AN INVESTIGATIVE STUDY ON PROJECT MANAGEMENT PRACTICE OF SUBCONTRACTORS IN ACCRA

BY

DENNIS GYAMFI

(BSc. Mechanical Engineering)

A Thesis submitted to the Institute of Distance Learning, Kwame Nkrumah University of Science and Technology in partial fulfillment of the requirements for the degree of

MSc. PROJECT MANAGEMENT

NOVEMBER, 2018

DECLARATION

I hereby declare that this submission is my own work towards the MSc. Project Management degree. To the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the next.

Dennis Gyamfi	…….	……
PG11506147	Signature	Date

Certified by:

Dr. Gabriel Nani	…….	……
Supervisor	Signature	Date

Certified by:

Prof. Bernard Baiden	…….	……
Head of Department	Signature	Date

ACKNOWLEDGMENTS

I am very thankful and grateful to God for the favor, health and strength He provided throughout this studies. Words cannot explain how the Lord has been good to me. May His name be praise forever.

Also, I am thankful to my supervisor Dr. Gabriel Nani for his unflagging support to make this work a success. I cannot forget my parents, I would like to say a big thank you and may God almighty bless them for their prayers especially my mum. I will like to also show gratitude to Mr. and Mrs. Sefa Boampong for their encouragement and support.

Finally, I would like to thank every individual who contributed one way or the other to help me in completing this studies.

DEDICATION

I dedicate this to Kwame Affection.

ABSTRACT

Buildings for commercial purposes or residential use have become complex and sophisticated. They require efficient and effective management to successfully complete them. The complex and sophisticated nature has made it necessary for prime contractors, sponsors or consultants of projects to acquire the services of subcontractors to execute specialize part of the bigger project. Air conditioning, fire system, electrical system and plumbing are some of the specialize aspect of building projects which are usually sublet to subcontractors to execute. Often than not, the attention is on the prime contractor when it comes to project management in the construction industry. This study will shift the attention from the prime contractors and focus on the subcontractors. The main objective of this study was to investigate how subcontractors are currently managing projects and also find out criteria or parameters subcontractors will use to judge a project as successful or not. A quantitative structured questionnaire was developed to collect data from participants. The participants are workers from subcontracting companies. The data collected was analyzed with SPSS. The study found out that subcontractors practice project management but do so in the informal way. There is no basic processes or methodology that is adopted by subcontractors. There is always someone in the project management position but such people are not certified project managers and most with less knowledge base in project management practice. The management of their projects are done through experience. In the area of success criteria, the study found out that meeting client's requirements, completing the work within time and completing within budget were the top three criteria subcontractors consider in judging how successful a project was. The study after conclusion recommended further studies into the activities of subcontractors in each of the knowledge areas separately in order to get full details on the activities of subcontractors when it comes to practicing project management.

Keywords: Project management practice, Subcontractors, Accra

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Industries like construction are key in the development of developing economies such as Ghana. As countries socioeconomic needs improve, lot of infrastructure and facilities such as; schools, factories and residential buildings, hospitals, large commercial buildings for offices and so on are required for the economy to flourish. One contributor to the growth of the economy of developing countries is the construction industry by providing employment opportunities at non-skilled and skilled levels (Amponsah,2010). The only industry that will probably provide bigger employment opportunity than the construction industry will be the agricultural industry (Ofori, 2006).

There are several large building construction projects that are being proposed and implemented as countries strive to boost their economies. These projects may be funded by major international donors or sometimes by the government itself. It must be worth mention that the private investors and groups are beginning to show tremendous interest in the building construction industry and thus fund some of these projects. The bitter truth about this increase is that most of these projects fail. The failure is often in the area of exceeding budget, run late, abandoned projects or sometimes fails to meet the objectives for which they were set for. Many projects in developing countries run into time and cost overruns as a result of poor management (Idoko, 2008). One major concern in recent times in Ghana is project failure rates and the cost associated with it (Amponsah 2010).

Many studies have suggested that these failures are as a result of poor management. Mostly fingers are being pointed at contractors for poor performance as a result of poor management techniques (Ahadzie, 2007). Again, poor management in the

construction industry of developing countries has been identified has one major problem in research works by Adams (1997), Long et al. (2004) and others.

The wakeup calls in addressing this issue is the improvement in the use of project management skills in managing construction projects. Project management practice is now a tool for an efficient and effective way of developing the construction industry globally (Barriere, 2003). Project management practice in developing countries is relatively new but it is becoming an important phenomenon.

As noted by Ofori (2013), there is very few studies known and documented on project management practice in Ghana, thus little documentation on the best practices in that field. Notwithstanding there has being some studies and research into project management practice in developing countries as well as Ghana. For example, Ahadzie and Amoah-Mensah (2010) studied management practices in the construction industry of Ghana; Kisi (2013) did a research titled "empirical understanding of the status of professional project management practices in the Ghanaian building industry", White and Fortune (2002), Ali (2011), Amponsah (2013), Abbasi and Al-Mhormah (2000) and Ofori (2013) are some of the papers and researches talking about project management practices in developing countries.

Although these studies and other research into project management practices have been done in developing countries, very few or at the extreme case none has be done on the part of subcontractors in the building sector.

Arguably building construction are becoming complex and more often the prime contractor has to subcontract part of the work to other contractors who are specialize in certain aspect of the project. The project's success can be linked to how these subcontractors manage the section of the project assigned to them. It is therefore

worthwhile to investigate into how these subcontractors practice project management to compliment the work of the prime contractor.

Currently there are no documents to show how these subcontractors manage their scope of work which are sometimes worth very huge amount of money. This research aim at filling the gap in knowledge on project management practice at the construction industry by concentrating and investigating on how project management are being practice by subcontractors to compliment the effort of prime contractors.

1.1 PROBLEM STATEMENT

Project management is now a global phenomenon (Ahadzie and Amoah-Mensah, 2010). With this universal phenomenon increase of project management practice even in developing countries such as Ghana, the growth and acceptance of PMP in the building construction industry is also increasing as resources become scarce and building projects become complex and sophisticated. Advancing of complex building construction has made it necessary for prime contractors, managers of the project or the sponsor to give some area of the project to specialized companies who are mostly term subcontractors. These areas of works are sometimes worth a huge amount of money and need to be managed efficiently. This part awarded out then becomes another project for the subcontractor. The success of the entire project is then linked with the success of this part awarded to a subcontractor.

Mostly, the attention is on the PMP of the prime contractor of the building project but not the subcontractors whose success will ultimately compliment the effort of the prime contractor. There is few or no literature on how these subcontractors manage their project. Many studies have been done on the PMP of the building construction as a whole but this study is focused on finding the project management practice of

subcontractors in the building construction since much is not known about how they manage their projects.

1.2 RESEARCH QUESTIONS

The main question this study will address is; what is the project management practice of subcontractors in the building construction?

The study also tends to address the following minor questions.

1. What are the activities performed in managing the 10 knowledge areas?
2. What are the project success criteria for subcontractors?
3. What are the critical factors of success and criteria of success for subcontractors in a project?

1.3 AIM OF STUDY

The main aim of this study is to know the project management practice of subcontractors and how they manage the knowledge areas according to PMI standards.

1.4 STUDY OBJECTIVES

The objectives of the research include:

- Determine if project management practices are adopted by sub-contractors in the implementation of projects.
- Identify how subcontractors manage the knowledge areas on a project.
- Identify the top success factors for subcontractors.

1.5 SIGNIFICANCE OF STUDY

The efficient and effective way of discharging projects increase as project management practice increases. For this reason, project management practice is always encouraged in most industries especially the construction industry.

The building construction industry these days' work with subcontractors because of the complex nature of building and the advancement in architectural buildings. Evidence indicates that there is less studies on project management practice of subcontractors on building construction projects. The successful execution of projects by subcontractors compliment the success story of the main contractors. It is therefore, expected that this study will provide a significant knowledge on how subcontractors manage their project. This significant addition to literature will provide scientific data on which improvement in project management practice of subcontractors will be made.

1.6 SCOPE OF STUDY

Advancing of complex building construction has made it necessary for prime contractors to give some area of the project to specialized companies who are mostly term subcontractors. These area of works are sometimes worth millions of cedis and need to be managed efficiently. In the context of this study we are classifying subcontractors as MEP (mechanical, electrical and plumbing) companies only. Thus this study will look at the project management practice of MEP companies in Accra only.

1.7 RESEARCH APPROACH

This study commenced with literature review to help provide an understanding of projects and project management practice. The research method instrument used was questionnaire survey and a quantitative analysis was performed on the primary data collected. Respondents were drawn from industry through snow-ball sampling of people with experience in MEP industry and construction industry in Ghana. A random sampling of one respondent was performed ones the company has been identified. This was that with the assumption that same practice is done in the company and thus choosing more than one will be irrelevant since say data will be given.

A questionnaire comprising 23 questions with a mixture of yes/no, Likert-scale, multiple choice and opened questions was developed. Hard copies of the survey questionnaire were made available and distributed to respondents and a collection date was agreed on. The questionnaire is in two parts. The first part considered the background and demographic features of the respondents and the second part considered project management practice questions centering the focus on the ten knowledge areas according to PMI.

Statistical Package for Social Sciences (SPSS) was used for the analysis. Using this software, frequencies, percentages, tables and charts were generated to explain and analyze the data.

1.8 LIMITATION OF STUDY

Aside limited time and financial constraints to conduct the studies throughout the country, this study was limited to companies performing either mechanical, electrical

or plumbing works in Accra only. All other categories of subcontractors were not considered.

1.9 ORGANIZATION OF THESIS

The thesis is presented in five chapters. It includes chapter one which is the introduction, chapter two which is the literature review, chapter three being the methodology, chapter four is the analysis of data and the last chapter which is chapter five being Conclusion and Recommendations and appendices.

Chapter one deals with the study's background, the problem statement, the aim, objectives, limitation and organization of thesis.

Chapter two review literature relevant to this studies and topics on project and project management.

In chapter three, methodologies for the research was treated. The attention is drawn on the research setting, the study population, sample size and technique used for sampling. Research design, data collection and the analysis procedure is also treated.

Chapter four addresses the analysis of all data collected and chapter five draws conclusions and recommendation.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents the literature on projects and project management concept. It gives a brief understanding of what projects and project management are by looking at the general overview of project and what is term as project management. This chapter also tends to explain from literature the meaning of some common aspect of project management that is essential in managing of a typical project.

2.1 PROJECT

A project is different and separated from regular work because it is a one-time work to introduce products (Williams, 2010). Projects can be defined in many forms and ways but the underlining point that almost all literature and writers highlight is the fact that a project has a starting time and an end. The uniqueness of projects is also captured in most definitions.

The Project Management Institute (PMI) defines a project by touching on two core characteristics. It defines a project as a temporary endeavor undertaken to create a unique product, service, or result (INSTITUTE, P. M.,2017). Cleland (1994) also quoted Newman et. al and Gillinger in giving a definition for a project. He said, “a project typically has a distinct mission that it is designed to achieve and a clear termination point the achievement of the mission. Christine (2013) also gave her definition of project just as the definition given by PMI and added that projects are often managed by a Project Manager who has to make sure the project achieves its objectives. According to PRINCE2, a project is intended to deliver one or more products according to a business case (Turley, 2010).

Projects can be in different sizes. A small project can be planned and managed by one person whiles a large project may require a group of team working on it (Newton, 2015).

This shows that a project can involve one person or a multiple of organizational unit. Projects can be large or small and can be completed in a day or over years. Construction of a road, installation of air-conditioning units in a building, electrification of a village and drilling of water bore-holes are some examples of a project.

Newton (2015) gave 3 main points as the characteristics almost all projects have. He stated that projects have some or all of the following characteristics: have a definite start and end time, the project is over once the endpoint is reached, and projects attempt to achieve something new.

