticulousness along with communication and decision making are the key. According to Muzani et al. (2006) by having knowledge and skills in decision making, it can prevent the project from running over the time period and budget. Thus, without such knowledge and skills, the success of the project will be affected.

2.9 Skills Required in Different Types of Projects

According to Syed (2012) projects with intermediate complexity, emotional stability and communication skills are important. On higher complex problems, project understanding is vital. On projects where relocation is the main issue, inspiration and assurance is an important issue. For restoration projects, communication is an important virtue along with self-awareness. On fixed price contracts, sensitivity along with communiqué is an issue.

2.10 Site Managers' Managerial Skills

Site managers' managerial skills necessary for project success have garnered substantial attention. Extant literature review revealed that several key skills have been identified as site manager's managerial skills. They include leadership skills (persuading, influencing, motivating, incentive, integrity, open and honest), effective

communication skills, administrative skills (planning and organising), technical skills, personal skill (self-confidence, coping skills and enthusiasm), team building/delegating skills, problem-solving /decision making skills (El-Sabaa, 2001; Gosling et al., 2003; Shi & Chen, 2006; Wilson et al., 2006; Lismila & Ogunlana, 2008; Ryan, 2010; Hyvari (2006); Mouchi et al., 2011; Barry, 2012).

2.10.1 Leadership Ability

According to Northouse (2004) the concept of leadership, at its core, is a process of influencing, motivating a group of individuals such that the group collectively agrees to and accomplishes a common goal. Leadership ability, then, is the ability for an individual to control that process. Within a project management context, the site manager is charged with leading his project team through the successful completion of the lifecycle of a project which is in an increasingly complex and competitive project environment (Brugger et al., 2000; Hyvari, 2006; Zimmerer & Yasin, 1998; Valencia, 2007; Syed, 2012). The importance of leadership ability is highlighted by other authors throughout the project management literature. Odusami (2002) and Windapo et al. (2015) find that construction professionals rank leadership skill as one of the top four managerial skills necessary for a site manager and Crawford (2000) found that leadership was the most mentioned site manager attribute among sixteen studies reviewed. Testing the contribution of leadership empirically, Thamhain (2004) found a significant positive relationship between the existence of team leadership and high performance of project teams. Valencia (2007) also found a significant positive correlation between the existence of team leadership and construction project performance. Given the general consensus among project management authors about

the importance of leadership ability, it can be expected that a positive relationship exists between this site managers skills and project success.

2.10.2 Effective Communication Skills

According to Archer et al. (2008) communication is “an attempt to achieve as complete and as accurate and understanding as possible between two or more people”. Hans (2011) also opined that communication refers to being able to actively listen to others and articulate your ideas in writing and verbally to any audience in a way where you are heard and achieve the goals you intended. Studies show that one of the most critical skills possessed by good leaders is their ability to effectively communicate with people at all levels (Benator & Thumann, 2003; Wilson et al., 2006; Ryan, 2010; Mouchi et al., 2011; Barry, 2012). Effective communication is not simply talking clearly; it is, in many cases, and often more importantly, listening effectively. Effective communication often requires that the listener understands the emotional content of the speaker's words as well as the words themselves (Benator & Thumann, 2003).

Project management calls for clear communication about goals, responsibility, performance, expectations and feedback. The site manager is also the team's link to the larger organization. The leader must have the ability to effectively negotiate and use persuasion when necessary to ensure the success of the team and project. Through effective communication, site manager support individual and team achievements by creating explicit guidelines for accomplishing results and for the career advancement of team members (Barry, 2012).

Several studies emphasized the importance and contribution that communication ability makes within the context of project management success (Dainty et al., 2005; Teixeira et al., 2006; Windapo et al., 2015; Hagberg, 2006; Awan et al., 2015). Hauschildt et al. (2000) offers that effective communication is one of 24 factors related to site managers' success and Hagberg (2006) found that communication skill was the most frequently cited skill in the site manager's surveys across three years of data collection. Similar to the studies on leadership ability, Odusami (2002) ranks communication skills as one of the top four skills perceived as necessary and Crawford (2000) reveals that communication is a frequently referenced skill in her review of 16 project management studies. Barry (2012) report that communication skills is almost always named as the second most important skill by site managers and team members. Awan et al. (2015) and Valencia (2007) found a strong positive correlation between effective communication skill and project success. Given the importance placed on communication skill, it can be expected that a positive correlation exists between a project leader's communication ability and the level of success he or she achieves in construction project performance.

2.10.3 Personal Skills

According to Dainty et al. (2005), the skills contained within this cluster all share a common theme in that they reflect intellectual and behavioural maturity in relation to others and to work. Of particular relevance to the superior performing managers was the ability to demonstrate self-control, remain composed, restrain negative actions, and cope well even when confronted with stressful situations. They further stressed that another important skill within this cluster is flexibility, the ability to adapt and work flexibly within a variety of situations, individuals or groups. Many authors

(Syed, 2012; El-Sabaa, 2001; Bartram, 2005; Valencia, 2007; Barry, 2012) also support this assertion.

Also self-confidence is one of the fundamental and effective requirements for site managers (Mouchi et al., 2011; Barry, 2012; Ekung et al., 2015). Studies indicate that leaders without high self-confidence are unable to take the right decisions and to solve conflicts that could arise amongst their staff (Paglis & Green, 2002). According to Mouchi et al. (2011) site managers with high self-confidence are more likely to attempt complex tasks and to set challenging objectives and take more initiative to deal with problems. Given this ever-changing and ambiguous environment, individual self-confidence is regarded as a critical site manager's skill (Mouchi et al., 2011; Dainty et al., 2005).

Although the project management literature considers Personal skills as important, it fails to directly measure this trait and provide empirical evidence that relates it to project management success. Most work done in investigating the importance of Personal skill (self-confidence, coping ability, and enthusiasm) are mostly anecdotal studies which detect the site manager's perception on the importance of the traits (Mouchi et al., 2011; El-Saaba, 2001; Hyavri, 2006; Barry, 2012). Although Personal skills lack empirical evidence to support a significant relationship with project success (Valencia, 2007), nevertheless are enough support within the literature to be included in this study. Given the importance placed on Personal skills, it can be expected that a positive association exists between a site manager's skill and the level of success he or she achieves in construction projects.

2.10.4 Team-Building/Delegating Skills

Team-building skill refers to the ability to work effectively with anyone with different skill sets, personalities, work styles, or motivation level to achieve a better team result. This skill includes team structure design skills, identifying the ability of different project team members, and integration skills (Deepa & Seth, 2013; Barry, 2012; Ryan, 2010). A team builder can best be defined as a strong person who provides the substance that holds the team together in common purpose toward the right objective (Ryan, 2010; Barry, 2012). A construction project team is temporary where people, in many cases from different organisations, come together for only one project with no guarantee of ever doing so again (Cornick & Mather 1999; Ong, 2008). This type of team has distinct characteristics and offers more challenges than the teams in other industries. Team-building, therefore, is crucial for managing the knowledge and skills of the human capital and making them as a competitive advantage instead of an inhibitor of delivering successful projects (Verma, 1995).

In order for a team to progress from a group of strangers to a single cohesive unit, the leader must understand the process and dynamics required for this transformation. Barry (2012) further indicated that the site manager must also know the appropriate skills to use during each stage of team development. The site manager must also have trust in his/her team members. This is demonstrated by how much he delegates and how much he allows people to participate in decision making. He further indicated that individuals who are unable to trust other people often fail as site managers and forever remain micro-managers, or end up doing all of the work themselves.

Studies have found that a site manager who encourages others to participate within his group contribute positively toward performance (Valencia, 2007; Awan et al., 2015). Given the importance placed on team-building and delegating skills, it can be expected that a positive correlation exists between a project leader's team-building and delegating skills and the level of success he or she achieves in construction projects.

2.10.5 Problem- Solving Skills

Problem- solving skills, which include being able to discover problems in a timely manner, problem-analyzing skills, judging and decision-making skills, as well as controlling skills. Gushgari et al. (1997), applying decision making to project management, defines it as the ability to take appropriate action under the constraints of limited time, information, and resources. Posner (1987 as cited in Valencia, 2007), in discussing the role of the site manager as problem solver, states that the site manager must understand the critical problems he or she faces, such as inadequate resources, insufficient time, and unclear goals and direction, and be prepared to manage them. Because the site manager operates in a constrained resource environment, the management of these problems will always require decisions to be made among alternatives.

Most scholars agree that there is a need for a site manager, through, exercise of leadership, in the project delivery process to have excellent problem solving and decision-making skills to positively influence the project outcome (Morris, 2000; Edum-Fotwe & Mc-Caffer, 2000, Dainty et al., 2005; Teixeira et al, 2006; Windapo et al, 2015; Turner, 2009; Barry, 2012; Deepa & Seth, 2013; Awan et al., 2015).

2.10.6 Administrative Skill

Administrative skill comprises two facets – planning and organizing (Kim & Yukl, 1995; Syed, 2012). Bartram (2005) describes administrative skill as the ability to plan ahead and move forward in a systematic, organized fashion. Kim and Yukl state that this skill is the determination of objectives and strategies (planning), the use of priorities in allocating resources (planning), and the attempt to improve the processes of production, and organizational effectiveness (organizing). Administrative skill is important to the site manager because he is charged with the initial planning, constant performance monitoring, and periodic re-planning should project conditions change. These three aspects of the site manager's responsibilities are not limited to himself, but he must also ensure that the functional managers that contribute to his project manage their portion in the same coordinated way (Valencia, 2007).

The role that administrative skills play with regard to site manager success is tested in at least four studies. Hyvari (2006) found that planning and organizing ability were viewed by stakeholders as the best predictor of site manager effectiveness. Hauschildt et al. (2000) surveyed site managers and found that administrative skill was a significant factor in the most successful site managers. Anderson and Tucker (1994), and Valencia (2007) found a strong correlation between administrative skill and site manager success. Syed (2012) asserted that Administrative skill is one of the essential skills required by the site manager for project success. In sum, these five studies show that administrative skill is a significant factor towards project success and it can be expected that a positive correlation between this factor and construction project success exists.

