UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

AN EVALUATION OF SUCCESS FACTORS FOR CONSTRUCTION PROJECTS IN GHANA; A CASE STUDY OF THE TEMA METROPOLIS

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DECLARATION

STUDENT'S DECLARATION.

I TEYE ELLIOTT declare that, this project, with the exceptions 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 this project as laid down by the University of Education, Winneba.

NAME: DR. NONGIBA KHENI ALKANAM

SIGNATURE: ……..

DATE: ……..……..

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Lord Jesus Christ, I thank you greatly for sailing me through these years of study, giving me knowledge, wisdom, guidance and retentive memory for my education. Without God, nothing would have been possible.

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DEDICATION

This work is dedicated to my two beloved daughters Miss Reina Kanie Teye and Miss Janice Corcor Teye and my wife Juliet Teye for their persistent encouragement to complete this research work. May the good Lord shine His countenance on all of you.

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ABSTRACT

The construction industry is one of the largest job creators in developing countries and is highly competitive. Achieving success in public construction projects is difficult because it requires economy, efficiency, quality, fairness and transparency. Construction projects are undertaken upon the request of owners/clients and almost always involve multiple entities which are also accountable to external financial audit and statutory agencies. The aim of the study was to identify key success factors of construction projects in the Tema Metropolis of Ghana and to make recommendation for enhancing project performance. The study adopted a quantitative approach involving the development and administration of survey questionnaires design using survey questionnaire. A total of four hundred and ten (410) questionnaires were administered to project managers and foremen of construction companies. A response rate of 38% was achieved. The findings of the study revealed that, the key success factors included; involvement of stakeholders, utilizing up-to-date technology, political support and handover procedures. The results would be helpful to public construction project professionals in taking proactive measures for successful completion of public projects. The findings reveal that, both the project managers and foremen strongly support the identified critical success factors as significant in achieving project success. There was no significant difference in their perception of critical success factors based on their biographical characteristics.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The construction industry is traditionally one of the largest industries in the world. In recent years, construction productivity has been lower than that of other industries in Ghana. Productivity in construction can usually be expressed in qualitative manner. The construction of building and civil works can be considered as production with a temporary factory, the building site being the factory in which the building contractor will make the product. The construction industry provides sufficient number of jobs for the populace but in recent years the industry has failed to get the expected results due to some mismanagement by managers of construction firms. The need to match managers performance measures onto projects of both unique and similar characteristics has long since been acknowledged by researchers. The need for these measures to reflect the various phases of the project life cycle has also been centered in the recent past. Mapping performance measures onto specific project types will also help create some common basis for comparism, create familiarization in their use, make it easier for users to understand the performance dimensions involved better and ultimately help engender better methodological systems for future improvement (Ahadzie et al 2005). Interdependency mainly occurs in the process stage focused on driving the execution of projects where single projects are managed simultaneously followed by inter-project interactions. Interdependency is important in project management process for adjusting and linking schedules to match available resources and removing unnecessary variation in workloads of project managers (Hashim and Baroudi, 2012).

The construction industry in Ghana will achieve high productivity when the line of communication is kept short as possible in both physical and human terms. Building and civil sites have individual organizational structures which differ from contractor to contractor and as well as from site to site. In all, each site will have to be structured depending on the size and nature of the current work involved so that there will be effective flow of work to speed up the project. The builders requires operatives, materials and plant to enable this activity to take place. This is carefully controlled so that the materials stored are readily available and not interfering with the general site circulation and adequate storage, space and site construction. On the part of contractors, many fail to employ experts for the various sections on site. This is due to the less profit he or she will get at the end of the project when he employs experts, in other words, paying experts the amount due to them. The contractor rather employs people who can write for the site management works without taking notice of the expert aspect of each section her or she is having on site.

There is no standard size ratio between the free site space required to construct a building and the total size of the site on which the building is said to be erected, therefore each site must be considered as a separate problem in terms of allocating space for operatives, materials and plant. There is an optimum way of laying out the site and also correct amount of expenditure to obtain maximum efficiency. Any planned layout site should be reviewed periodically and adjusted to suit the changing needs of the site activities. If this aspect of building construction is carefully planned and controlled, it will be reflected in the progress and profitability of the contract. The site will therefore be a well organized place and there will also be a high percentage of discipline and concentration on the work if a supervisor is at each section. The issues stated above agitated

the mind of the researcher to carry out studies to find out the causes of these problems and the impact that it has on the progress of the construction industry.