These characteristics given by Newton (2015) and other authors like Christine (2013) and Verzuh (2003) are in agreement with the characteristics stated by PMI. The characteristics of projects according to PMI are:

1. Temporary: Projects always have a start and date to meet a customer's requirement. The end of the project can be reached when the project is cancelled. The temporary nature of a project does not apply to the product. The product can last for a very longtime more than the project or after the project has ended.
2. Unique: Every project undertaken is different from any other. It is not like an operation where activities are repeated always. Uniqueness can be based on time, location, ownership and many more.
3. Has a purpose: Every project has some objectives that it wants to achieve. But not all objectives of a project can be met even though all projects are initiated

based on some objectives. Without a purpose an endeavor undertaken cannot be classified as a project.

4. Interrelated activities: In a projects, lot of activities are performed towards in achieving one objective. These activities are interrelated and they are managed with one goal of producing a deliverable meeting given specific requirements.
5. Progressively elaborated: Projects mostly have well spelt out objectives but scope keeps on expanding into details throughout the project's life cycle. This means that the distinguishing characteristics of the project and it activities are defined into details with time as the project progresses.

2.2 PROJECT LIFE CYCLE

Projects can be mapped to a simple cycle structure. That is starting the project, preparation and organizing, performing the work and closing the project (Newton, 2015). This cycle is usually known as phase life cycle and mostly termed as initiation, planning, executing and closure. Williams (2008) also described project life cycle as a "generic life cycle which is fairly simple—first you start the project (called Initiating), then you go on to actually do the project (through the Planning, Executing, and Controlling phases, which form a loop), and finally you finish with everyone happy, a strategy for the future in place, and a check in your hand (Closing)".

Newton (2015) just like Darnall and Preston (2010) grouped project life cycle into only four phases where monitoring is included in the executing phase. According to Newton (2015), project life cycle basically has four phases. The first of the four phases is the initiation phase which is characterize by starting of the project. This phase is followed by the planning phase where the organization and the preparation is done to kick start the execution of the project. The third phase or cycle as shown in

Fig 2.1 is carrying out the work. This phase is also known as the executing cycle. The executing phase is when the actual work is performed. The last phase is the closing phase. This phase is where the project is ended and all deliverables are delivered and all paper works and documentations are completed.

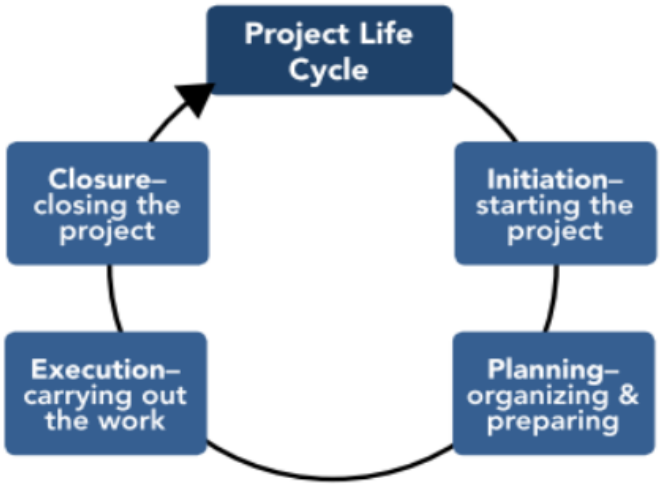

Figure 2.1 Project Life Cycle

Source: Newton, 2015

On the other hand, Williams (2010) agreed with PMI, a project has five life cycle. According to PMI, the project life cycle is the phases of the project from the beginning and end of the project showing what you have to do in order complete the project. It provides the framework of the project. The life cycle of a project is determined by the industry. A general life cycle of a project is shown in Fig 2.2 (PMI, 2017).

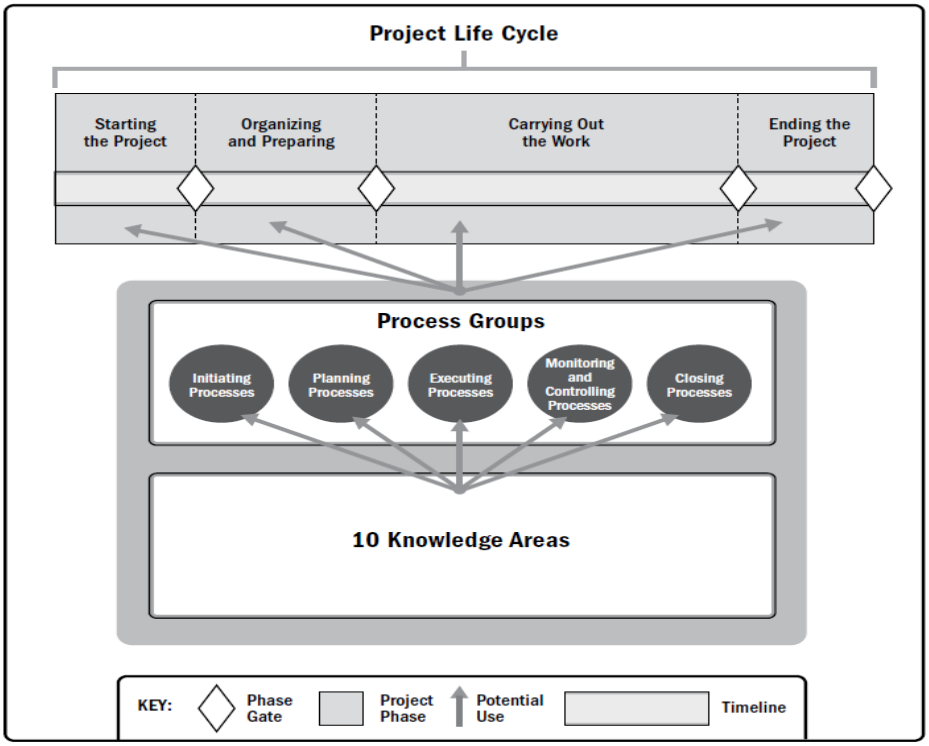

Figure 2.2 Project Life cycle with Process Groups

Source: PMI, 2017

Grouping project into phases provides an opportunity to assess the project performance and take necessary corrective or preventive actions in subsequent phases and also to enable the project manager and team plan and organize resources effectively for all activities.

2.3 PROJECT MANAGEMENT

"There has been no identified profession or industry where project management practices will not work" (Cleland and Ireland, 2002). Project management is about converting vision into reality (Turner, 2009). The project manager and team have a shared goal to carry out the works of the project in order to meet the project's objectives and they can achieve this through some management process and application of some skills. The application of these process and skills is what can be

term as project management. A glossary developed by CompTIA (2006) defines project management as "The process of initiating, planning, executing, monitoring, controlling and closing out a project by applying skills, knowledge, tools and techniques to fulfill requirements". Newton (2015) also had a similar definition to give by defining project management as the discipline of planning, organizing, motivating and controlling resources to achieve certain goals.

According to PMI, Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Many authors make references to this definition given by the PMI. It is widely accepted as the baseline for defining project management. As the definition suggest, project management incorporates some level of skills, tools and processes in achieving the success of the project. The skills in this case are acquired knowledge, interpersonal skills and experiences that are used to manage the risk within the project to improve the likelihood of it success. The tools are the various aids used to assist project managers or teams to improve their chances of success. Every project management processes produce an output from an input by using project management tool (PMI, 2017).

2.4 PROCESS GROUPS

PMI and PRINCE2 provides standards of project management that are widely used. Both provide a lot of guidelines, recommendations and processes used for managing projects. For the purpose of this study, our attention will be focused on the processes adopted by PMI.

The PMI explains process group as the logical grouping of project management processes. Project management involves five process groups according to PMI. The project management processes are linked by specific inputs and outputs where the result or outcome of one process may become the input to another process that is not necessarily in the same Process Group (PMI, 2017). The five process groups are initiating, planning, executing, monitoring and controlling and the closing process group. These process groups are the pillars of every project management life cycle (Wysocki, 2009). Wysocki (2009) pointed out similar five process groups which does not contradict what was given by PMI except changing the name of initiating and executing groups to scoping group and launching group respectively. He as a matter of fact adopted the definition of process group from PMI.

2.4.1 Initiating Process Group

A project being successful will depend on how clearly the term of references are established. The main purpose for this process group is to usher and authorize the starting of the project (Stackpole 2013). This group has two processes that produce the project charter and identifies the stakeholders. In documenting the initiating information, the forms or documents used are Project Charter, stakeholders Analysis matrix and stakeholder's register. According to Stackpole (2013) some initiation activities that need to be performed when managing a project are: selecting a project, select project manager and the organizational structure, collect past information of similar projects, identify stakeholders, identify requirements, document business need, document assumptions and constraints, prepare estimate, determine acceptance criteria, identify high risk and prepare a project charter and stakeholders analysis matrix.

2.4.2 Planning Process Group

The purpose of this group is to create a number of comprehensive plans that will be used to manage the project. Ibbs and Kwak (2002) are of the view that, a workable scheme is developed and maintained as a result of this group. These plans elaborate on the high level information that were provided in the project charter. Planning occurs throughout the project. According to PMI (2017) the processes in this group are to help establish the scope of the project, define the objectives and also define how these objectives will be met. There are 24 processes in the planning process group (Institute, P.M, 2017).

Some of the aims of the planning process group to (Stackpole 2013) is to develop a realistic schedule, develop budget, identify the procurement needs of the project combine all planning information into a project management plan and set off the project.

2.4.3 Executing Process Group

The performance of the complete work as defined in the management plan is done in this process group. This is to satisfy all project requirements. In summary the actual work is done in this group. In all there are ten processes in this group as given by PMI. The processes include directing and managing the project, managing the knowledge areas, managing quality, acquiring resources, developing your team, managing the team, managing communication, implementing risk measures, conducting procurement and managing your stakeholders. The main point this group highlights is managing resources, processes and distributing information. The emphasis is on being proactive and completing work defined in the project plan.

Creating deliverables, managing quality, managing the team, carrying out effective communication, developing reports and procuring are some of what is expected to be done according to (Stackpole 2013).

2.4.4 Monitoring and Controlling Process Group

Tracking, reviewing and regulating the progress and performance of a project is what this group addresses (PMI,2017). It also identifies the areas that requires change or attention so that the corresponding change will be initiated. One other activity in this group is accepting deliverables which satisfy the customer. Also results are reviewed and compared to planned results. When there is a significant variance, preventive actions, corrective actions, or change requests are initiated.

2.4.5 Closing Process Group

This process group signifies the end of the project. They are those processes performed to formally complete or close the project, phase, or contract If care is not taken this process group is often ignored. Product delivery is not the same as end of project. A product might be delivered but the project might not necessarily be over since it has not been properly closed. All paper works and other closing activities must be completed to ensure end of a project. There is only one process in this group and this is close project or phase.

2.5 PROJECT MANAGEMENT KNOWLEDGE AREAS

Knowledge areas approach to project management has been develop basically by the PMI and it is adopted by managers who practice the PMBOK methodology. Apart from project management processes being grouped into the various Process Groups, processes are also categorized by knowledge areas.

A Knowledge Area is an identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques (PMI, 2017). In project management view point, these knowledge areas are defined separately even though they are interrelated. There are ten knowledge areas according to PMI. The ten Knowledge Areas as defined by PMI are as follows:

1. Project Integration Management: this area deals with processes that identify, define and coordinate the various activities within the project management process groups.
2. Scope Management: this the area that make sure the project is completed successfully by including all the required works only
3. Schedule management: this area has all the process that will help to complete the project on time.
4. Project cost management: this knowledge area has the processes that help in planning, estimating, budgeting, managing and controlling cost. This helps the project to be completed within budget approved.
5. Quality Management: It involves the processes for ensuring the project is completed meeting the quality requirements of stakeholders.

6. Project Resource management: This knowledge area has processes for identifying, acquiring and managing the resource needed for completing the project.
7. Communication management: The timely planning, collection, creating and distribution of information is managed by processes in this knowledge area.
8. Project risk management: It involves the processes use in identifying risk, analyzing, managing and controlling risks on the project.
9. Procurement Management: this the area that have processes that help in planning and acquiring products and services
10. Project Stakeholder Management: Includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution.

2.6 PROJECT SUCCESS AND PROJECT MANAGEMENT SUCCESS

Alias et al (2014) defines a successful project as one that has met certain expectations for a given participant. Notwithstanding the expectations can be different from each participant.