2.10.7 Technical Skills

In her study of project management effectiveness, Hyvari (2006) defines technical competence as the competency to use project management tools and methods to carry out projects. In exploring the perceived importance of technical skills within defence acquisition, Grant et al. (1997) derive a similar definition of technical skills as the understanding of project management tools, techniques, and technologies. Hyvari and Grant et al. report that technical competence is perceived by their study's respondents as an important trait and Odusami (2002) and Crawford (2000) list technical skills within their rankings of important site manager skills. The significance of technical skills as it relates to a site manager's success is unclear.

Anderson and Tucker (1994) advise that selecting a site manager with an appropriate technical background is essential, but caveat their statement saying that technical competence without managerial capabilities is not enough. Goodwin (1993) offers that a site manager with too strong focus on the technical aspects of a project may fail to recognize organizational, political, and other external realities to the detriment of his work. Some studies however report that technical skills are related to success, or at least perceived to be related; Thamhain (2004) finds that the use of project management tools and techniques has a strong influence on team performance. Although it appears that technical skills is not as significant as other site manager skills in predicting success, its importance within the literature still draws the expectation that the level of technical skills a site manager possesses will positively influence the level of success he/she achieves.

2.11 Acquisition of Project Management Skills

Most individuals are not born with all the skills needed to be successful managers; rather, management skills are learned and accumulated over time. According to Xiong (2008) building management skills requires taking risks and learning from those mistakes. Staying in easy, non-challenging situations will never make a good leader; rather, facing difficult situations that require you to adapt and make changes is the best way to obtain leadership skills. Xiong (2008) and Syed (2012) indicated that individuals can gain knowledge of project management and develop management skills through;

- Observing the methods and skills (mentor system) of leaders/managers.
- Reading the autobiographies from those great leaders they admire
- Formal training

2.11.1 Mentoring or Coaching System

This involves having the more experienced leaders/managers coach the less experienced employees (McCourt & Derek, 2003; Torrington & Hall, 2000). It is argued that mentoring offers a wide range of advantages for development of the responsibility and relationship building (Torrington et al., 2005). The practice is often applied to newly recruited graduates in the organization by being attached to a mentor who might be their immediate manager or another senior manager (Aidah, 2013). This however does not imply that older employees are excluded from this training and development method but it is mainly emphasized for the newly employed persons within the organization.

2.11.2 Formal Training

The need to perform one's job efficiently and the need to know how to lead others are sufficient reasons for training and development and the desire to meet organizations objectives of higher productivity, makes it absolutely compulsory.

According to Oribabor (2000) training and development is aimed to developing competences such as technical, human, conceptual and managerial for the furtherance of individuals and organization growth.

Training has been an important variable in increasing organizational productivity. Most of studies including Colombo and Stanca (2008), Oguntimehin (2001) identified the functions of training as follows: increases productivity, improves the quality of work; improves skills, knowledge, understanding and attitude; enhance the use of tools and machine; reduces waste, accidents, eliminates obsolete in skills, technologies, methods, products, capital management etc. It brings incumbents to that level of performance which needs the performance for the job; enhance the implementation of new policies and regulations; prepares people for achievement, improves man-power development and ensures the survival and growth of the enterprise.

2.12 Determinants of Construction Project Success

Project success is a crucial concept and determining the degree of success or failure is very complex (Chan et al., 2004). The topic of project success has always been a central concern in the project management literature (e.g., Cooke–Davies, 2002; Fortune & White, 2006). A significant amount of research has gone into the identification of the determinants of project success (Jetu & Riedl, 2012). A project is

considered to be successful if there is no time or cost overruns and it meets expectations (Narayanaswamy et al., 2013). Collaboration of multiple specialists and need to integrate their skills in a befitting manner is required for successful execution of the project and to achieve uniformity of the ideas and views within the team while taking into account the budget and schedule constraints (Sicotte & Langley, 2000).

According to Hagberg (2006) every project's success hinges on each party having some consideration in the process. The client must feel they received an appropriate product for their expense and the contractor must feel they were adequately compensated for services rendered. When both sides can walk away mutually satisfied those objectives have been met the project was ultimately successful. Hagberg (2006) further indicated that success may not be readily apparent and the ultimate project goals may take years to be manifested, but ultimate realization of satisfactory consideration for services rendered or project delivery will lead to the eventual perception of success or failure. Project success largely hinges on the ability of the constructor to establish and communicate successful project objectives to the client. Many times project success also hinges on contract type.

Researchers have grouped project success factors into five categories. These include human-related factors, project-related factors, project procedures, project management actions, and external environment (Chan et al., 2004). Related to these five categorical determinants of project success are "critical success factors" that impact construction project performance. Hughes et al. (2004) developed a method that quantitatively assessed the overall project success of a construction project. These included cost, schedule, quality, safety and operating environment. Nzekwe - Excel et al. (2008)

developed satisfaction parameters for evaluating team performance as a correlate of project success. They defined satisfaction as a 'measure, or the extent to which the needs, requirements and expectations of clients, team members and customers for a project are met'. Their satisfaction parameters were defined along four most commonly identified success criteria in the construction industry; cost, quality, safety and time with 16 attributes.

Cost:

- Project fee is paid for as agreed;
- Changes are fairly introduced;
- Supplier cost estimates are in accordance with my requirements;
- Flexibility for changes or introduction.

Quality:

- Project design contains sufficient details;
- Project consultants are responsive to question and changes;
- Open and friendly communication;
- Client interactions are open and friendly;
- Minimal defects in supply.

Safety:

- Project schedules are detailed and easy to understand;
- Health, safety, and risk procedures are with no incidents.

Time:

- Project is completed on time;
- Communication flow is consistent;

- Response to complaints is very quick;
- Ensures that changes are introduced as early as possible
- Supplier's ability to meet my deadlines.

2.13 Constraints of Construction Site Managers

Project teams consist of individuals from previously loosely coupled areas in an organization brought together to perform complex or specialized tasks of a multidisciplinary nature (Cohen & Bailey, 1997). The short-term interaction of projects presents one of the greatest challenges to individuals managing performance within it (Turner & Muller, 2003). Also, projects involve undertaking a range of work activities for a finite period with one or more defined objectives (Turner & Muller, 2003). Added to this is a project setting characterized by groups of individuals working together for short periods of time before being disbanded and redeployed elsewhere within the organization (Atkins & Gilbert, 2003).

Cabano (2006) pointed out that many projects are experiencing limited abilities in meeting the demands of capital programs due to the limited skills of their human resources, he also makes mention of the fact that resources level in project management is more acute than most other disciplines. The allocation of human resources in the execution of projects is usually made according to the experience and intuition of site managers. Successful negotiation for project staff assignments is oftentimes dependent on the leadership qualities of site managers and their ability to ensure that the project receives appropriately competent staff in the required time frame (Dainty et al., 2005; Kotnour & Vergopia, 2005).

It is very unlikely that development projects will be implemented successfully without some form of conflict with one or more stakeholders. How these conflicts are managed is what determines whether a project will be successful or not. Conflicts with project stakeholders can be in different forms, but the most common issues are usually around use of project resources, preferred project locations, violation of cultural or religious beliefs, non-compliance with organizational policies. In as much as these issues are very important to the concerned stakeholders, there could be a threat to the success of any project if they are not managed properly.

According to Ma et al. (2014) the top five constraints that site managers have to overcome are:

- Poor communication skill
- Poor defined goals and objectives
- Misunderstandings among the project team
- Expectations of stakeholders in their organizations
- Expectations of senior management in their organizations

2.14 Conceptual Framework and Hypotheses

The research model in this study consists of 12 elements divided into two parts. The first part consists of seven site manager managerial skills elements namely: Site manager's skills, Communication skills, Administrative skills, Team-building/delegating skills, Problem solving skills, Personal skills, and Technical skills adapted from Shi and Chen (2006), Hofstee de Raad and Goldberg, 1992; Nortons (1975 as in Valencia, 2007) representing the independent variables for the study. These site managers managerial skills have been identified by several authors like Low and Christopher (2000); Edum-Fotwe and Mc-Caffer (2000); El-Sabaa (2001); Dainty et

al. (2005); Shi and Chen (2006); Valencia (2007); Teixeira et al., (2006); Xiong (2008); Turner (2009); Barry (2012); Ma et al.(2014), Ekung et al. (2015), Windapo et al., (2015). The second part is the construction project success (cost, quality, delivering time, safety and operating environment) which is the dependent variable. Regarding the construction project success, the scales were adapted from Hughes et al. (2004) and Nzekwe-Excel et al. (2008). These construction project success elements have been used by authors like Valencia (2007), Kheni and Ackon (2015) and Ekung et al. (2015). Figure 2.1 shows the conceptual framework for the study.