1.2 Statement of the Problem.

The construction industry in Ghana is constrained in terms of the available time and amount of money as pertained in so many developing countries (Du Plessis, 2002; Ofori, G.2002).The human and technical resources, equipments, and materials within the limited funding and time available are identified by some authors as key.

Inadequate organizational structure on construction sites and lack of qualified personnel has resulted in the increase in insufficient flow of work on construction sites, poor security and low productivity. The in-orderliness and insufficient flow of work on site is the absence of the type of construction team. Contractors most at times have more contracts which they are executing and therefore cannot make them have full control or monitor effectively as required. The contractor can decide on the type of construction team he or she is supposed to bring on site, depending on the type of contract being executed. This will bring about a smooth and perfect contract, therefore, all projects which will be carried out must have supervisors and foremen for quick and effective work. Most building sites are not able to function well because their construction sites are not well structured, so there is no proper information flow and because of that, activities have impact on progress of the construction industry.

1.3 Aim and Objectives of the Study.

The aim of the study is to identify key success factors of construction projects in the Tema Municipality of Ghana and to make recommendations for achieving project outcomes. Based on the aim of the study, the specific objectives of the study are as follows:

- to identify key success factors of construction projects in the Tema Municipality;
- to determine the relative importance of success factors for construction projects; and,
- to make recommendations for enhancing project performance.

1.4 Research Questions.

- What are the success factors for construction projects?
- Which success factors significantly affect project performance?

1.5 Significance of the Study.

The study has become necessary and significant in the sense that construction sites do not achieve the optimum productivity when there is a building or civil construction projects. Various results especially on building construction site point to the fact that more effort need to be exploited as to intensive supervision by project managers to enhance high productivity on the construction site. The research therefore serve as a guide to project managers, contractors and government housing agencies and as well as policy makers.

1.6 Scope of the Study.

The study was centered in the Tema Metropolis in the Greater Accra Region. The

Scope was to pin down to some selected construction sites in Tema and agencies

1.7 Organization of the Study

The research comprises of five chapters. The chapter one discusses the performance of the construction industry and the impact it has on the economic status of the country. The major stakeholders of the construction industry, especially the project managers and the contractors were seen that their presence on the site is very paramount to ensure effective supervision and high level of performance. The objectives of the research was also outlined to ensure a good procedural outcome and its relativity with the other chapters.

The chapter two discusses the construction team and its effectiveness on the construction sites to ensure on time delivery, adherence to specifications meted out in the contract document, empowerment, team spirit which encourages good coordination among the workers and the management on the construction sites. The role of the project manager which mostly affect the progress of work on the site was discussed to know of his relevance to site.

The project performance on the construction site was also appreciated in that, although it is recognized that construction projects are unique in nature, it seems potentially necessary for performance measures to be categorized to reflect the characteristics of the different project types involved. The project success factors were identified by various researchers which includes; competence, comfort, commitment and communication.

Chapter three discusses the research design, the population, the sample and sampling technique used in the study. Being a quantitative study, the survey method was used to gather primary data and the number coding system was adopted since it gives an exact interpretations.

The fourth chapter discusses the four success factors and the perceptions of the professionals (project managers/contractors and foremen) were critically analysed using the SPSS analyses tool. Through the ethics of the research, the researcher managed to obtain their addresses to enable easy collection of questionnaire. Due to the busy schedules of the professional, the researcher suggested if e-mail medium of communication would be appropriate to respond to the questionnaire. Most of them agreed which made collection and analyses of data prompt and satisfactory.

Considering the findings, and recommendations, the researcher made an informed decision by carefully taking project managers/contractors and foremen's response. Their demographic characteristics, work experience and gender were considered to make sure future personnel for construction are secured.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This section therefore deals with the review of related literature from published, Unpublished books, journals, interviews and any related information on what others have said about the subject matter, theories and researches that address the issue. It is hoped that the information on the subject from the related literature would enable the reader to have better view of the study. From chapter one, we looked at the effective way of organizing the construction site for high productivity. Local contractors over the past few years have struggled enough with how to manage huge projects by way of assigning work to specific Supervisors.