Definitions of successful projects can be surprisingly elusive (Pinto, 2010). Cooke-Davies (2002) in his paper made two distinctions between project success and project management success by making reference to other writers. He defined a successful project as one being measured against the objectives of the project and project management success is one measured against the traditional measure of performance against cost, time and quality.

From the above definitions, there are a lot of success criteria which a project can be judged on thus making it difficult to determine if a project is successful. Generally, a project is considered to be successfully implemented if it's able to meet the requirements of schedule, quality, cost, stakeholders satisfaction and performance to business case.

2.7 SUCCESS CRITERIA

A project is evaluated or measured mostly at the end of it to see if it was a success or a failure. These measures are what we term success criteria. Success criteria are the measures by which success or failure of a project is judged. It allows one to know if the project was successful or not. Determining if a project was successful is invariably a difficult task. This is so because saying a project is successful based on your judgement might totally be different from another stakeholder's point of view. According to White and Fortune (2002) in another literature studied, stated 7 major

criteria for measuring the success of a project. They are: meet client requirement, complete within schedule, complete within budget, meet organizational objectives, yield benefits, causes minimal business disruption and meeting quality requirement.

2.8 SUCCESS FACTORS

Success factors are the components that are required in establishing an environment where projects are managed effectively in consistent with excellence (Kerzner, 1987). In other words, they are lists of common factors of success/failure perceived to have an impact on the success/failure of projects. The Standish CHAOS report gave five top success factors. They are user involvement, executive management support, clear requirements, proper planning and realistic expectation.

Other factors of success have been identified in many literatures. Researchers have further based most of their research on these factors to ascertain the credibility of these factors. White and Fortune (2002) in their research outlined a number of critical success factors taken from literature. Out of those factors, they found out that the top three success factors are:

- Clear goals
- Support form senior management
- Adequate funding

In the 1994 Standish CHAOS report, Incomplete Requirements, Lack of user involvement and Lack of Resources were stated as the top failure factors that affect project success. This is in consistence with the top 3 factors that were reported by Diana and Fortune (2002).

CHAPTER THREE

METHODOLOGY

3.1 RESEARCH SETTING

The study was conducted using companies in Accra to represent subcontractors. The companies are MEP companies found in any part of Accra who mostly work under prime contractors on construction projects.

Accra is chosen because of proximity to the researcher and arguably because most complex construction projects are located in Accra. Also, most of these companies described as subcontractors in this study are located in Accra.

3.2 RESEARCH DESIGN AND STRATEGY

Research design can be described as the blueprint for conducting the study so that factors that will interfere with the validity of the research results will be controlled (Polit and Hungler, 1999). Burns and Grove (2001) also pine that research design of a study helps to plan and implement the study in a manner that the intended results will be obtained. The objectives of this research were achieved through a quantitative exploratory descriptive design.

Quantitative data can be transposed into numbers, in a formal, objective, systematic process to obtain information and describe variables and their relationships (Brink & Wood 1998). The study collected data through the administering of questionnaires and data transposed into numeric data for quantitative analysis.

According to Polit and Hunger (1999) an exploratory study investigates a full nature of a phenomenon, the way it is perceived and the factors that affect it. Burns and Grove (1999) also of the view the results of exploratory study are not generalized to a larger population but to provide an understanding of a sample being examined.

Exploratory research examines the relevant factors in detail to arrive at an appropriate description of the reality of the existing situation (Brink & Wood ,1998). The study sought to investigate the phenomenon of project management practice by a group known in this study as subcontractors. The research was quantitative and exploratory because it met the criteria given from literature.

3.3 POPULATION

A population of a study is the totality of all the subjects that conforms to a set of specifications or identify, comprising of the entire group of person that is of interest to the researcher and to whom the results can be generalized (Polit and Hungler, 1999). It is a group of individuals that exhibit the same characteristics. The research population of the study comprised all companies who work as subcontractors in the area of Mechanical, Electrical and Plumbing in the building construction industry in Accra.

The study involved 20 companies identified through snow-ball sampling within Accra. The companies are MEP companies. Specifically, those in charge of managing the projects of the companies were targeted. These targeted respondents were Project managers, Engineers, Supervisors and those who are in-charge of managing projects.

3.4 SAMPLE SIZE AND SAMPLING TECHNIQUES

Burns and Grove (1999) and Brink (1996) pointed out some characteristics of a non-probability sampling. They argued that with a non-probability sampling, every person who meets the criteria is asked to participate; it is a less complicated and more economical procedure. One example of such sampling technique is snowball sampling. Snowball sampling is a convenience sampling method and it is applied

when it is difficult to access subjects with the target characteristics. Ali (2010) explained that convenience sampling is a non-probability sampling which is chosen because it is quick, convenient and less expensive. With the limited time and resources available to the researcher it was convenient to use snowball technique to reach out to targeted participant for a quick and convenient data collection process.

Snowball technique was used in reaching out to the companies and random sampling was used in selecting a participant after a company identified. Kissi (2013) in a similar study on project management practice in the Ghanaian building industry used snowball technique in sampling contractors. He argued that the difficulty in getting the list of contractors from the ministry of works and housing makes it more convenient to use this technique. Looking at the nature of this study and the time bound, it was imperatively important to use snowball technique just as Kissi (2013) used in sampling contractors for his studies.

20 companies were identified through this the snow-balling technique. A participant each from the twenty companies was selected randomly to answer questionnaires. One participant was chosen each from the company because it was assumed one practice is being done by a company so a response from a participant can be generalized for a company. A total of 20 participants were involved in the study.

3.5 SOURCE OF DATA

The main source of data of this study is from a primary source. Data were collected from participant through questionnaire. This data collected was used for the analysis.

3.6 INSTRUMENT

A self-report questionnaire was used to collect data from participants. The questionnaire was in two sections. The Part I collected information on demographic background of participants and part II gathered information of project management practice of participant in his or her company.

3.7 DATA COLLECTION PROCEDURE

The researcher sought permission from the mangers of the companies by explaining the purpose of the study to the various managers. After approval is given, the researcher would seek the consent of the participants who agree to take part in the study before delivering the questionnaires to them to answer.

Participants would be assured of confidentiality of information that they will provide. A date will then be fixed for researcher to come for the answered questionnaire. Data collection was done in a month.

3.8 DATA ANALYSIS

Statistical Package for Social Sciences (SPSS) and Microsoft excel were used in the analysis of this study. The software was used to facilitate the data analyzing by generating frequencies, percentages, tables and chart to explain and analyze the data. It also assisted in making independent t-test on all the knowledge areas practiced.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. INTRODUCTION

This Chapter focuses on the research findings, analysis of the results and discussions. Previous chapters addressed the introduction, the review of relevant literature, and the research methodology adopted. This chapter provides a detailed explanation of the main survey results. Through the data collected, the analysis is being discussed into detail, linking it to relevant literature and authors in the relevant areas of this study.

4.2 BACKGROUND INFORMATION

The results are presented in line with the research objectives stated. However, background information of the respondents would be presented first. The major variables discussed in an attempt to describing the background of the respondents included sex of the respondents, the respondents' position in the firm, the highest level of qualification, and the experience of the respondents in the his or her position. Also in the background information, respondents were asked if they were certified PMP and if they have received any training in project management. The major variables also discussed in an attempt to describing the profile of the company were the type of organization and the ownership of the company and if respondents believe practicing project management will improve the success story of their organization.

4.2.1 Gender

The majority of respondents were male. 17 of the respondents which represents 85% were males and 3 respondents representing 15% were females. This confirms the notion that the construction industry and engineering industry is dominated by males.

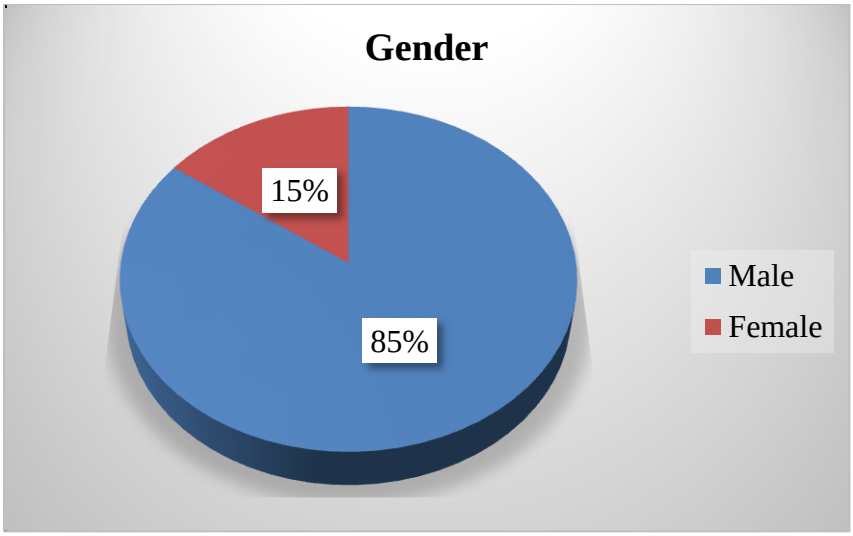

Figure 4.1 Gender of Respondents

Source: Field data, 2018

4.2.2 Highest Educational Level

The highest level of qualification of the majority (50%) of the surveyed respondents was Bachelor of Science (BSc.). That is 10 out of the 20 respondents had a Bachelor degree. 30 percent (n=6) had masters level of education and 4 of the respondents representing 20 percent had other education level which was found out to be HND. Inference, the position of managing projects at this level are mostly occupied by personnel with some level of degree holding education, that is at least HND but preferably BSc.

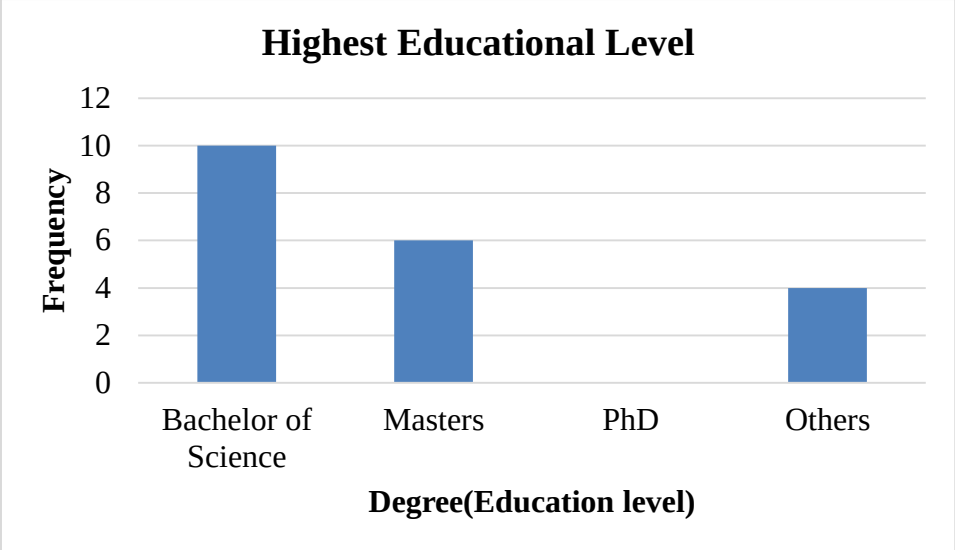

Figure 4.2 Highest Educational Level

Source: Field data, 2018

4.2.3 Years of Working Experience

The working experience of the majority of the surveyed respondents was between 4 to 6 years. 12 respondents have 4 to 6 years working experience. 7 respondents representing 35 percent had 1 to 3 years' experience in their position whiles only 1 respondent had over 6 years' experience.