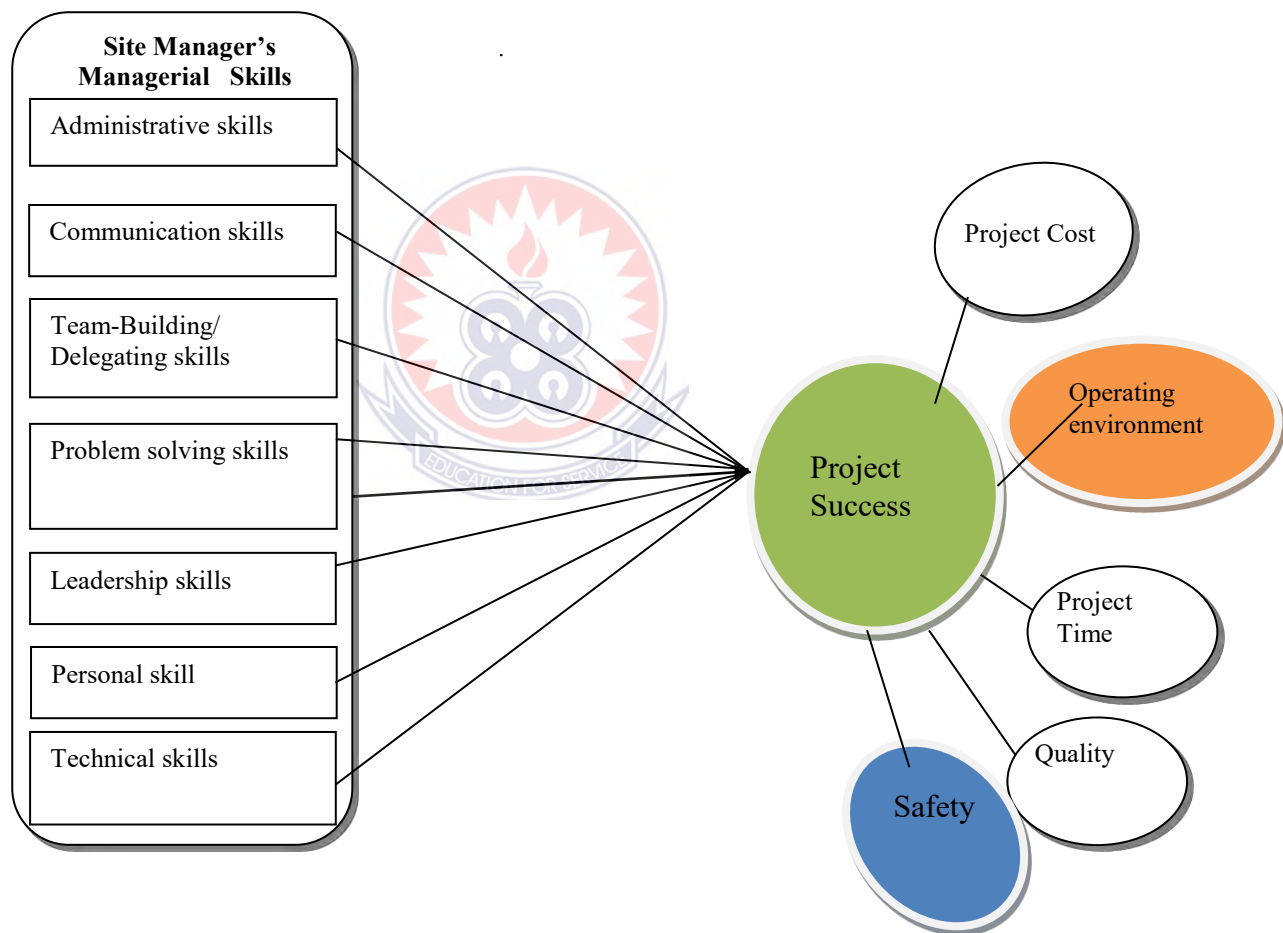


Figure 2.1: Conceptual Framework for the study

2.14.1 Formulation of Hypotheses

Based on the relevant literature, the following hypotheses are proposed to assess the impact of site manager's managerial skills on construction project success:

H1.The site manager's Communication skills affect the construction project success.

H2.The site manager's Leadership skills affect the construction project success.

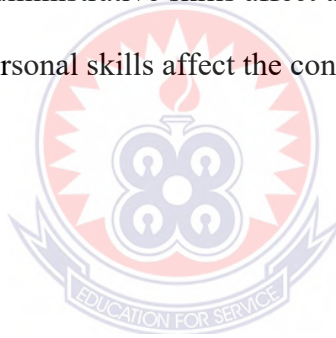
H3.The site manager's Technical skills affect the construction project success.

H4.The site manager's Team building/delegation skill affects the construction project success.

H5.The site manager's Problem solving/decision making skills affect the construction project success

H6.The site manager's Administrative skills affect the construction project success

H7.The site manager's Personal skills affect the construction project success.



CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presents the various methods and techniques used to collect and analyze the data collected for the study. Consequently, this section provides information such as the research design, targeted population, sample techniques, sample frame, sample size determination, sample size, sources of data, and method of data collection. It also examines the questionnaire design, validity and reliability of the instrument that was used to collect data for the study.

3.1 Research Design

This study employed descriptive quantitative survey approach. Creswell (2002) suggested that research methodology must consider the context of the research and the desired results in order to achieve meaningful research outcomes. Quantitative research focuses on relationship between dependent variables and independent variables (Babbie, 2010). A survey research involves collecting data in order to test hypothesis or answer research questions concerning the correct status of the subject of study (Gay, 1992). Fraenkel and Wallen (2000) also indicated that a survey research involves the collection of data through the use of questionnaires, interview or ability test.

A quantitative descriptive approach minimizes the potential for researcher bias as well as minimizes the need for subjective evaluation of data (Thies, 2002). One of the major concerns regarding the use of qualitative research in studies involving social or behavioural content is the possibility of researcher bias and influence induced by human persuasion (Thies, 2002). Quantitative approaches, using numerical methods,

on the other hand rely on objective means for collecting data, distancing the researcher from human influences (Neuman, 2003). Quantitative survey has the advantage of producing a good amount of responses from a wide range of people. According to Saunders et al. (2007), survey enables a lot of information to be collected from a sizeable population in a short time, and is practically inexpensive to administer. Besides, it enables researchers to use smaller groups of people to make inferences about larger groups which are prohibitively expensive to study (Holten & Burnett, 1997).

This research is a descriptive study as it aims to discover whether there is any relationship between two variables (but not causal relationship) the effect of the independent variables on the dependent variable directly to test the hypothesis. Quantitative approach was found more consistent with the purpose of this research. Also this research is without any control on the behaviours (Ogbonna & Harris, 2000). As a result of this, survey strategy is appropriate and was used for this research. This research depends on empirical findings and therefore it is of inductive nature.

3.2 Population

The target population for the study comprised site managers working with construction companies in Accra and Sekondi-Takoradi currently registered with the Ministry of Water Resource, Works and Housing (MWRWH). The Ministry of Water Resource, Works and Housing serves as a regulatory body for the construction industry in Ghana. These two Metropolises were selected because they are among the

major Metropolises in Ghana where most contractors and construction activities are highly concentrated (Ankomah et al.2010).

3.3 Sampling Technique

The study employed simple random sampling technique using a list of the members of the targeted population. Each individual was chosen randomly and entirely by chance, in a way that each individual has the same chance of being chosen for the sample as any other individuals. In using this method, names of respondents firms were written on pieces of papers and drop into an empty container. The sampling units in the container were thorough mixed and each unit selected without replacement. The process of mixing and selecting continued until the required sample was obtained. According to Kumar (2005), a simple random sampling is an unbiased surveying technique and is a basic type of sampling, since it can be a component of other more complex sampling methods. The chosen of the sampling technique was to ensure that each member of the population has equal chance of being selected. This was done to avoid bias in the sampling process.

3.4 Sampling Frame

The study drew its sampling frame from the registered list of contractors kept by the two Metropolitan Assemblies of the selected Metropolis (Accra and Sekondi-Takoradi). The sampling frame for the study was 431 construction firms of various classifications. Table 3.1 shows the details of the sample frame.

Table 3.1 Contractors in the selected Metropolis

Accra	Sekondi-Takoradi	Total
295	136	431

3.5 Sample Size Determination

To determine the sample size of contractors for each Metropolis, the Kish (1965) equation which gives a scientific procedure for determining sample size was used.

The equation is given below:

$$n = \frac{n^1}{\left\{1 + \left(\frac{n^1}{N}\right)\right\}}$$

Where

n = Sample Size from finite population

N = Total Population

n^1 = Sample Size from infinite population calculated from; $n^1 = \frac{S^2}{V^2}$, where

V = Standard error of sample population equal to 0.05 for the confidence level 95%, and $t = 1.96$

S^2 = Standard error variance of population elements,

$S^2 = P(1 - P)$; Maximum at $P = 0.5$

Using Kish formular, the sample size for the study was calculated as follows:

$$n^1 = S^2/V^2 = (0.5)^2 / (0.05)^2 = 100$$

$$n \text{ Construction companies} = \left[\frac{100}{1 + \frac{100}{431}} \right] = 82 \text{ firms}$$

Similar research conducted in Ghana has indicated non-response rates ranging from 35% to 72% (Kheni et al, 2008; Kheni & Ackon, 2015). Based on the non-response rates recorded in the aforementioned studies, an allowance of 70% was used in this present study to cater for both the non-response and those firms with more than one project sites. The adjusted sample size taking into consideration the allowance was:

$$\frac{170}{100} \times 82 = 1.7 \times 82 = 139 \text{ construction firms' site managers}$$

The sample sizes for the two Metropolises were calculated as follows:

$$n \text{ Accra} = \frac{295}{431} \times 139 = 95 \text{ construction firms' site managers}$$

$$n \text{ Sekondi-Takoradi} = \frac{136}{431} \times 139 = 44 \text{ construction firms' site managers}$$

The samples for the two Metropolises are better presented on Table 3.2. The table shows that a total of one hundred and thirty nine construction firms' site managers were sampled for the information used in the study.

Table 3.2 Sample size for each Metropolis

Accra	Sekondi-Takoradi	Total
95	44	139

Source: Field data, September (2016)

3.6 Data Collection

The primary source of information was obtained using questionnaires. Also, extensive review of literature was undertaken to establish the concept of project management, project management skills; its importance and associations, and how to gain project management skills; construction project success, and constraints of site managers. Questionnaires were the main data collection tool (Ogbonna & Harris, 2000; Awan et al., 2015).

3.6.1 Questionnaire Development

The questionnaires were divided into three (3) sections. The first part sought the demographic background of respondents. This section was developed to help address objective three (3). The second part consisted of questions on seven (7) site manager managerial skills element to identify the project management skills possessed by construction site managers in Ghana. This section was developed to address objective one (1) and also to help address objective two (2). The third part was developed to assess the respondents' perception on how their skills contribute to construction

project success; this helped to address objective two (2) and objective three (3). The questions on seven (7) site manager's managerial skills elements were from Shi and Chen (2006); Hofstee de Raad and Goldberg (1992); Nortons (1975) as in Valencia, (2007). Indeed, these measures of site manager's managerial skills have been widely used in a variety of literatures and are generally accepted as a good measure of perceptions of site manager's managerial skills (Shi & Chen, 2006; Valencia, 2007; Awan et al., 2015).

The questions on project success were adapted from Hughes et al. (2004); Nzekwe-Excel (2008). All the questionnaires were designed to be answered using a five-point likert scale with responses ranging from _1' to _5'. The definitions for the responses for section (B & C) were:

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

3.6.2 Pre-testing of the Questionnaires

Before obtaining the final questionnaires used in the research, draft questionnaires were designed and pre-tested to look into their effectiveness and applicability with regard to the current study. The draft questionnaires were edited by project management experts (two (2) construction management consultants and an academician) to obtain the final questionnaires. The pre-testing of the questionnaires consisted of two (2) phases, the first phase involving administration of the pre-questionnaire, and the second phase involving the conduct of a follow-up feedback interview in relation to pilot survey respondents' thoughts. The pilot respondents were asked whether they understood the instructions for completing the questionnaire, and whether the wording and places to mark responses to each question were clear.