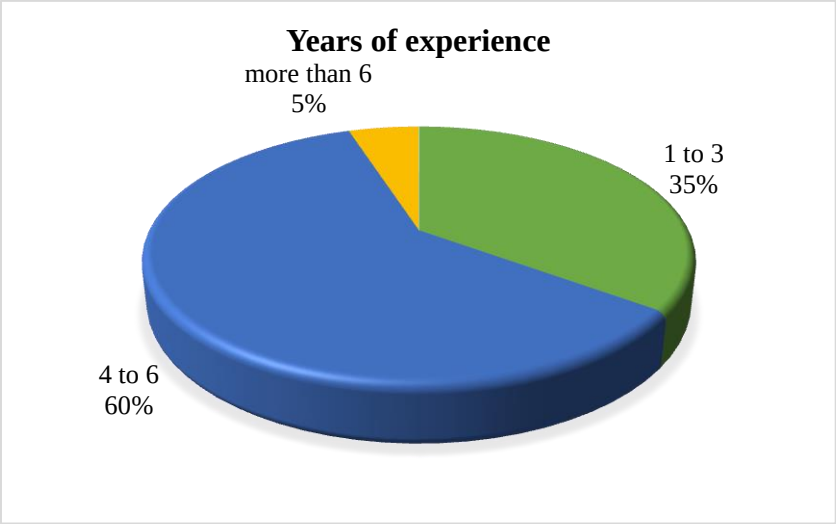

Figure 4.3 Years of Working Experience

Source: Field data, 2018

4.2.4 Job Position

In relation to job position,4 respondents representing 20 percent worked as project managers while 5 participants worked as Project Engineers. 8 participants representing 40 percent of the respondents worked as site engineers and 3 respondents identified themselves as supervisors. None of the respondents perform the role of a project coordinator. Even though some respondents identified themselves as project managers, none of them were certified PMP. All these positions given are those in-charge of managing the projects of the subcontractors thus getting the necessary data on the management of the project was fruitful.

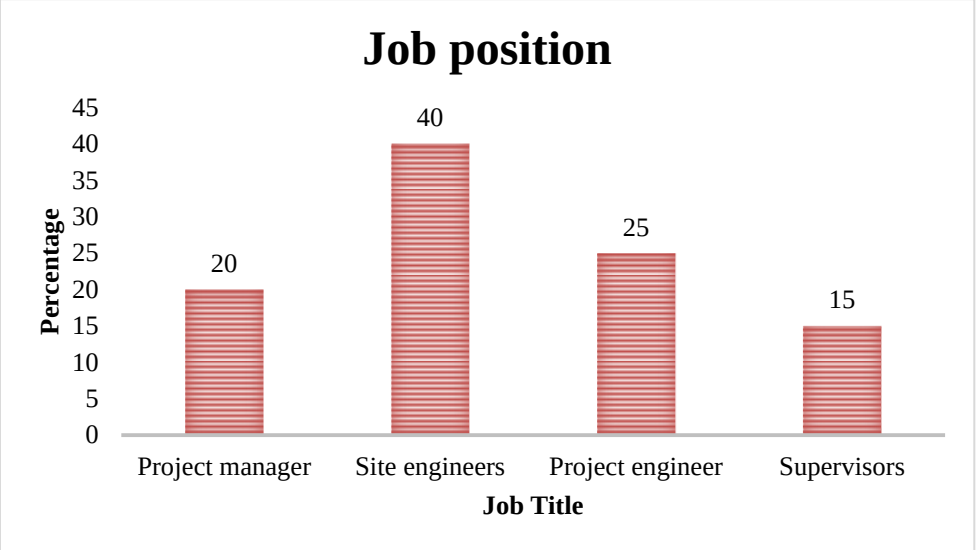

Figure 4.4 Years of Working Experience

Source: Field Data, 2018

4.2.5 Certified PMP

None of the respondents was a certified PMP.

4.2.6 Role in Decision Making

Respondents were asked how involve they are when it comes to making decisions concerning the projects they are managing. 55 percent being the majority of the respondents said they were involved in the decision making process whiles 35 percent said they are the main decision makers. The minority (10%) said they have no involvement when it comes to taking decision concerning the project. The study wanted information from respondents who are involved in decision making concerning projects. The high frequency of respondents being involved and being the main decision makers made it possible to acquire the needed information.

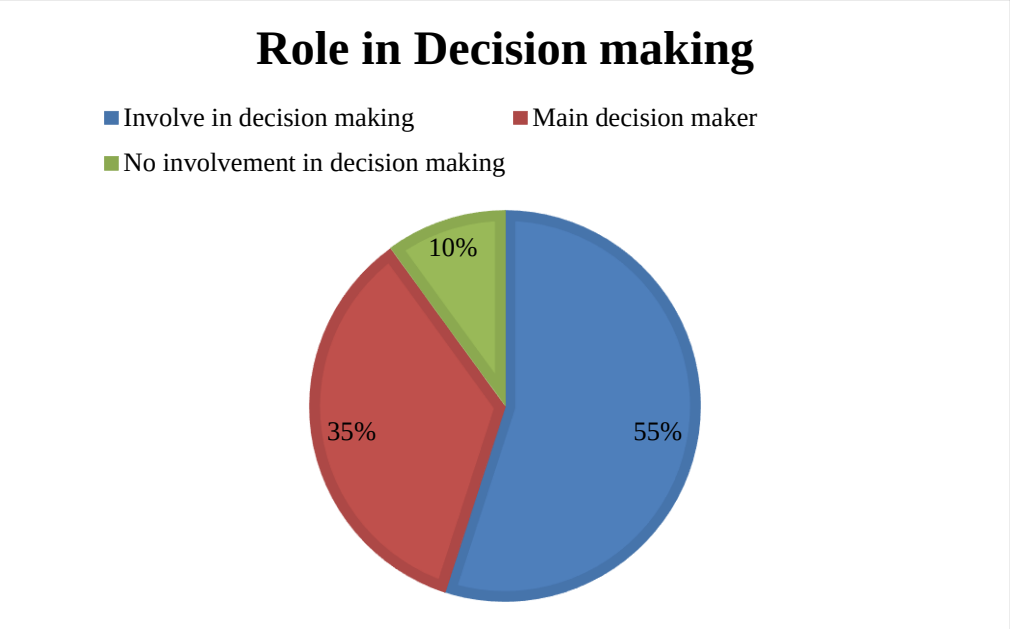

Figure 4.5 Role in Decision Making

Source: Field data, 2018

4.2.6 Company Type

This study sort to collect data from four types of company. The company was either mechanical, electrical, plumbing or combination of any of these who are working in the construction industry. 8 of the respondents belong to electrical companies making

42 percent of the total respondents. 7 of the companies which represent 35 percent were mechanical only, 15 percent (n=3) identified themselves as plumbing only and 10 percent (n=2) were combination of all the three. This distribution although gotten out of random through snow balling helped the researcher to capture the views of all targeted companies who are mostly term subcontractors on a project.

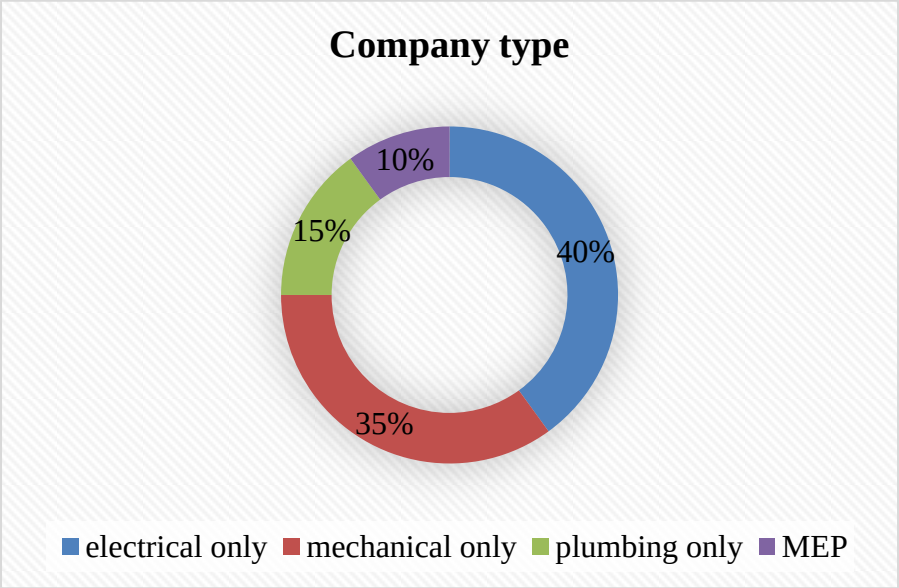

Figure 4.6 Types of Company

Source: Field data,2018

4.2.7 Ownership Structure of Firm

In relation to ownership of organization, 70 percent of respondents worked in companies that are 100% foreign ownership whiles 30 percent worked for 100 % Ghanaian ownership. None of the respondents worked for a joint venture company role of a project coordinator. This results give the impression of how foreigners are investing into building projects in Ghana. Sometimes it is of a common view in the industry that foreign companies on projects do manage most aspect of the project and some are able to pre-finance before monies are being later after certificate are raised.

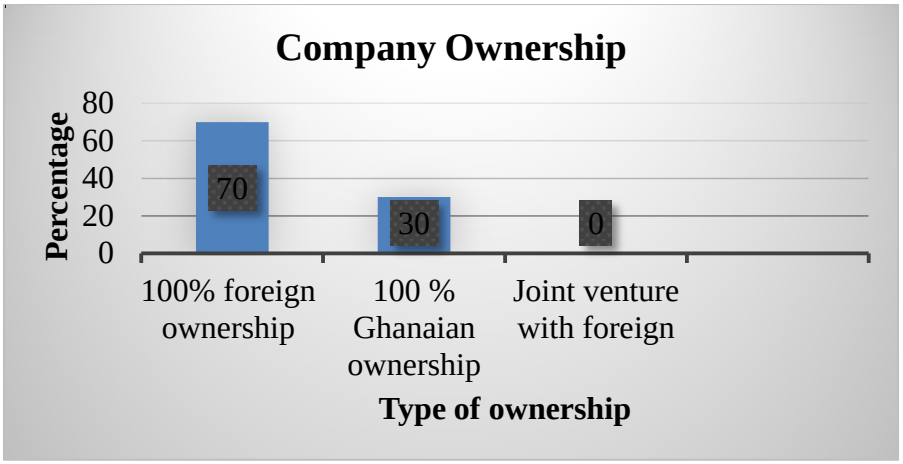

Figure 4.7 Ownership Structure of Companies

Source: Field data, 2018

4.2.8 Project Management Practice improving Project Success

All respondents are of the view that practicing project management will improve the success delivering of projects in their company. Inference, the work of subcontractors on construction projects purely falls under the category of projects and managing them like one with project management practice and knowledge acquire from project management training will improve project delivery and success. Those in-charge of managing the projects are much aware of this situation judging from the response given.

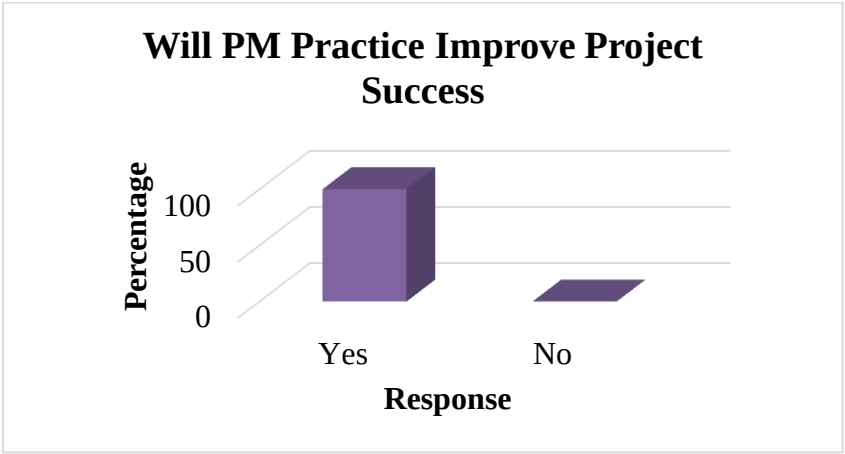

Figure 4.8 PM practice improving Project Success

Source: Field data, 2018

4.3 GENERAL PROJECT MANAGEMENT PRACTICE

The study found out that the need of PM is not recognized by subcontractors. 17 of the respondents representing 65 percent confirmed that the need of PM is not recognized by the companies. This was supported from the fact that less support is provided by the management of the companies when it comes project management in the companies. 80 percent admitted management of their companies provide no support for project management practice whiles 20 (n=4) percent received some sort of support from management. White and Fortune (2002) in their study found out that management support was the second most important factor when it comes to project success and in project management practice, if this is anything to go by then the success of project of subcontractors through the practice of project management become very difficult since most of them receive no support. Success will be achieved through the person in charge of managing the projects own experience or 'try and luck' so to speak.

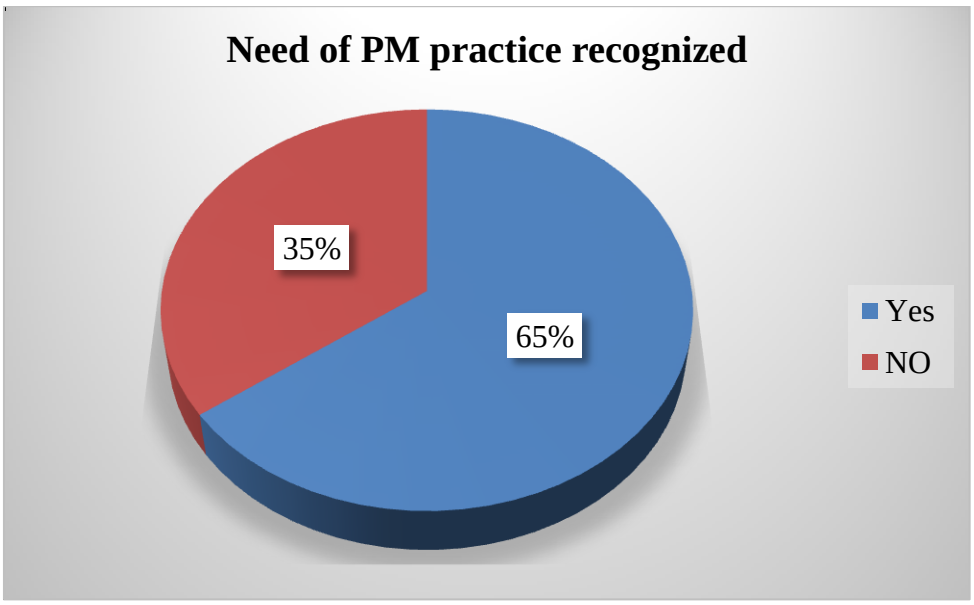

Figure 4.9 Recognition of PM practice in Company

Source: Field data, 2018

Project management is the application of process and skills in managing projects. The study wanted to find out is project management was practiced formally by subcontractors. It was found out that project management is practiced by respondents and their companies but these practices are informal. Respondents were asked if there are standards and methodologies laid down of managing projects. 17 out of 20 being the majority of respondents admitted there are no standards or laid down methodologies in managing projects. 85 percent said there are no methodologies or process in managing their projects whiles the remaining 15 percent had a processes and methodologies of managing their projects.

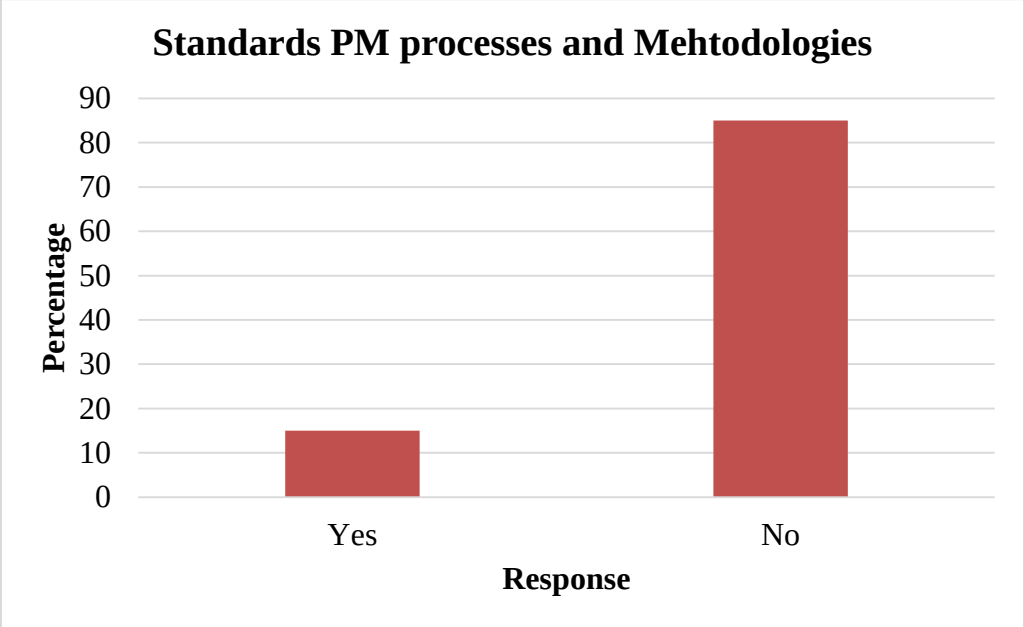

Figure 4.10 Standard PM processes and Methodologies

Source: Field data, 2018

Just as the majority said there are no processes and methodologies in managing project and the need of project management is not recognized by management, there is little effort in training those in charge of managing projects to formally acquire

project management skills and knowledge. The study found out that most of respondents in charge of managing projects do not have strong knowledge base in project management practice. They do manage projects out of experience and sometimes templates provided by the company or developed by them. 75 percent admitted that project managing personnel have no strong knowledge base in PM practice and 15 percent on the contrary have knowledge in PM practice. The less percentage of personnel having strong knowledge base in PM practice attests to the fact that subcontractors manage projects in the informal way. This is worrying to the practice of project management since many processes will be ignored and even those that will be practiced unknowingly will be done so informally. It will make the practice of project management ineffective thus the major problems encountered in project implementation.

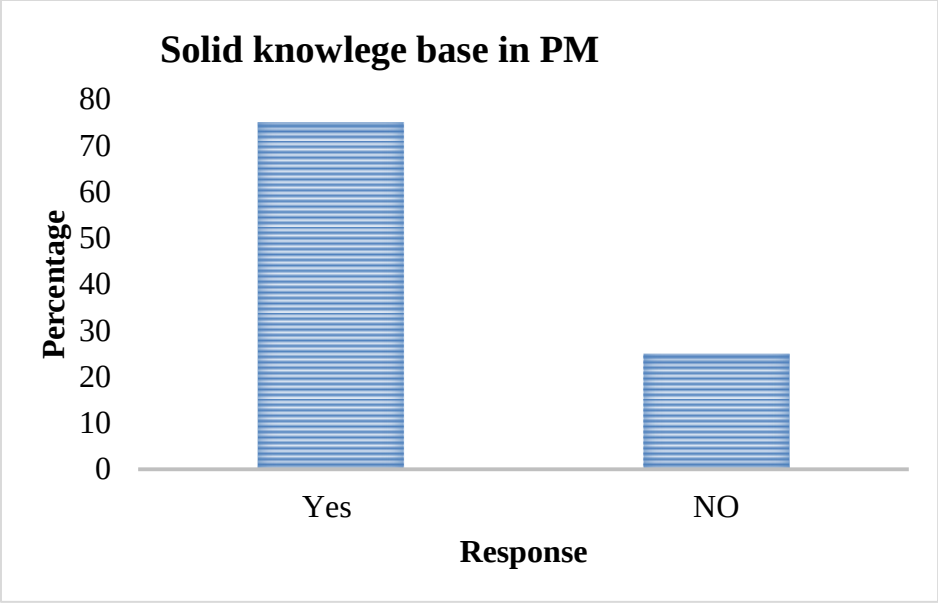

Figure 4.11 Project Managing personnel solid knowledge base in PM

Source: Field data, 2018

4.4 PROJECT MANAGEMENT PRACTICE ACROSS THE KNOWLEDGE AREAS

A Knowledge Area is an identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques (PMI, 2017). A project encompasses the 10 knowledge areas as spelt out by PMI. All 10 areas might not be applicable at the same time on a project but it is believed that managing all these areas sums up to the management of the project in totality.

The study adopted the ten knowledge areas of PMI and asked respondent if these areas are applicable in their field of work and thus how it was managed. The intend of this was to find out if respondents do manage the said areas formally or use their own experience to manage the knowledge area. Also, to find out whether the area is not managed at all.

4.4.1 Scope Management

Scope management is the process of making sure that the project includes all the work necessary to complete the project and only the work required. The survey through this study shows that scope management is applicable in the works of subcontractors. All respondents (fig 4.4.1) affirmed that scope is managed one way or the other in their field of work. The management could be formal or informal. On the issue of scope managed formally by adhering to some standards and methodologies, respondents where tasked to approximate their practice of scope management by some statements given. According to the results 50 percent which is 10 of respondents perform scope management by using documented scope management process, 35 percent (n=7) have a general stated scope statement for the project and 15 percent (3) have an established

basic scope management process within their company. Inference, scope is one key aspect of the project that subcontractors do take serious and manage it somehow even if project management practice as a whole is not supported by company management. It is obvious there is always some form of scope managing by subcontractors being it formal or informal.

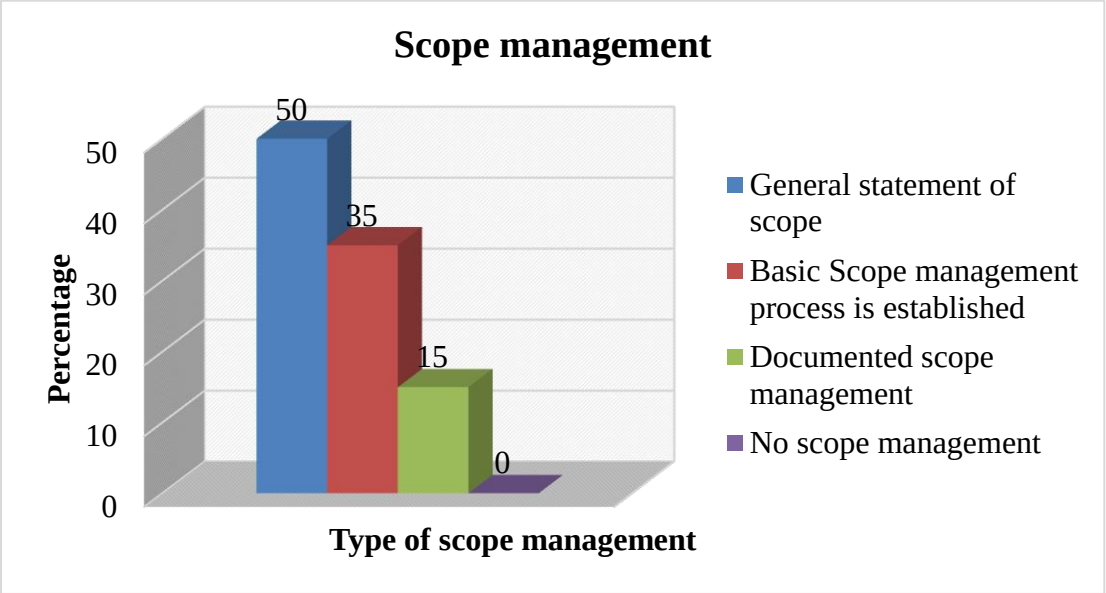

Figure 4.12 Approximating Scope Management

Source: Field data, 2018

4.4.2 Communication Management

Project Communications Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Overall the communication management of the subcontractors is found to be somewhat formal. 70 percent of respondents who took part in the survey admitted they manage communication on their project one-way or the other. When respondents were queried to define communication management in their company by a statement, 65 percent said, basic communication process is

established. 20 percent agreed that there is a communication that channel created or provided when only its necessary in their company whiles 15 percent do not manage communication. The 15 percent (n=3) who admitted not managing communication do share information on site but the actual problem was its management for information to reach the intended recipient when needed and in the right way. This huge number of percentage that was found out indicates that there is always a form of communication process for subcontractors on projects. Wusuah (2012) in her study on communication in the construction industry in Ghana found out that; face to face discussion, team meetings, site meeting as well as general meeting seem to happen at every construction site in Ghana. This finding in this study confirms this.