Another issue which was addressed was the average time required to complete the questionnaire, as it was acknowledged that if it would take a long time for respondents to complete, they might be reluctant to participate and this would have negative impact on collection numbers and nature of responses (Willar, 2012; Kheni & Ackon, 2015).

The pilot-questionnaires involved five (5) site managers from three registered construction firms in Accra, the largest city in Ghana. The feedback from the respondents indicated that the average time required to complete the questionnaire was appropriate. There were however, some few modifications on the wording in parts of the questionnaire to suit the current context. Sample of the questionnaire is attached as Appendix.

3.6.3 Administration of the Questionnaires

The efficient and effective administration and implementation of a survey significantly influence the overall success of data generation and the achievement of satisfactory responses (Churchill, 1991; Faria & Dickinson, 1992). In order to further reduce the poor response rate associated with questionnaire survey, a method of administering questionnaires described by Saunders et al. (2009) as “delivery and collection questionnaires” was employed. Questionnaires were administered by hand with the support of two (2) research assistance. Names of the site managers and their phone numbers were obtained from their companies’ secretaries after a letter of introduction had been shown to them regarding the purpose of the survey. The site managers were first contacted on the phone before meeting them on their various project sites. The respondents were given an option of being interviewed or to self-

complete the questionnaire, in which case the respondent had to indicate the time to come back to collect a completed questionnaire. Where the targeted respondents declined to participate in the survey or their offices could not be found, a substitute firm with similar characteristics was identified and approached. This exercise went on for one (1) month in order to capture as many respondents as possible.

3.7. Data Analysis

Completed questionnaires from the field was edited and coded appropriately to make effective meaning out of the data. Editing was done to correct errors, check for non responses, accuracy and corrects answers. Coding was done to facilitate comprehensive quantitative analysis of the data. The data was analyzed and interpreted by using Statistical Package for Social Science (SPSS) version 16. In addition to descriptive statistics such as tables, percentages, simple means and standard deviation, the following inferential statistical tools; Pearson's Product Moment Correlation Coefficient (PMCC), and Multiple Regression Analysis were employed (Awan et al., 2015; Valencia, 2007). The validity and reliability of the research questionnaire were examined using face validity, principal component analysis and Cronbach's alpha of 0.7 cut-off threshold.

3.7.1 Correlation Analysis and Multiple Regressions Analysis

3.7.1.1 Correlation Technique

The major statistical measure of the relationship was the correlation coefficient. Correlation analysis is primarily concerned with finding out whether a relationship exists and determining its magnitude and direction (Saunders et al., 2007; Hair et al., 2006). The Pearson's Product Moment Correlation Coefficient was computed to

determine the relationship between the seven (7) site manager's managerial skills and construction projects success questionnaire.

3.7.1.2 Multiple Regression Technique

Hair et al. (2006); Saunders et al. (2007) and Sekaran (2005) describe the multiple regressions as a statistical technique used to predict the variance in a single dependent variable caused by the effect of more than one independent variable. In other words, correlation indicates the existence of the relationship between the variables while the multiple regressions specify the most crucial variables for the relationship. Stepwise Multiple Regression analysis was used for the determination of the relevance of each independent variable and its contribution to the mathematical equation.

3.8 Construct Validity

Construct validity is also statistical tool that measures the extent to which the items in a scale measures the same construct (Hair et al., 2006) and can be evaluated by the use of factor analysis. There are two (2) forms of factor analysis; exploratory factor analysis and confirmatory factor analysis (Hair et al., 2006). According to Hair et al. (2006) factor analysis condenses or summarizes the information into a smaller set of new composite dimensions (factors). However with this study exploratory factor analysis was used. There are two methods of exploratory factor analysis; Principal Component Analysis (PCA) and Common Factor Analysis. According to Imbeah (2012), PCA is appropriate when researcher is primarily concerned with the number of factors.

3.9 Principal Component Analysis (PCA)

Principal component analysis is generally used to assess the underlying structure of data. PCA reduces the dataset into a smaller number of different variables while still retaining the variation from the original dataset (Valencia, 2007; Willar, 2012). Prior to the examination of associations between site manager managerial skills and construction project success, a phase of data reduction was necessary. The construction of meaningful indices was initiated by the use of principal components analysis with varimax rotation. Factor analysis was deemed necessary since it was considered prudent statistically to ascertain whether the adopted measures of site manager's managerial skills and construction project success captured differing dimensions of site manager's managerial skills and project success.

The principal components analysis of items pertaining to site manager's managerial skills and construction project success were conducted individually. In accordance with the Kaiser criterion, factor solutions were retained only if they exhibited an eigen value greater than one (1) and if they were conceptually clear and interpretable (Churchill, 1991; Hair et al., 2006). It was not necessary to delete items from the analysis due to lack of variation or because of problems of interpretation.

3.10 Content Validity of the Questionnaire

An instrument has content validity if researchers agree that the instrument is made up of a group of items covering the issues to be measured (Conca et al., 2004). To ensure that the instrument covered all the relevant areas of site manager's managerial skills and construction project success; and the whole proposed survey instrument was well worded and understood; thus, content validity, the survey questions were refined

through a series of reviews by academicians and construction industry practitioners who had extensive background in project management. This helped to improve the content, eliminate ambiguity and ease understanding.

3.11 Reliability

Reliability is the extent to which a measurement procedure yields the same answer however and whenever it is carried out. The internal consistency of the set of measurement items refers to the degree to which items in the set are homogenous (Badri, 2007). It can be determined using a reliability coefficient such as Cronbach's alpha (Cronbach, 1951).

Internal consistency is usually computed for a scale based on a set of items under the scale or construct. It can also be calculated for any subset of the items under a particular scale or construct. The recommended minimum threshold of Cronbach's alpha value is 0.7 (Pallant, 2011). Reliability analysis was performed for the items of each of the seven (7) constructs /scale using internal consistency method by determining the Cronbach's alpha coefficient.

3.12 Ethical Considerations

In the data collection, ethical issues were taken into consideration, in that respondents were made fully aware of the purpose of the study and also assured that individual respondents and companies were not going to be identified and all the responses will be analyzed together (Bailey, 2007).

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

In this section the results of the empirical analysis are reported and presented. The presentation proceeds with an analysis of the descriptive statistics on the variables under consideration. The data was analyzed and interpreted by using Statistical Package for Social Science (SPSS) version 16. In addition to descriptive statistics, Pearson's Product Moment Correlation Coefficient (PMCC) and Linear Multiple Regression Analysis were employed. The upper level of statistical significance for hypothesis testing was set at 5 percent. All statistical tests were computed at 2-tailed level of significance (Sekaran, 2001).

4.1 Response Rate

A total of one hundred and thirty nine (139) questionnaires were administered out of which ninety (90) responses were received. Unfortunately, six (6) of these responses were ineligible for a variety of reasons, including inadequate completion of the survey instrument. Following the recommendations of various authors (Ogbonna & Harris, 2000; Imbeah, 2012; Kheni & Ackon, 2015) the response rates were calculated in a manner which removed ineligible responses from the sample size. This calculation yielded an effective return rate of 61 percent (see Table 4.1). This response rate is considered adequate as, according to Idrus and Newman (2002), Oladapo (2005), Kheni et al. (2008), and Kheni & Ackon (2015) a response rate of 30 percent is good enough in construction studies. T-Test was used to find out about the problem of non-response bias, no significant difference was found between early and late respondents suggesting that non-response may not be a problem (Ogbonna & Harris, 2000).

Table 4.1 Statistical Data of Questionnaires Sent and Received

Gender	No.	Percentage
Total Questionnaire Sent	139	
Total Questionnaires Received	90	65%
Invalid Data	6	4%
Usable Data	84	61%

4.2 Demographic Characteristics of the Respondents

The demographic characteristics of the respondents provided descriptive information on Age, Qualification, Experience, Training Acquired, Type of Construction Company and the Classifications of the respondents companies. This information was necessary to ascertain the validity of the results obtained and to develop an understanding of the background of the respondents with respect to their qualifications and experience.

4.2.1 Respondents' Professional Qualification

Table 4.2, provides the professional qualification of the respondents. The results show that most of the respondents had Bachelors and HND level of education i.e. 62 percent and 20 percent respectively; a good number had CTC level of education i.e. 12 percent; whereas a small proportion of the respondents had Masters Level of education i.e. 6 percent. This implies that the respondents possess adequate qualification required of the industry. This helped them had a better understanding of the questions; thus making the data reliable.

Table 4.2 Respondents' Professional Qualification

Educational Qualification	Frequency	Percentage
CTC	10	12%
HND	17	20%
BSC	52	62%
MASTERS	5	6%
Total	84	100%

4.2.2 Respondents' Working Experience

Table 4.3, indicates that majority of the respondents, thus, eighty (80) accounting for 95 percent have more than 5years working experience. Impliedly, the respondents have greater working experience which is a necessary requirement for the construction sector; and also provided a better understanding of the questions as well as reliability and validity of the response.

Table 4.3 Respondents' Working Experience

Experience	Frequency	Percentage
Under 5years	4	5%
5 – 10 years	30	36%
Above 10 less than15 years	20	24%
15 – 20 years	18	21%
Above 20 years	12	14%
Total	84	100%

4.2.3 Project Management Training Attended by Respondent

Figure 4.1 shows that out of the eighty four (84) respondents fifteen (15) representing 18 percent have had formal training in project management while sixty nine (69) representing 82 percent have not had any formal training.

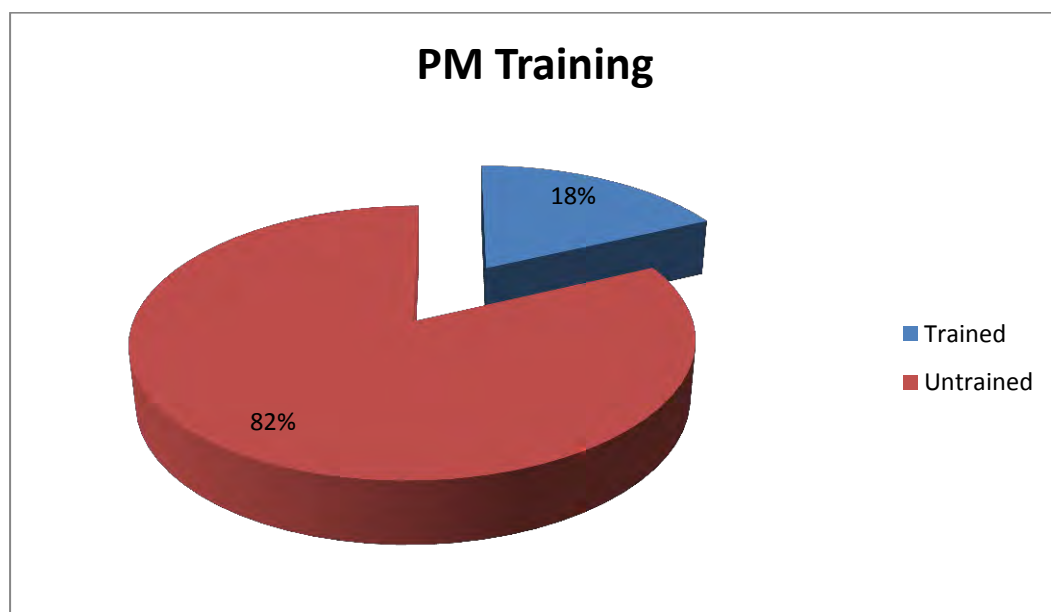


Figure 4.1: Site Manager Training Attended by Respondents.

4.2.4 Type of Construction Work Undertaken by Respondents

Table 4.4 shows that twelve (12) of the respondents accounting for 14 percent undertake civil works while majority, thus, seventy two (72) of the respondents accounting for 86 percent undertake building works.

Table 4.4 Type of Construction Work Undertaken by Respondents

Type of Construction Works	Frequency	Percentage
Civil	12	14%
Building	72	86%
Total	84	100%

4.2.5 Respondents' Company Classification

Table 4.5 shows that forty five (45) of the respondents representing 54 percent belong to medium size construction firms; Thirty (30) of the respondents representing 36 percent belong to small size firms while nine (9) respondents representing 10 percent belong to large size firms.

Table 4.5 Respondents' Company Classification

Medium (D2K2)	45	54%
Small (D3)	30	36%
Large (D1K1)	9	10%
Total	84	100%

4.2.6 Number of Employees in the Respondents' Firms

In Figure 4.2 respondents were asked to specify the number of employees in their respective firms. 54 percent of the respondents indicated that they have 21 up to 40 employees, 32 percent indicated that they have up to 20 employees whereas 14 percent said they have over 40 employees in their respective firms.

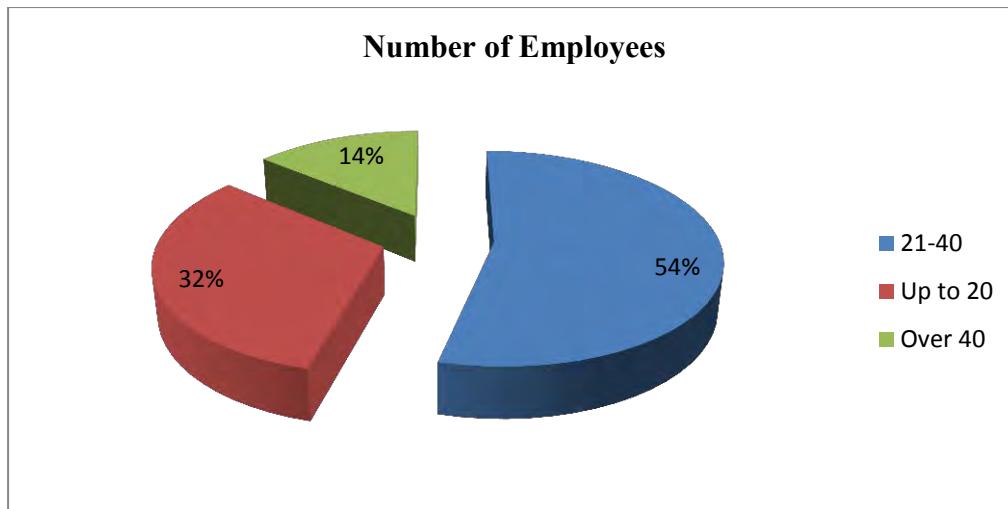


Figure 4.2: Number of Employees in the Respondents' Firms

4.3 Validity

The validity of the instrument; the researcher sought opinion from individuals such as academicians and professionals who are experts in the subject area in order to ascertain the effectiveness and applicability of the instrument with regard to its current use. To further strengthen the validity, item analysis and the construct validity of the items was gauged using correlation matrix and factor analysis (principal component analysis).

4.4 Item Analysis

A detailed item analysis evaluates the assignment of items to the scales in an instrument. This is done by correlating each item with each scale. The corrected item-total correlation (i.e., the correlation of each item with the sum of all other items) (Hair et al., 2006; Koufteros, 1998; Malhotra & Grover, 1998; Torkzadeh & Dhillon, 2002) is used to determine if an item belongs to the scale as assigned, belongs to another scale, or should be eliminated. If an item does not correlate highly with any of the scales, it is eliminated (Nunnally, 1978; Zhang, 2000). The value of that item to

scale correlations should be greater than 0.5, those lower than 0.50 do not share enough variance with the rest of the items in that scale. For that reason, item(s) should be deleted from the scale (Zhang, 2000; Conca et al., 2004).

Zhang et al. (2000), Conca et al. (2004) and Imbeah (2012) used this method to evaluate the assignment of items to scale in developing their instrument for measuring the critical factors of quality management.

Table 4.6 shows the correlation matrix for the seven scales or measures of the constructs. All the items had high correlations with the scales to which they were assigned, hence were judged to be appropriately assigned to their scale.

Table 4.6 Detailed Item Analysis (Item to Scale Correlation)

Construct	Item Numbers					
	1	2	3	4	5	6
Leadership Skills	0.774	0.852	0.887	0.813	0.804	---
Administrative Skills	0.832	0.931	0.921	0.844	---	---
Communication Skills	0.760	0.796	0.738	0.814	---	---
Team building/del skills	0.823	0.874	0.879	0.833	0.817	---
Problem Solving Skills	0.703	0.847	0.864	0.823	---	---
Technical skills	0.935	0.783	0.605	0.848	---	---
Personal Skills	0.683	0.873	0.846	0.596	0.779	---
Construction Project Success	0.606	0.915	0.948	0.903	0.802	---

**Note: Item number in this table is the same as the question number in the instrument;
The symbol “--” means not available**

4.5 Construct Validity

A measure has construct validity if it measures the theoretical construct that it was designed to measure. This analysis is done using SPSS.16.0 to perform factor analysis (Principal component analysis) for each construct. In performing factor analysis each measure was assumed to be a separate construct. In this analysis (shown in Tables 4.7, 4.8, 4.9 and 4.10) each factor must be one dimensional that is to say that, all items in each scale should load on to one factor. When items in a scale or construct load on

more than one factor, the rotated (varimax) solution was examined. All items with loadings less than 0.5 in each scale are eliminated.

It can be observed from Table 4.7 that six (6) site manager managerial skills factors or constructs and the construction project success factors had one factor component except Personal skills. This means that, the items in the six (6) site manager managerial skills construct and performance factors formed or load unto a single factor. From Table 4.7 and 4.10, it is also clear that all the items had high factor loadings greater than the suggested threshold of 0.5. The results of the factor analysis indicate a high level of construct validity of the measure.

Table 4.7 Summary of the factor matrix for each measure

Construct	KMO	Item loading Range	Eigen Value	Percentage of variance Explained	Bartlett's Test of Sphericity	Sig.
Leadership Skills	0.868	0.774 - 0.887	3.418	68.360	214.271	0.00
Administrative Skills	0.795	0.832 - 0.936	3.137	78.418	242.368	0.00
Communication Skills	0.623	0.726 - 0.842	2.426	60.648	132.659	0.00
Team building/del Skills	0.832	0.813 - 0.881	3.575	71.507	258.986	0.00
Problem Solving Skills	0.721	0.586 - 0.897	2.680	67.001	169.197	0.00
Technical Skills	0.633	0.637 - 0.954	2.588	64.690	171.631	0.00
Construction Project Success	0.818	0.693-0.936	4.401	73.353	525.305	0.00

4.5.1 Personal Skills

The Personal skills construct in which the items did not load unto one factor, the result was obtained according to the rule of Eigen values being greater than one, which are listed in Table 4.9 with it rotated factor matrix in Table 4.10. The two factors that emerged as shown in Table 4.10, items number 1, 2 and 3 which are “do not panic or lose head when things go wrong”. “resolve challenges in a cool, calm and collected manner” and “do not sweat or flap if things become stressful at a

point” respectively can be described as **–Coping ability”** constituting separate factor from the remainder of self confidence items. The remaining items 4, 5 which are **–I am steadfast in achieving success”** and **–I set high standard for myself and others”** formed another factor that can be interpreted as **–Self Confidence”**.

Table 4.8 KMO and Bartlett's Test: Personal Skills

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.709
Bartlett's Test of Sphericity	Approx. Chi-Square	245.436
	Df	10
	Sig.	0.000

Table 4.9 Factor Extraction: Personal skills

Total Variance Explained: Personal Skills

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	
1	2.899	57.988	57.988	2.899	57.988	57.988	2.502	50.042	50.042
2	1.298	25.951	83.939	1.298	25.951	83.939	1.695	33.897	83.939
3	0.432	8.631	92.570						
4	0.267	5.339	97.909						
5	0.105	2.091	100.000						

Extraction Method: Principal Component Analysis.

Table 4.10 Factor Matrix: Personal Skills

Rotated Component Matrix^a

	Component	
	1	2
I do not sweat or flap if things become stressful at a point.	0.952	
I resolve challenges in a cool, calm and collected manner.	0.943	
I do not panic or lose head when things go wrong	0.810	
I set high standard for myself and others		0.902
I am steadfast in achieving success		0.839

Extraction Method: Principal Component Analysis

4.6 Reliability Analysis

The internal consistency of the set of measurement items refers to the degree to which items in the set are homogenous (Badri, 2007). The scale of Cronbach’s coefficient alpha value is the most widely used statistics to determine the reliability of a measurement; from Table 4.11, the reliability coefficient of the independent variables

(site manager managerial skills) ranges from 0.78 to 0.91. The alpha value of the dependent variable (Construction Project Success) is 0.92. This means that all the cronbach's alpha values of the measurement used exceeded the cut-off threshold of 0.7 (Pallant, 2011). Impliedly, all the measurement used has acceptable internal consistency.