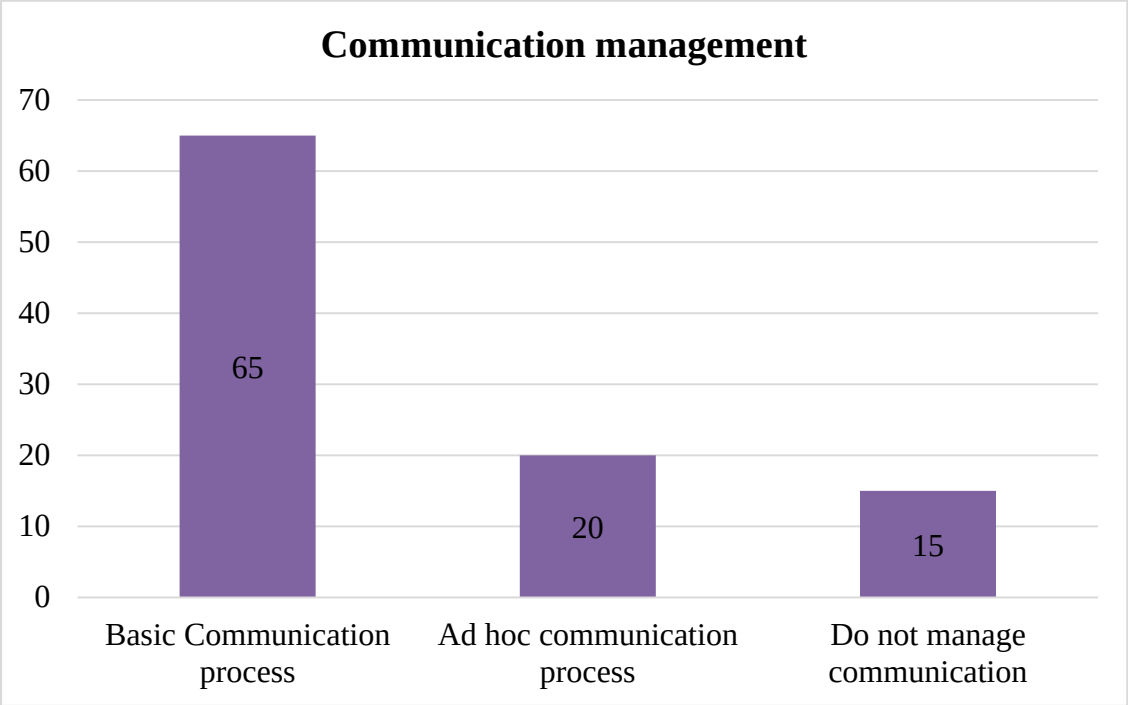

Figure 4.13 How best Communication is Managed

Source: Field data, 2018

4.4.3 Time Management

On approximating time management of subcontractors, the majority of the respondents (70 percent) are of the view that basic time management is established in their company. That is, they have basic process to follow when it comes to managing time. 20 percent manage time through a documented scope management process and 10 percent do not manage time at all. Completing a project on time or within schedule is one aspect all companies and individual managing projects do not take for granted. This was evident with the huge number of recipient attesting to the fact that they have basic time management process established

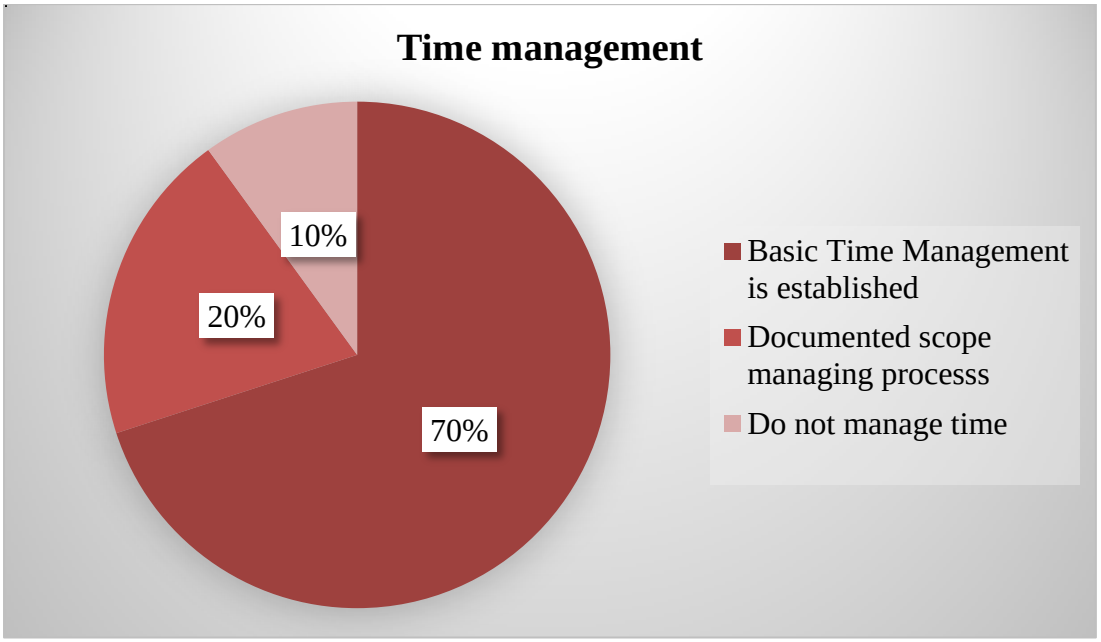

Figure 4.14 How best is Time Managed

Source: Field data, 2018

4.4.4 Cost Management

Cost is one crucial aspect of projects that is very important when it comes to managing projects. Managing project to a completion within budget is one great deal

for all those in charge of managing projects. Most people even allude to the fact that a successful project is one that has been completed within budget. In view of that, respondents were asked if cost is managed on their project. All respondents responded that they manage cost in their projects. In approximating cost management, 50 percent of respondent approximate their cost management to informal practice. That is cost is managed but it is done informally through the experience of project managers. 30 percent also used cost estimating, reporting and performance measurement in managing cost. 20 percent uses documents that are standards develop in the company in managing projects.

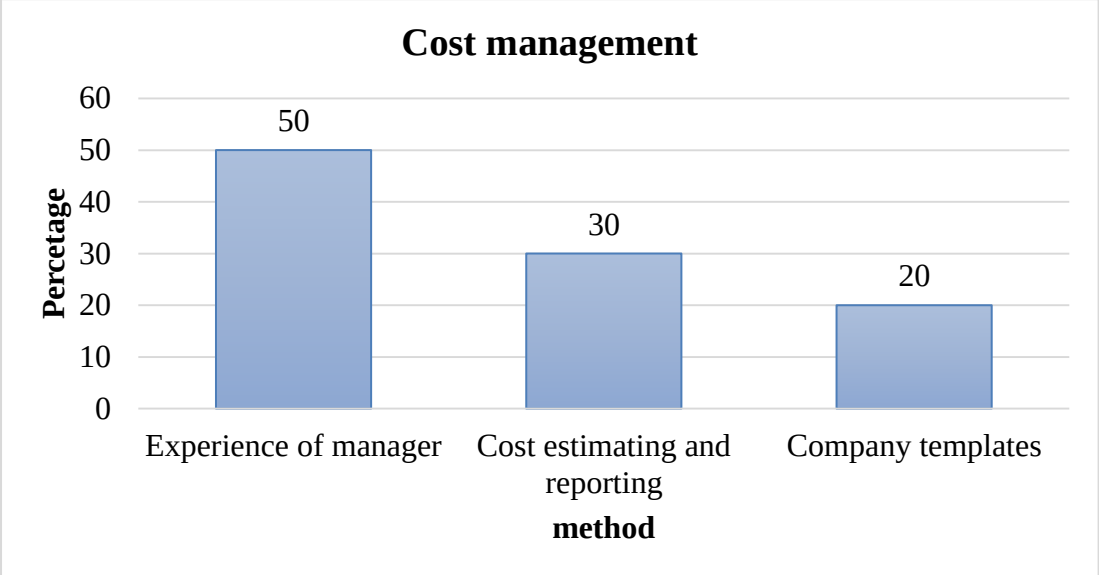

Figure 4.15 How cost is Management Practice is Approximated

Source: Field data, 2018

4.4.5 Human Resource Management

When asked to approximate the total human resource management, 50 percent said there are no established practice but manages human resources through their own experiences. 15 percent admitted having a process of managing human resources that

is documented whiles 35 do not manage human resource themselves since they outsource their works mostly.

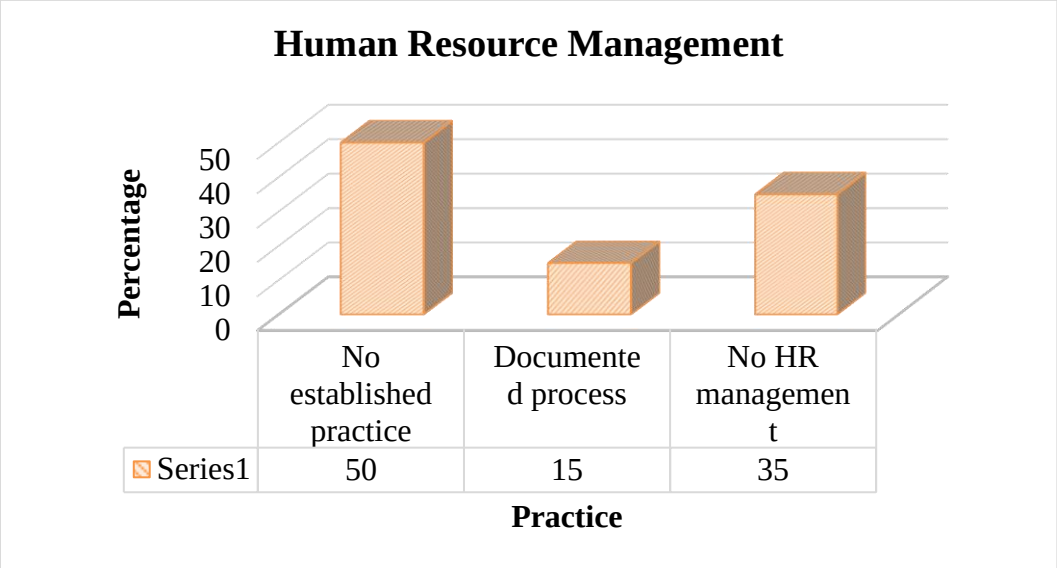

Figure 4.16 How Human Resource is Management is Approximated

Source: Field data, 2018

4.4.6 Quality Management

Quality management is the process of planning quality and assuring quality works are performed. The need to control quality is also necessary. It was found out from this study that there are always quality checks when it comes to the work of subcontractors. These can be done by subcontractors themselves or by a consultant. In approximation, the quality management of subcontractors is not an established practice. Those in charge have to make sure they are delivering a good project through their own intuition, experiences and efforts. The results show 50 percent of respondents do not have an established practice and 35 percent have a basic quality management process. 15 percent do not actually manage quality but make sure the

right thing (quality) is done since their work will be approve or disapprove by a consultant.

Figure 4.17 How Subcontractors Manage Quality

Source: Field data, 2018

4.4.7 Procurement Management

Project procurement management includes the processes necessary to purchase or acquire products and services. From the survey results, procurement is done by all respondents of subcontractors who took part in the survey. Majority of the procurement is done without going through an established process or methodology. 13 of the respondent being 65 percent gave the impression of procurement being done without basic methodology. The 35 percent do procurement through a well-documented process or methodology that is spelt out by the company. None of the respondents agreed to not managing procurement at all.

Projects cannot obviously be executed without some procurement. The results confirmed this is so for subcontractors as well. But the underlining point is how procurement should be done to get the best product or services procured. It can be explained again from the results subcontractors do face a lot of challenges when it comes to procuring since there is no basic methodology followed. It can be assumed from the results managers try to procure the best within schedule out of their experience and contact.

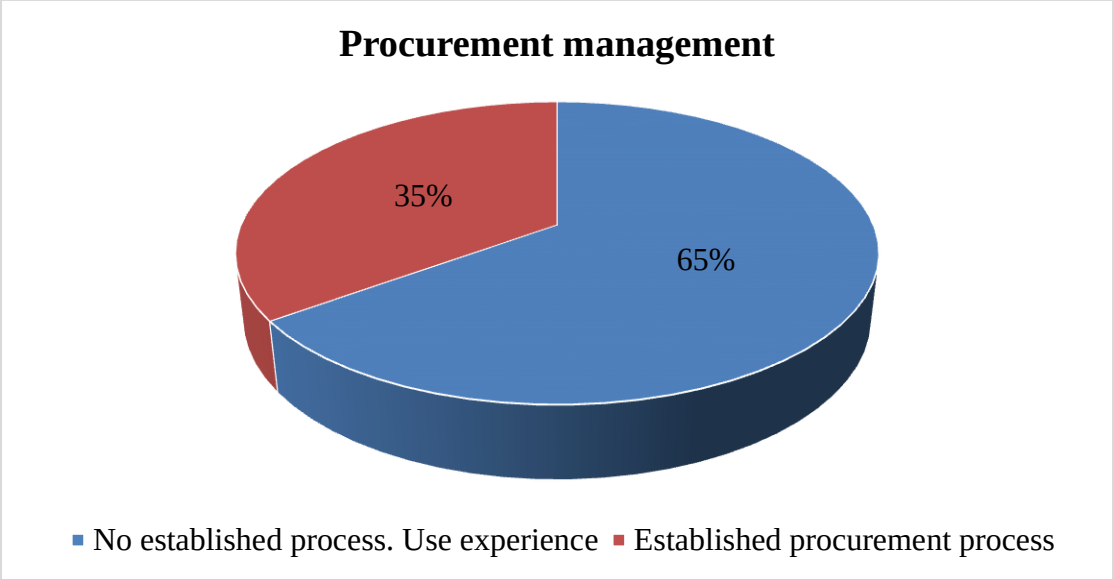

Figure 4.18 Procurement Management of Subcontractors

Source: Field data, 2018

4.4.8 Risk Management

The results showed risk management by subcontractors is very poor. 85 percent of respondents indicated they do not manage risk at all but only solve as and when encountered whiles 15 indicated they manage risk but there are no stated ways or process they use in managing risk in their company or on their projects. This results quiet gives the impression how mostly problems are not realized before they occur.

Proper risk analysis or assessment is done when executing projects thus potential risks that can affect projects take us by surprise leaving the project helpless sometimes

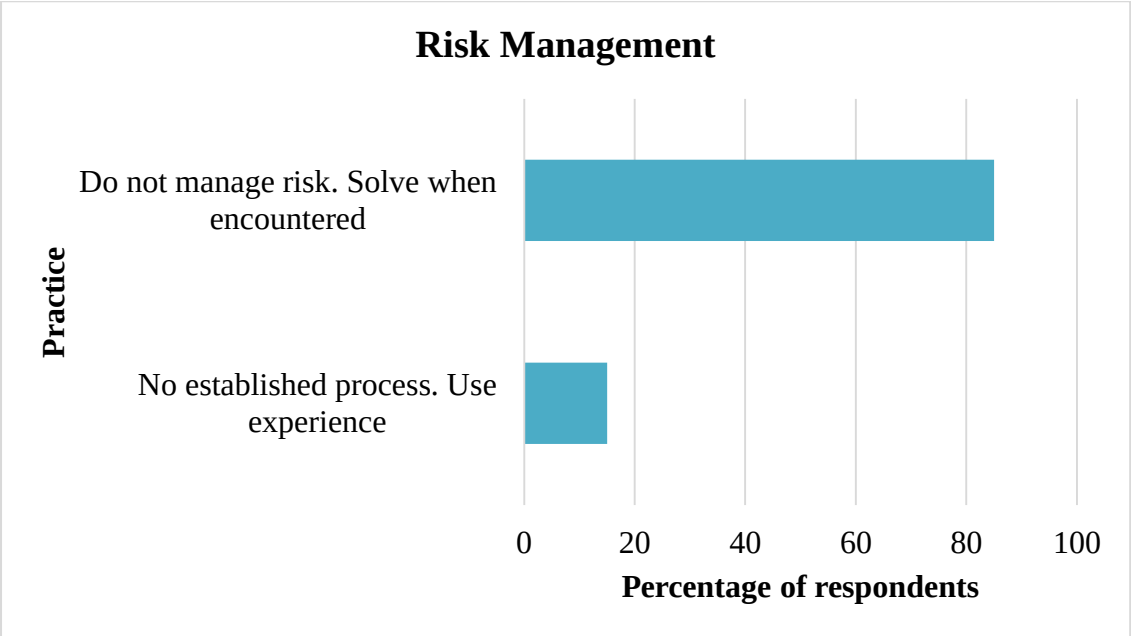

Figure 4.19 Risk Management Practice of Subcontractors

Source: Field data, 2018

4.4.9 Stakeholders Management

Stakeholders we have on our project play important role when it comes to the success of our projects. They can delay or at worse impede the progress of projects if they are not managed well. Respondents were asked if they do manage stakeholders and if they do, by what means or process do they do that. The results suggested a split of opinions. 50 percent of respondents indicated they do not manage stakeholders but have to be nice to them whiles 50 percent do manage stakeholders but do that through experience. They do not have any procedure or processes.

Figure 4.20 Stakeholders Management Approximation

Source: Field data, 2018

4.4.10 Total Practice of knowledge Areas

i. Null Hypothesis

Managing a project can be done wholesomely by managing the various knowledge areas indicated by PMI but it can be assumed that not all knowledge areas are applicable on a project. Some knowledge will eventually not be practice by some companies. Same with subcontractors, we assume less than 60 percent of the knowledge areas are managed by subcontractors. Therefore, stating the null hypothesis for this study: subcontractors manage less than 60 percent of knowledge areas.

H_0: $p < 0.6$

ii. Alternative Hypothesis

The alternative hypothesis of this study for managing all knowledge areas; subcontractors manage more than 60 percent of the knowledge areas.

H_a: p > 0.6

Testing the Hypothesis

With data gathered from field as given from previous analysis showing how many respondents practice which knowledge area, a significance test was performed by grouping respondents into two main categories. That is , those practicing more than 6 knowledge areas and those who are not.

Table 4.1 Mean Table for practicing more than 6 knowledge Areas

Group Statistics

Total practice	N	Mean	Std. Deviation	Std. Error Mean
Practice more than 6 knowledge areas	12	.7667	.06513	.01880
Practice less than 6 knowledge areas	8	.5500	.07559	.02673

Source: field data, 2018

Table 4.2 Independent Sample Test

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								90% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.227	.640	6.841	18	.000	.21667	.03167	.16175	.27159
Equal variances not assumed			6.630	13.534	.000	.21667	.03268	.15897	.27436

Source: field data

From the table 4.2 shown, with a confidence level of 90 percent at a degree freedom (df=18), p = 0.00 with t value of 6.841. Since the p value is less than 0.05 we do reject the hypothesis that subcontractors do manage only 60 percent of knowledge areas. It can be concluded that subcontractors do manage more than 6 knowledge areas.

4.5 CRITERIA USED FOR JUDGING SUCCESS

Success criteria from literature where given to respondents and they were asked to rank in order of importance the success criteria they use or will use to make the judgement about their own project being successful or not. They were to either indicate they disagree, agree or strongly agree with the success criteria given by the researcher.

No respondent disagreed with any of the criteria given as a way of measuring project success. Table 4.5.1 shows the distribution of respondents who strongly agree or agree with the success criteria that were given. The responses whether agreeing/disagreeing with the criteria were re-coded (disagree=1, agree=2 and strongly agree=3*).* To find out the most talked about or important criteria, the scales given were summed up according to the responses given. The total scores are displayed in table 4.5.2. From the table it can be seen that, the highest scoring criteria are "meets client's requirements", "completed within time" and "completed within budget". This means that these three criteria are the most strongly agreed criteria subcontractors use in judging whether their projects has been a success or not. These top three success criteria from the results conforms with the top three success that were determined by Diana White and Joyce Fortune in their paper current practice in project management-empirical studies.

Table 4.3 Criteria used for Judging Project Success

Success Criteria	**Strongly Agree**	**Agree**
Meet client's requirement	13	7
Complete within time	10	10
Complete within budget	8	12
Yield business benefits	7	13
Meet organizational objective	6	14
Meet organizational objectives	5	15

Source: Field data, 2018

Table 4.4 Success Criteria Ranking

Success Criteria	**Sums of answers after re-coded**	**Ranking**
Meet client's requirement	53	1st
Complete within time	50	2nd
Complete within budget	48	3rd
Yield business benefits	47	4th
Meet organizational objective	46	5th
Meet organizational objectives	45	6th

Source: Field data, 2018

4.6 FACTORS THAT AFFECT THE SUCCESS OF PROJECTS.

Factors that contribute to the success of subcontractors projects were explored. A number of factors were selected from literature and respondents were asked if they disagree or agree with these factors contributing to the success of their projects. To analyze the top factors, the ranks or respondent's selection were given scores by re-coding (disagree=1, agree=2, and strongly agree=3). The total scores of the responses are displayed in table 4.6. The results show realistic schedule, support from senior

management, adequate funds and clear goals were the crucial factors that affect success of projects. 65 percent of respondents strongly agree realistic schedule and adequate funds affect project success respectfully. 50 percent indicated that they strongly agree support from senior management affect success of their projects. Analyzing the results with the scores as displayed in table 4.5, realistic schedule, senior management support and adequate funds were the top three factors that affect success of projects of subcontractors.

Table 4.5 Factors that affect project Success

Success factor	Strongly agree	Agree	Disagree
Clear objectives	12	7	1
Realistic schedule	13	7	0
Senior management support	10	10	0
Adequate Funds/Resources	13	7	0
Clear communication channels	6	12	2
Effective leadership	8	10	2
Effective monitoring	8	9	3
Flexible change approach	3	8	9
Account of external influence	3	7	10
Effective team	6	7	7
Effective risk management	4	9	7

Source: Field data, 2018

Table 4.6 Ranking factors affecting project Success

Success factor	Sums of answers after re-coded	Sums Ranking
Clear objectives	53	1st
Realistic schedule	53	2nd
Senior management support	51	3rd
Adequate Funds/Resources	50	4th
Clear communication channels	46	5th
Effective leadership	45	6th
Effective monitoring	44	7th
Flexible change approach	39	8th
Account of external influence	37	9th
Effective team	34	10th
Effective risk management	33	11th

Source: Field data, 2018

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSION

The study investigated project management practices of subcontractors (mechanical, electrical and plumbing companies) in the construction industry in Accra. The main objective of this study was to know how subcontractors manage their project. In line with this main objective, the study investigated 3 specific objectives. They were

- Determine whether subcontractors adopt project management practices in the Implementation of projects.
- Determine if subcontractors manage each of the 10 knowledge areas of project management.
- Identify critical success factors for subcontractors that can be achieved through effective project management practice.

The results obtained in the study supported the research objectives examined. Below are summary of the major findings in line with the research objectives.

i. Subcontractors adopt project management practices in the Implementation of projects.

There is no doubt the works of subcontractors fall under the umbrella of a project. To manage these works efficiently one has to adopt project management practice. The study found out that though the need of project management is not recognized by subcontracting companies and none of the respondents were certified PMP, projects were implemented through the practice of project management but in the informal way without having a structured or standard process. Most of the practice is through the experiences of the managers.

ii. Subcontractors managing knowledge areas of project management.

The study revealed that not all 10 knowledge areas spelt out by PMI are of much importance to subcontractors. Risk management, Stakeholders management and Human resource management had a low positive response. Subcontractors pay attention to scope, time, procurement and communication. From a significant test performed, it was found out that subcontractors manage more than 6 knowledge areas on their projects. Also, the study found out that there are no strict processes when it comes to managing these knowledge areas. Those in charge of managing the projects rely on their own experiences and sometimes on the few templates of the company.

iii. Success factors for subcontractors that can be achieved through effective project management practice.

The study found out that the three top factors that can affect the success of project of subcontractors were realistic schedule, adequate funds and clear objectives. These top identified factors were same to factors affecting other projects identified in other literature

The research established that subcontractors practice project management but not in the formal way where processes and standards are adhered to. This current practice by subcontractors make it difficult for the full potential benefits of project management be realized. As a result of this effective project management is not achieved and can contribute to the low success story of project in the construction industry as a whole.