Table 4.11 Reliability Analysis

Variable	Cronbach's Alpha	No. of items
Leadership Skills	0.88	5
Administrative Skills	0.91	4
Communication Skills	0.78	4
Team building/del Skills	0.90	5
Problem Solving Skills	0.83	4
Technical Skills	0.80	4
Personal Skills	0.81	5
Construction Project Success	0.92	5

4.7 Managerial Skills Possessed by Construction Site managers in Ghana

The first part of the questionnaire related to the managerial skills possessed by construction site managers. Table (4.12) shows that the means of the skills variables ranged from (4.45) to (4.61); this indicates that construction site managers in Ghana possess adequately the skills identified and which had also been identified by numerous authors (Shi & Chen, 2006; Valencia, 2007; Petterson, 1991; Odusami, 2002; Crawford, 2000; Hyavari, 2006; Ekung et al., 2015, El-Sabaa, 2001, Ma et al., 2014). The results further indicated that Technical Competence has the highest mean (4.61) while Problem solving skills has the lowest mean (4.45).

The results further indicated that the means of all the managerial skills in the study above the scale mid-point (3) which suggest that the construction site managers possess high project management skills. However, they possess more of Technical

skills (Mean = 4.61, SD = 0.43) than the other skills examined; followed by Administrative skills (Mean = 4.55, SD = 0.41); Leadership skills (Mean = 4.54, SD = 0.48); Personal Skills (Mean = 4.53, SD = 0.48); Team building/del skills (Mean = 4.52, SD = 0.46); Communication skills (Mean = 4.50, SD = 0.46); and Problem solving skills (Mean = 4.45, SD = 0.53). The standard deviation lies between (0.41 - 0.53), this indicates homogeneous data and less spread out or dispersed.

Table 4.12 Managerial Skills Possessed by Site managers in Ghana

SM Skills	Mean (M)	Stddvt. (SD)	Rank
Technical Competence	4.61	0.43	1
Administrative Skills	4.55	0.41	2
Leadership Skills	4.54	0.48	3
Personal Skills	4.53	0.48	4
Team building/del Skills	4.52	0.46	5
Communicating Skills	4.50	0.46	6
Problem Solving Skills	4.45	0.53	7

4.8 Relationship between Site Manager Managerial Skills and Construction Project Success (CPS)

In this section the results of the inferential statistical techniques used in the study are presented. In other to test the research hypotheses, the Pearson Product Moment Correlation Coefficient was calculated as well as Stepwise Multiple Regression.

4.8.1 Impact of Site Managers' Managerial Skills on Construction Project Success

4.8.1.1 The Results of Correlation Analysis

Connection between two variables is detected by correlation and it determines the proportionality extent of two variable values (Sekaran, 2005). The results of correlation test between the site managers' managerial skills variables and construction project success is presented in Table 4.13. Level of significance to test

the relationship was 0.01. The results indicated that all the site managers' managerial skills variables are strongly, positively correlated with the Construction project success variable. The strongest relationship exists between project success and Leadership skills ($r = 0.863$, $p < 0.01$), Administrative skills ($r = 0.836$, $p < 0.01$), Communication skills ($r = 0.831$, $p < 0.01$), Team building/del skills ($r = 0.825$, $p < 0.01$), Technical skills ($r = 0.757$, $p < 0.01$), followed by Problem solving skills ($r = 0.713$, $p < 0.01$), and Personal skills ($r = 0.709$, $p < 0.01$).

There was a strong criterion-related validity since the bivariate correlations of the site managers' managerial skills variables with construction project success measures were statistically significant. The highest correlation coefficients value is 0.863 (Table 4.13) which is below the cut off threshold of 0.90 for the collinearity problem (Jaafreh & Al-abadallat, 2012).

Table 4.13: Association between Site Manager managerial Skills variables and CPS variable

	LDS	ADS	CMS	TB/D	TKS	PSS	PS
CPS Pearson Correlation	0.863**	0.836**	0.831**	0.825**	0.757**	0.713**	0.709**
Sig (2 – tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Correlation is significant at the 0.01 level (2 – tailed).

CPS: Construction Project Success; **LDS:** Leadership skills; **ADS:** Administrative skills; **TKS:** Technical skills; **CMS:** Communication skills; **TB/D:** Team building/del skills; **PS:** Personal Skills and **PSS:** Problem solving skills.

4.8.1.2 Multiple Regression Analysis

The results of the correlations indicated existence of a relationship between the site manager's managerial skills variables and the construction project success variable but did not identify the most crucial contributory variables for this relationship. To achieve this objective, Stepwise Multiple Regression technique was used to determine the importance of each independent variable and its contribution to the mathematical equation. The multiple regressions was conducted between site managers managerial

skills variables namely (Leadership skills, Technical skills, Administrative skills, Communication skills, Team building/delegating skills, Personal skills, and Problem solving skills) as they were the independent variables, and the Construction project success variable (dependent variable).

Table 4.14 displays the results of the multiple linear regression with standardized betas (β) and t – statistics (t) which are both indicative of the relative importance of each variable contained in the model. Multicollinearity was assessed through examining the inflation factors (VIFs) of each variable and the Tolerance level. The values of VIF and Tolerance showed no multicollinearity between the variables as their values were less than ten (10) for VIF and more than 0.10 for tolerance level as suggested by Pallant (2011). Another way to check it is by using the coefficient of correlation; the highest in this research is 0.863, which is below the cut- off threshold of 0.90 for the collinearity problem (Hair et al., 2003). Therefore, multicollinearity was determined not to be an issue.

Table 4.14 revealed that the R^2 adjusted value was 0.887. This indicates that the seven factors proposed in the framework (Leadership skills, Administrative skills, Communication skills, Technical skills, Team building/delegating skills, Personal skills, and Problem solving skills) together can explain 88.7 percent of the variation in construction project success as a dependent variable. The F- ratio was 126.773 ($p < 0.01$). This indicates that the regression of construction project success on the constructs assessed, expressed through the adjusted R- squared is statistically significant.

The beta coefficient, which is the standardized regression coefficient, is used as a direct comparison between coefficients as to their relative explanatory power of the dependent variable (Hair et al., 2006). The variable Leadership skills element of site managers skills made the greatest impact towards achieving the construction project success (dependent variable) with a beta coefficient of **0.246** ($p < 0.05$). The variable Administrative skills made the second largest influence of the dependent variable with a beta coefficient of **0.217** ($p < 0.05$). The variable Communication skills made the third largest contribution to the dependent variable with a beta coefficient of **0.182** ($p < 0.05$). Team building /delegating skills made the fourth acceptable contribution to the dependent variable with a beta coefficient of **0.160** ($p < 0.05$), Problem solving skills made the fifth acceptable influence with a beta coefficient of **0.150** ($p < 0.05$). The variable Technical skills made the sixth acceptable contribution to the dependent variable with a beta coefficient of **0.133** ($p > 0.05$). However, technical skills contribution was not significant. Nevertheless, technical skills element played synergistic role to enhance the overall contribution. Personal skills variable was out of the regression model because its contribution was not much and also insignificant. The results further showed that normality was also not a problem as is evident from P-P Plot of regression standardized residual; all points lie in a reasonably straight line from bottom left to top right (see Figure.4.3).

The variables account for 88.7 percent of the variance in construction project success. This implies that other unexplored site managers' managerial skills could account for the 11.3 percent of variance in construction project success.

Table 4.14: Model: Summary of Multiple Regression Analysis between Site Manager Managerial Skills variables and CPS variable.

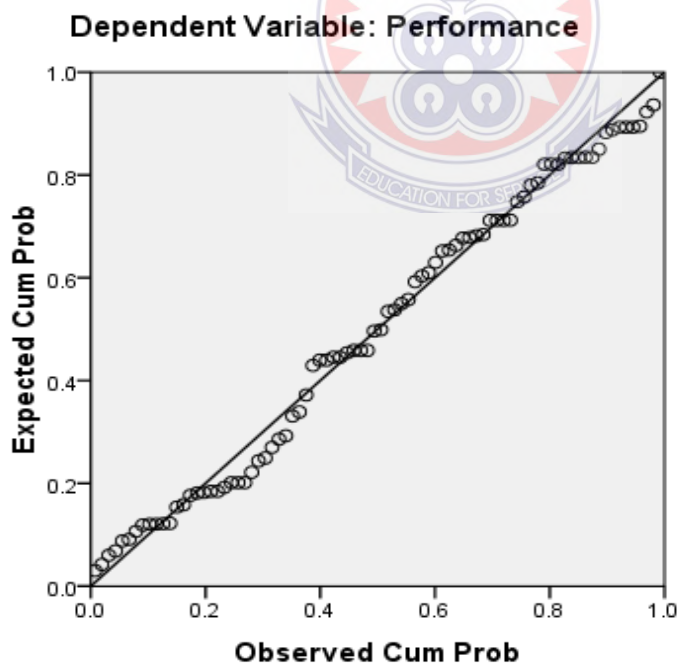
Dependent Variable	R	R-Square	Adjusted R Square	Standard Error
Construction Project Success	0.941	0.904	0.887	0.985

Analysis of Variance

	Sum of squares	Df	Mean square	F	Significance
Regression	711.963	6	118.661	126.773	0.000
Residual	72.073	77	0.936		
Total	784.036	83			

Standard Coefficients

	Beta	T	Significance	Collinearity Statistics	
				Tolerance	VIF
Leadership skills	0.246	3.819	0.000	0.288	3.467
Administrative skills	0.217	2.945	0.004	0.220	4.553
Communication	0.182	2.891	0.005	0.303	3.303
Team building/del	0.160	2.482	0.015	0.286	3.494
Problem solving	0.150	2.685	0.009	0.485	2.060
Technical skills	0.133	1.947	0.056	0.201	4.984
Personal skills	0.084	1.645	0.125	0.197	2.431

**Figure 4.3: Normal P-P Plot of Regression Standardized Residual**

4.8.2. Association between Demographic Variables (Experience, Qualification, Age) and Project Success

Table 4.15, the results show that there is statistically highly significant, positive relationship between Experience and construction project performance ($r = 0.857$, $p < 0.01$); there is also significant correlation between Qualification and construction project performance ($r = 0.447$, $p < 0.01$). The results also indicated that there is a statistical significant, negative relationship between the Age and Performance ($r = -0.089$, $p < 0.01$).

Table 4.15: Results of Correlation test for Experience, Qualification, Age and Performance

	Experience	Qualification	Age
Performance	0.857**	0.447**	-0.089**
Sig (2 – tailed)	0.004	0.012	0.002

**Correlation is significant at the 0.01 level (2– tailed).

4.8.3. Influence of Site Manager's Training on Project Success

Table 4.16 shows that there is highly significant mean difference in the project success based on site manager's training on project management ($p < 0.01$). Trained site managers evidenced the highest levels of project success (Mean = 29.07, SD = 0.88), while untrained site managers indicated the lowest (Mean = 26.07, SD = 3.12). Impliedly, training in project management has influence on Site Managers Project success. In interpreting the data however, cognizance needs to be taken of under representation of the respondents.

Table 4.16 ANOVA: Influence of Site Managers Training on Project Success

	Mean	SD	N	F	P
Trained	29.07	0.88	15	13.45	0.000
Untrained	26.07	3.12	69		

* $P < 0.05$

CHAPTER FIVE

DISCUSSION OF RESULTS OF THE STUDY

This chapter presents the discussion of the results of the study. It is organized into four sections. The results are discussed in the context of the literature reviewed in chapter 2, to further explain the findings on the subject of impact of site managers' managerial skills on construction project success, in the context of Ghana; which is regarded to have relevance to other developing countries.

5.1 Site Manager Managerial Skills Possessed by Construction Site Managers in Ghana

The first part of the questionnaire related to the managerial skills possess by construction site managers in Ghana. From Table (4.12) the results of the study indicated that the means of the Site Manager managerial skills possessed by the respondents ranged from 4.45 to 4.61. This indicates that the means of all the site manager managerial skills identified in the study were above the scale mid-point (3) which suggest that the construction site managers possessed highly the skills identified and which had also been identified by numerous authors (Pettersson, 1991; Anderson, 1996; Crawford, 2000; El-Sabaa, 2001; Odusami, 2002; Thamhain, 2004, Muller & Turner, 2005; Hyvari, 2006; Shi & Chen, 2006; Valencia, 2007; Ma et al., 2014; Ekung et al., 2015; and Windapo et al., 2015).

The results further indicated that Technical skill has the highest mean (4.61); this implies that the respondents possessed hard skills than soft skills. This is not surprising because most of these site managers (see Figure. 4.1) are what Zielinski (2005) described as "accidental site managers"; they are engineers who are pressed

into the role of site managers and as such often focus on technical issues while giving management aspects less credence. This finding is in agreement with Bacca (2007) assertion.

5.2 Impact of Site Managers' Managerial Skills on Construction Project Success

The results of the correlation test between the site managers' managerial skills variables and construction project success indicated that all the site managers' managerial skills variables were strongly, positively correlated with the construction project success variable.

There was a strong, positive significant correlation between project success and leadership skills ($r = 0.836, p < 0.01$). This finding is consistent with (Hyvari, 2006; Hauschildt et al., 2000; Valencia, 2007; Syed, 2012) findings.

There was a strong, positive relationship between project success and Administrative skills ($r = 0.863, p < 0.01$). This finding is in agreement with (Odusami, 2002; Windapo et al., 2015; Crawford, 2000; Thamhain, 2004; Valencia, 2007) findings.

There was a strong significant correlation between project success and Technical skills ($r = 0.757, p < 0.01$). This finding is in corroboration with (Grant et al., 1997; Odusami, 2002; Crawford, 2000; Hyvari, 2006) assertion.

There was a strong significant correlation between project success and Communication skills ($r = 0.831, p < 0.01$). This assertion is consistent with (Dainty et al, 2005; Teixeira et al, 2006; Windapo et al., 2015; Hagberg, 2006; Awan et al., 2015; Hauschildt et al., 2000) with findings.

There was a strong significant correlation between project success and Team building/delegating skills ($r = 0.825$, $p < 0.01$). This assertion is in agreement with (Deepa & Seth, 2013; Barry, 2012; Ryan, 2010; Valencia, 2007; Awan et al., 2015) findings;

There was a strong significant correlation between project success and Personal skills ($r = 0.709$, $p < 0.01$). This finding is in agreement with (Syed, 2012; El-Sabaa, 2001; Bartram, 2005; Valencia, 2007; Barry, 2012) assertions.

There was a strong significant correlation between project success and Problem solving skills ($r = 0.713$, $p < 0.01$). This finding is in agreement with (Morris, 2000; Edum-Fotwe & Mc-Caffer, 2000; Dainty et al, 2005; Teixeira et al, 2006; Windapo et al., 2015; Turner, 2009; Barry, 2012; Deepa & Seth, 2013; Awan et al., 2015) assertion. The result of the correlation analysis, therefore, supported all the hypothesized relationships (Hypothesis H₁- H₇).

The findings of this result indicate that all the seven identified site managers' managerial skills have significant influence on construction project success. The output also implies that the higher a site manager possesses the identified managerial skills the higher the opportunity to achieve higher levels of project success.

After running a regression analysis (see Table 4.14), the study found that Leadership skills, Administrative skills, Communication skills, Team building/del skills, Problem solving skills, and Technical skills were the site managers managerial skills that contributed significantly in that order (a greater effect on the project success).

Impliedly, these six site managers' managerial skills have a high explanatory power on construction project success.

5.2.1 Leadership Skills

Leadership skills and its impact on project success have been measured. Of the seven site managers managerial skills evaluated, findings of the results indicated that a site manager's leadership ability was the most important to performance. This was demonstrated in both bivariate (i.e., correlation) and multi-variate (i.e., regression) analyses. This implies that if the site manager has the ability to influence, take into consideration of individual differences in motivation and skills, express confidence and trust in team members, and provide coaching and advice as and when needed such that the group collectively agrees to and accomplishes a common goal throughout the lifecycle of a project, the outcome results would be team effectiveness and ultimately project success. This result seems to support the studies by Odusami (2002); Windapo et al. (2015) and Crawford (2000) who found that construction professionals rank leadership skill as one of the top four skills necessary for a Site Manager and found that leadership was the most mentioned site manager skill.

5.2.2 Administrative Skills

Administrative skills and its impact on project success have been measured. The result shows that if a site manager has the ability to plan ahead and move forward in a systematic, organized fashion; and has the ability to determine objectives and strategies (planning); use priorities in allocating resources (planning), and also to improve the processes of production, and organizational effectiveness (organizing),

would strongly achieve project success (Bartram, 2005, Kim & Yukl, 1995, Syed, 2012).

This result also seems to corroborate with the thoughts of Anderson and Tucker (1994), Hauschildt et al. (2000), Hyavri (2006), Valencia (2007) and Syed (2012) who put forth that administrative ability is not only important, but one of the most important skills for a site manager to possess.

5.2.3 Communication Skills

Communication skill and its impact on project success have been measured. The result indicated that communication skill has impact on project success. This implies that if a site manager is able to communicate clearly and conveys enriched task information to the team members, and also actively listens to others in the team, the expected outcome will be high team performance (Jetu and Riedl, 2012). This finding corroborates with earlier research that amply highlighted the need of a site manager being a good communicator (Hans, 2011; Piysush et al., 2011). During current research it has been established that in Ghana's context, site managers' communication skills positively affect the outcome of a project, which is in line with the findings of the earlier research done on the subject (Benator & Thumann, 2003; Wilson et al., 2006; Ryan, 2010; Mouchi et al., 2011; Barry, 2012, Awan et al., 2015).

5.2.4 Team Building and Delegation Skills

Team building and delegation skills and its impact on project success have been measured. Teams are an important tier in successful execution of the project. If a site manager is unaware of the complexities of team working with him, and their abilities,

he is less likely to draw optimum advantage from their capabilities (Deepa & Seth, 2013; Shi & Chen, 2006). Moreover, owing to special chemistry of the construction projects wherein a site manager is required to do a variety of tasks in time in a compressed environment, ability to correctly delegate the responsibility to team members assumes paramount importance (Shi & Chen, 2006).

5.2.5 Problem Solving & Decision Making Skills

Problem solving and decision making skills and its impact on project success have been measured. The results indicated that Problem solving/decision making skill has positive impact on project success. This implies that if a site manager is able to timely anticipate problems, and through his power of analysis is able to find solution and devise strategies to mitigate these problems (Shi & Chen, 2006) and also able to take appropriate action under the constraints of limited time, information, and resources (Gushgari et al. (1997), could contribute to project success. This finding is in agreement with the studies by (Morris, 2000; Edum-Fotwe & Mc-Caffer, 2000, Dainty et al., 2005; Teixeira et al., 2006; Windapo et al., 2015; Turner, 2009; Barry, 2012; Deepa & Seth, 2013; Awan et al., 2015).

5.2.6 Technical Skills

Technical skill and its impact on project success have been measured. The result indicated that technical skills had no significant impact on the project success of the respondents' construction firms. Nevertheless, technical skills element played synergistic enhancement role to the overall contribution of the project success of the respondents firms. Technical skill is therefore, positively related to construction project success but the relationship is not significant. This implies that the importance

of having technical knowledge (competency to use project management tools and methods to carry out projects) is quite relevant. Although it appears that technical skills is not as significant as other site manager's skills in predicting success, it is empirically evident that the neglect of technical knowledge in the selection of a site manager will affect the overall project success. This finding corroborate with the reported studies by Odusami (2002). Crawford (2000; 2006), and Grant et al. (1997) in which technical competence was perceived by their study's respondents as an important site manager's skill. This result seems to align with the thoughts of Anderson and Tucker (1994) that selecting a site manager (SM) with an appropriate technical background is essential, but technical competence without managerial capabilities is not enough.

Conclusive statements on the impact of the final site manager's skill - personal skills cannot be made. Although this factor was identified in previous research as important to success, this research did not find any conclusive evidence of such a relationship. Nevertheless, it demonstrated high bivariate correlation with project success.

A cursory look at the results revealed that soft skills (Human skills) of site managers contribute more to project success than the hard skills (Technical skills). This finding supports El-Sabaa (2001), Watts & Watts (2008) as cited in John (2009) and Awan et al. (2015) assertion.

5.3 Effect of Site Manager's Demographic Characteristic on Project Success

Regarding demographic variables, results of the study revealed that experience had a strong significant, positive relationship with project success. This implies that the

more experienced a site manager the higher the project success. This finding is in agreement with Valencia (2007) and Atout (2008) assertions.