The use of experiences gathered overtime is dominant in managing projects of subcontractors. It can also be concluded that the success factors of subcontractors are same as other construction projects with the top three factors being realistic schedule, adequate funds and clear objectives.

5.2 RECOMMENDATION

Based on the findings of the study, the following recommendations are made concerning subcontractors.

Some level of standards and process of managing projects should be set. These processes can be set by adopting the standards of some strong household names like PMI when it comes to project management. These process can be adopted and documented as the company's process assets which will be used by all those in charge of managing projects in the company.

Management should show interest in the need of project management by providing necessary support such as organizing trainings for those in-charge of managing projects in the company so they can improve their knowledge base in project management. Provision of project management software can be another support that senior management can give to those managing projects.

5.3 FURTHER STUDIES RECOMMENDATION

This study looked at the broader picture of project management practice of subcontractors and as a results the study had a few discussable issues that can be addressed in further studies. The details of the processes and activities in each knowledge area may have been overlooked or skipped in this study due to the nature of the study. It is therefore recommended that further studies will take separately the knowledge areas so that a good look at the details of activities in the current project management practice can be studied.

REFERENCE

AfDB (2006). Project Implementation inefficiencies: African Development Bank Workshop. March 2006.

Ahadzie, D. K. & Amoah-Mensah, K. (2010). Management practices in the Ghanaian house building industry. Journal of Science and Technology, Vol. 30, No. 2 (2010), pp 62

Ahadzie, D. K. (2007). A Model for Predicting the Performance of Project Managers in Mass House Building Projects in Ghana, PhD Thesis (Unpublished), University of Wolverhampton, UK.

Ahadzie, D.K (2008). A Model for Predicting the Performance of Project Managers in Mass Housing Building Projects in Ghana. Wolverhampton: PhD Dissertation submitted to School of Construction and Built Environment.

Ahadzie, D.K (2009) The case for a construction industry development agency for Ghana www.ghanaweb.com accessed 20th October, 2009

Ahadzie, D.K., Proverb, D.G., Olomolaiye, P.O. and Ankrah, N.A. (2009). Competences required by managers for housing construction in Ghana Implications for CPD agenda. Emerald vol. 16, No. 4., Emerald Group Publishing Limited.

Barriere, C., University Of South Australia. School Of Geoinformatics, P. & Building 2003. A Study Of Project Management Development In South Africa, University Of South Australia.

Cleland, D. I. 1994. Project management: strategic design and implementation, McGraw-Hill.

Cleland, D.I. and Ireland, L.R. (2002) Project Management: Strategic Design and Implementation. Boston: McGraw-Hill.

CompTIA (2006). Glossary of Standard Project Management Terms.

Cooke-Davies T. (2002). The ‘‘real’’ success factors on projects. International Journal of Project Management 20 (2002) 185–190. www.elsevier.com/locate/ijproman

Darnall R. and Preston J. (2010). Project Management from Simple to Complex. http://www.saylor.org/site/textbooks/Project%20Management%20-%20From% 20Simple%20to%20Complex.pdf

Ibbs, C.W, & Kwak, Y.H, (2002). Project Management Project Maturity (PM)2 Model. Journal of Management in Engineering, 18(3):

Idoko, L. A. (2008). Developing local capacity for project management - Key to social and business transformation in developing countries. PMI Global Congress 2008. Project Management Institute.

INSTITUTE, P. M. (2017). A Guide to the Project Management Body of Knowledge, Project Management Institute.

Jekale, W. (2004). Performance for public construction projects in developing countries: Federal road and educational building projects in Ethiopia. Norwegian University of Science & Technology.

Kerzner, H. (2001). Strategic planning for project management using a project management maturity model. John Wiley & Sons, Inc.

Newton, P. (2015). Principles of project management Project skills, www.free-management-ebook.com, ISBN 9781-1-62620-958-9.

Ofori, D. F. (2006). Problems of Project Management: Theory, Evidence and Opinion from Ghana. Accra: Ghana Universities Press.

Ofori, G. (2006). Construction in developing countries: A research agenda. Journal of Construction in Developing Countries.

Ofori, G. (2012) Developing the Construction Industry in Ghana: the case for a central agency. http://www.buildingcontractorsgh.com/Developing%20the%20Construction%20Indus try%20in%20Ghana.pdf accessed on 26 January 2013.

Ofori, G. (2012), Developing the Construction Industry in Ghana: the case for a central agency.

Petersen, C. (2013), The Practical Guide to Project Management 1st edition, PMP & bookboon.com ISBN 978-87-403-0524-1

Pinto, J. (2010). Introduction why Project management.

Stackpole, C. S. (2013). A Project Manager's Book of Forms Second Edition, A Companion to the PMBOK Guide Fifth Edition.

The Standish Group International, (1999). CHAOS: A Recipe for Success. The Standish Group International.

Turley, F. (2010). The PRINCE2® Training Manual, a common sense approach to learning and understanding PRINCE2, Version 1.0h.

Turner, J. R. (2009). The Handbook of Project Based-Management Third Edition, Published by The McGraw-Hill Companies.

Verzuh, E. (2003). The portable MBA in Project Management, Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

White, D. and Fortune, J. (2002). Current practice in project management- an empirical study. International Journal of Project Management 20 (2002) 1–11. www.elsevier.com/locate/ijproman

Williams, M. (2008). The Principles of Project Management, Site point.

APPENDIX

SURVEY QUESTIONNAIRE

COMPANY NAME (optional): ……

YOUR NAME (Optional): ……

PART I: BACKGROUND INFORMATION

Kindly select one that best describe your state or situation

1. What is your Gender?
   a. Male
   b. Female

2. What is your highest Educational Level?
   a. Bachelor
   b. Masters
   c. PhD
   d. If Other state …… ……...

3. What is your project or company type?
   a. Mechanical only
   b. Electrical only
   c. Plumbing only
   d. MEP (Mechanical, Electrical and Plumbing
   e. If Other, state …… ……

4. Describe the ownership structure of your firm.
   a.100 % Ghanaian ownership ( )
   b. Joint venture with foreign company (
   c. 100% foreign ownership ( )
   d. Others, (Please specify) …… ……

5. What is your Job title in the project or company?
   a. Project Manager
   b. Project Coordinator
   c. Project Engineer
   d. Site Engineer
   e. Supervisor
   f. Other, state…… ……

6. How many years of working experience do you have in the position stated in question 5 above? …… …….

7. Are you a certified PMP?
   a. Yes
   b. No

8. I. Have you received any course or training in project management?
   a. Yes
   b. No
   II. If yes, State the course or training tittle …… ……

9. What is your role in decision making on your project in your company?
   a. The main decision maker

b. Involve in the decision making process
c. Do not have any input in the decision making

10. Do you agree practicing project management will improve your project delivering and success of project in your company?
    a. Yes
    b. No

PART II: **Project Management Process**

11. *Answer all the Questions that follow based on your knowledge of practice of Project Management in the project you are participating or in the organization you are working...*

    Please Choose:

    Yes: If the description approximates the condition in your project (organization).

    No: If the description does not come close to the condition in you project (organization).

    N/A: (Not applicable): If you think the practice or the description is inapplicable for your case.

    I/DK (I do not know): If you do not have information/knowledge about the question.

	YES	NO	N/A	I D/K
1. Is the need and benefit of Project Management recognized by your organization's management?				
2. Does your organization's management provide support for Project Management development?				
3. Does your organization have a central Project Management office that provides project management support for the projects of the organization?				
4. Does your organization have standard Project Management processes and methodologies?				
5. Does your organization provide Project Management training for its Project Management team?				
6. Do Project Managers of your organization have solid knowledge base of Project Management?				
7. Are Project Management practiced formally in your organization?(i.e. processes, methodologies and procedures applied formally in managing projects in your organization?)				

12. Does your organization/project have a way of managing the listed areas on your project?

    Please Choose:

    Yes: If you manage the area in your project (organization).

    No: If you do not manage the area in your project (organization).

    N/A: (Not applicable): If you think the area is inapplicable for your case.

    I/DK (I do not know): If you do not have information/knowledge about the question.

	YES	NO	I D/K
Scope			
Time			
Cost			
Quality			
Human resource			
Communications t process			
Risk			
Procurement			
Integration			
Stakeholders			

Direction: *Please choose the statement that best describes each of the project management practice in your project or organization. Please choose only one choice for each question.*

13. Communications management practice in your project or organization is best approximated by the statement?

a. There is an ad hoc communications process in place whereby projects are expected to provide informal status reports to management.

b. Basic communications process is established. Projects follow the process and provide progress reporting.

c. There is a formal, documented and clear communication management process. The process is used in most projects.

d. Do not manage communication, Communicate or provide information as and when requested or needed by someone

14. Scope management practice in your project or organization is best

approximated by the statement?

a. There is only general statement of the scope of the project. Little or no scope management or documentation exists.
b. There is a basic scope management process in place. Scope management techniques such as WBS are regularly applied on larger, more visible projects.
c. There is a documented scope management process and it is utilized by most projects. The project scope is well defined, monitored and controlled.
d. Do not manage scope

15. **Time management practice in your project or organization is best approximated by which of the statements?**

a. There is no established planning or scheduling standards.
b. Basic time management processes exist. Standard scheduling approaches are utilized for large projects.
c. Time management processes are documented and utilized by most projects
d. Do not manage time.

16. **Cost management practice in your project or organization is best approximated by which of the statement?**

a. There are no established practices for managing project cost. Informal practices are common.

b. Cost estimating, reporting, and performance measurement are used.
c. There is a defined and documented cost management process that is standard to the organization.
d. Do not manage cost.

17. Human Resource management practice in your project or organization is best approximated by which of the statement?

a. There are no established practices, standards or guides for project Human resource management. Project Human resource time and cost is not measured. Use your own intuition and experience
b. There is a documented, repeatable process in place for human resource management. Human Resource plan is prepared and performance is monitored.
c. Outsource works mostly so they manage their human resources
d. Do not manage human resources, Employ resources as and when needed.

18. Quality management practice in your project or organization is best approximated by which of the statement?

a. There are no established project quality practices or standards. Use your own intuition and experience, no need to document plan for managing.

b. There is basic organizational project quality management process.
c. Do not manage quality, just work and wait for consultant approval

19. **Procurement management practice in your project or organization is best approximated by which of the statement?**
    a. There are no established project procurement practices or standards. Use your own intuition and experience.
    b. There is a well-documented standard procurement management processes. The process is used in most projects of the organization.
    c. Do not manage procurement, just have to look for what I want to buy when I want to buy and buy them.

20. **Stakeholders management practice in your project or organization is best approximated by which of the statement?**
    a. There are a well-documented standard stakeholder's management processes. The process is used in most projects of the organization.
    b. There are no established practices or standards. Use your own intuition and experience.
    c. Do not manage stakeholders, just have to be good to/with them

21. **Risk management practice in your project or organization**

is best approximated by which of the statement?

a. There are no established project risk management practices or standards. Use your own intuition and experience.

b. There is a well-documented standard risk management processes. The process is used in most projects of the organization.

c. Do not manage risk. Solve risk when encountered.

22. How will you judge that your project in your organization has been successful?

Please rate the following points based on how you agree or disagree with judging that a project has been successful with the points below.

Rank from 1 to 3. **1 = Disagree 2 = Agree 3 = Strongly Agree**

Criteria	Rank
1. You are able to do or provide are that your client is requesting.	
2. You are able to complete the work on time.	
3. You are able to complete the work within budget	
4. You are able to meet your organization's objectives irrespective of what happens on the project.	
5. You are able to get profits and benefits for your company through that project.	
6. Your work meets quality and safety requirement	

State here If any other criteria are applicable but not mentioned.

23. Below are factors that affect the success of projects, indicate whether you strongly agree, agree, or disagree these factors can impact your project.

Factors	Strongly Agree	Agree	Disagree
Clear goals/objectives			
Realistic schedule			
Support from senior management			
Adequate Funds/resources			
Clear communication channels			
Effective leadership/conflict resolution			
Effective monitoring and feedback			
Flexible approach to change			
Taking account of external influences			
Effective team building/motivation			
Effective management of risk			

State here If any other factors are applicable but not mentioned.