The study further indicated that qualification is statistically significant, positively correlated with project success. However, the correlation was comparatively weak. This partly suggests that qualification of site managers has significant influence on project success. This finding partly supports Crawford (2007) assertion.

Interestingly, the study also revealed that age is statistically significant, negatively correlated with project success. Impliedly, older site managers tend to have poor project success. This finding supports Valencia (2007) assertion that older site managers tend to have higher cost and schedule indices (greater cost and schedule growth) indicating poor performance.

5.4 Influence of Site Manager's Training on Project Success

The results of the study indicated that trained site managers have higher project success than the untrained site managers. This implies that site managers Training has influence on project success. The need to perform one's job efficiently and the need to know how to lead others are sufficient reasons for training and development and the desire to meet organizations objectives of higher productivity, makes it absolutely compulsory. The site managers' performance is going to be more effective if he is trained in good manner.

According to Oribabor (2000) training and development is aimed to developing competences such as technical, human, conceptual and managerial for the furtherance

of individuals and organization growth. Site managers learn from their practical experience much better as compared to bookish knowledge. On the job training reduces cost and saves time (Asad & Mahfod, 2015). It is better for the organizations to give their site manager's on the job training because training is important to enhance the capabilities of the site managers. The site managers who have more job experience have better performance because there is an increase in both skills and competencies because of the job experience (Afaq & Khan, 2008). This finding is in agreement with Syed (2012), Mouchi et al. (2011) and Xiong (2008) assertion.



CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary, conclusion and recommendations of the study. The first section presents the summary of the study; the second section presents the conclusion of the study based on the study's findings followed by sections that present the recommendation for improving site managers' effectiveness in Ghana, and recommendations for future research.

6.1 Summary of the Major Findings of the Study

The purpose of this research was to evaluate key site managers' managerial skills which contribute to a site manager's success. The findings will help facilitate better site manager selection by organizations so they can maximize their opportunities for project success. The following were the major findings of the study:

Data analysis for this study showed that site managers in Ghana possessed highly of technical skill than administrative, leadership, communication, team building/delegation, personal and problem solving/decision making skills. The study found that leadership skills, administrative skills, communication skills, team building/delegation skills, and problem solving/decision making skills have greater impact on project success. Furthermore, technical skill has partially significant impact on project success- thus providing synergistic enhancement to construction project success. Also, soft skills of site managers have greater impact in achieving project success than the hard skills. The study further revealed that site manager's experience and training acquired have influence on his effectiveness and project success.

6.2 Conclusion

In conclusion, practicing site managers who choose to embark on self improvement may focus their efforts on these skills (leadership skills, administrative skills, communication skills, team building/del. skills, and problem solving/decision making skills). Selection personnel may be able to use this model as a screening tool for site manager applicants. Researchers of project management are provided evidence to corroborate the importance of certain site manager skills through a method which directly tested individual levels of these skills against the success of a site manager.

6.3 Recommendations for Improving the Effectiveness of Site Managers in Ghana

The following strategies could be used to increase the effectiveness of the managerial and administration skills of a site manager.

Increasing Pre-Appointment Training

Site managers get into the managerial position after an experience which is more or less solely based on a technical experience for example in engineering. Managerial skills which are prerequisites for the site manager's job may not be present. Often training is received in a do-or-die situation on the job. Proper training if at all, may not be present. Hence training before being elevated to the position is beneficial if not necessary to develop such managerial skills.

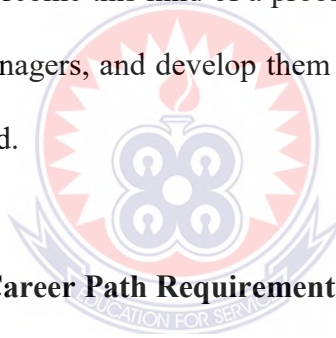
Establishing a Mentor System

Appointing a role model might be a good way to develop managerial skills required for a site manager. Project management experience that the mentor possesses could be utilized by the new appointee. Time should be spent between the two such that

managerial attributes are cultivated. Developing plans for career development should be done such that there is a broad-spectrum development of his or her managerial skills as project know-how and experience is gained.

Careful Selection of Potential Site managers

Identifying potential site managers is an essential part of organizational techniques. Successful engineering and construction skills are opposite to successful project management skills. Technical skills that are exhibited by an engineer help him being promoted to a managerial level, and he sticks to the technical side of things and essential managerial skills are not present which leads to hampering of project success. A strategy to overcome this kind of a problem is to instil a policy that allows early detection of site managers, and develop them such that they have a ready batch of future managers at hand.



Early Identification of Career Path Requirement

Companies should identify dual career paths for both technical and managerial workers such that each worker excels in his own field of expertise. For the technical path, the company should adopt a proportionate performance enticement such that it is attractive and the workers stay to their field of interest.

Determining Key Management Skills to Develop

Training all people in all characteristics of management may not be appropriate or even necessary. Managers could have specific areas to develop such as their human interaction skills, leadership skills or administration skills depending on the requirement of the trainee.

Finally, a site manager's training and progress should be focused on development of managerial competencies and not just related to technical and management skills.

6.4 Recommendation for Future Research

Future researchers may also venture into finding other site manager's skills which have impact on the project success in relation to those discussed in this study and also using a larger sample size.



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APPENDIX A

The purpose of this questionnaire is to examine the impact of site managers' managerial skills on construction project success in Ghana.

SECTION A: PERSONAL INFORMATION

Q1. Please, indicate your gender. (Please tick []) (a) Male [] (b) Female []

Q2. What is your working experience? (Please tick [])

Under 5 years []; 5 – 10 years []; Above 10 but less than 15years [];

15 – 20 years []; Above 20 years []

Q3. What type (s) of academic or professional qualification (s) do you have? (Please tick [] or write in the appropriate boxes)

(a) Construction Technician Certificate (b) Higher National Diploma []

(c) Bachelors Degree [] (d) Masters Degree

Other [] Please state.....

Q4. What type of construction works does your company undertake? (Please tick [])

(a) Civil Engineering Construction [] (b) Building Construction []

(b) Other [] Please state

Q5. What contractor classification does your company belong to? (Please write in the box)

Q6. Please, state your current position with your company. (Please write in the box)

Q7. Have you attended project management training before? Yes, No

Q8. What is the number of employees in your firm?

Up to 20 21 - 40 over 40

SECTION B

This section measures the extent to which you believe you possess specific skills.

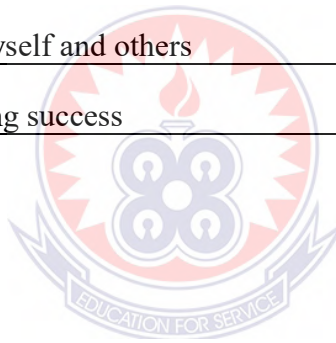
For each statement, fill in the tick with the number that indicates the extent to which you agree with each statement. Use the 5-point scale below for your responses

1= Strongly Disagree 2= Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Project Management Skills	1	2	3	4	5
Leadership Ability					
People describe me as someone who takes charge	1	2	3	4	5
I take into consideration of individual differences in motivation and skills	1	2	3	4	5
I express confidence and trust in team members	1	2	3	4	5
I advise my team as and when needed such that the group collectively agrees to and accomplishes a goal throughout the life cycle of the project	1	2	3	4	5
I am not easily intimidated	1	2	3	4	5
Administrative Skills					
I have the ability to plan ahead and move forward in a systematic, and organized fashion	1	2	3	4	5
I pay attention to details	1	2	3	4	5
I use priorities in allocating resources	1	2	3	4	5
I am someone who completes tasks successfully	1	2	3	4	5
I make well-considered decisions	1	2	3	4	5

Technical Skills					
I have mastering of tools and methods of project management	1	2	3	4	5
I give clarity of work or process instruction to employees, artisans and site staff (these includes both employees of subcontractors & project staff)	1	2	3	4	5
Even though the project work here could be challenging, I am not frustrated and find motivation to continue not because of paycheck.	1	2	3	4	5
Doing project work well is a reward in itself to me	1	2	3	4	5
I use flow chart, check list, inspection and supervision and test plan for activities that directly affect quality	1	2	3	4	5
Team Building/Delegating Skills					
I encourage frequent contact between parties involved in projects delivery and other functions	1	2	3	4	5
Members of my project team question my instructions when they don't understand them	1	2	3	4	5
I use specific quality committees and work teams to support quality improvements on sites	1	2	3	4	5
I delegate responsibility to team members	1	2	3	4	5
I establish peer review teams on sites.	1	2	3	4	5
Communication Skills					
I am able to communicate clearly and convey enriched task information to the team members.	1	2	3	4	5
I actively listen to others in my team.	1	2	3	4	5
I inform members of my project team when they have done a good work.	1	2	3	4	5
I inform project team about project plans for the future	1	2	3	4	5

Problem Solving and Decision Making Skills					
I am able to timely anticipate problems.	1	2	3	4	5
I am able to find solution and devise strategies to mitigate problems.	1	2	3	4	5
I am able to take appropriate action under the constraints of limited time, information and resources.	1	2	3	4	5
I am prudent when dealing with authority or general opinion	1	2	3	4	5
Personal Skills					
I do not sweat or flap if things become stressful at a point.	1	2	3	4	5
I resolve challenges in a cool, calm and collected manner.	1	2	3	4	5
I do not panic or lose head when things go wrong	1	2	3	4	5
I set high standard for myself and others	1	2	3	4	5
I am steadfast in achieving success	1	2	3	4	5



APPENDIX B**Section C: Project Success**

This section measures general project success of your company. For each statement, fill in the circle with the number that indicates the extent to which you agree with each statement. Use the 5-point scale below for your responses

1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5= Strongly agree

Statement	1	2	3	4	5
Overall, this company meets cost performance for projects based on baseline goals, targets, or expectations.	1	2	3	4	5
Overall, this company meets project schedule performance based on baseline goals, targets, or expectations	1	2	3	4	5
Regulator involvement (e.g., EPA, NBC, NFSA and OHS) is effectively managed by this company so that delays rework, or harmful publicity is minimized.	1	2	3	4	5
Overall, this company meets project quality objectives based on baseline goals, targets or expectations	1	2	3	4	5
Overall, this company meets project Health and Safety objectives based on baseline goals, targets or expectations	1	2	3	4	5