One of the major areas of research has been the attributes that help to make a project successful. The studies have been based on the assumption that the project success is repeatable and it is possible to find certain success attributes (Ashley et al., 1987). The projects being complex and dynamic, their success or failure cannot be measured with a simple test like the strength of a concrete mix. Despite the availability of literature, it is very difficult to identify certain universal attributes which when present in a project would guarantee a successful outcome. This is for a number of reasons explained below.

First, what makes it difficult to assess whether a project has achieved success or has failed is the lack of a universally accepted definition of project success and the fact that the concept of success remains vague among stakeholders. For those involved in a project, project success is normally thought of as the achievement of some predetermined project goals (Lim and

Mohamed, 1999) while the general public has different views of success, which are commonly based on user satisfaction. According to de Wit (1988, p. 165): the project is considered an overall success if the project meets the technical performance specifications and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among: key people in the parent organization, key people in the project team, and key users or clientele of the project effort.

Second, the perception of success or failure is also time-dependent. The Denver airport project in the USA reveals that something that was viewed as a failure during the construction phase is now treated as a success due to a high inflow of revenue and the improved lifestyle of local inhabitants (Griffith et al.,1999).

Third, there are just too many variables influencing the performance of a project. Geographic location and management style, among other matters, have a role to play in the outcome of a project (Boynton and Zmud, 1984).

2.1 The Construction Industry.

The construction industry has been referred to as engine that drives the overall economy (Halpin, 2012). Building industry over the past few years, entered into a new and challenging era. Many new materials have been developed and appearing on the market in an ever-increasing volume. New techniques in building in the shape of industrialization and prefabrication have evolved,

bringing with them new problems in design organization production handling and storage (Butler, 1988). Procedures that are to be followed on the construction site are ignored.

This has greatly affected the progress of work, hence, poor and incompetent delivery leading to majority of unproductive results on the construction site.

In a related issue, (Taylor, 2014), sights that, rework in construction development project can significantly degrade project cost and schedule performance. In a typical construction development project, rework in the construction phase could increase construction cost by up to 12.4% of the contract price. In large, complex projects, undiscovered rework in the design phase can induce rework in the construction phase, thus increasing project cost. The time when rework is discovered during the project development process affects the magnitude of the impact of rework on overall project performance.

However, available knowledge is not always successful in improving Project Managers' understanding of the feedback mechanisms that drive undiscovered Rework impacts on project performance, specifically the interaction between different phases during the developing process. A system dynamics model of a two-phase project development cycle to identify high leverage points for minimizing the impacts of rework and ripple effects on project development performance. The work contributes to the existing body of knowledge by providing a structured feedback description of how design undiscovered rework combines with ripple effects to impact project performance in both the design and construction phases, as well as evaluating possible solutions to the problem. The model analyses suggest that failing to discover rework near its

creation in the project development process can magnify the impact of rework on project performance.

According to Konprine V. and Du Pont H.(2014), selecting the right project delivery method is critical in order to meet a project's requirement and objective. The project delivery method assigns roles, responsibilities, and liabilities to the Project parties in performing, supervising, and approving. The majority of large-scale construction projects are delivered using fixed–price and date-certain engineering, procurement and construction (EPC) contracts. Such contracts provide customers of limited-resource projects with cost and time certainty and carry a simple point of responsibility for the design, construction and procurement of the works.

As the size and complexity of project increases, however, and as Engineering, Procurement, and Construction contractors' bargaining positions improve, there is a trend for project delivery to take the Engineering, Procurement, and Construction Management (EPMC) route. Under the EPMC project delivery mode, the EPMC contractor is contracted to provide engineering, procurement, and construction management services. Other companies are contracted by the customer directly to construction services. The EPMC contractor usually manages the construction contracts and the whole project on behalf of the customer. It should also be realized that the industry is changing within itself. The days when a building contractor would provide his own men to complete a project throughout are now past, few operate in this way.

2.1.1 The Project's Managers Role

Preoccupation with finance and cost-effectiveness had meant that the human side of Project management has been severely neglected. There is a pressing need for a more 'descriptive'

approach in which the manager's role as decision maker is taken fully into account. The demands made on the project manager as the man in the middle, the constraints of the job and the choices available must be considered. There are numerous ways in which the term project can be defined. In its most rudimentary form, a project can be regarded as an idea which has been generated, quite subjectively in response to a perceived situational need and has gained verbal expression. For example, "Wouldn't it be a good idea if ...?" and therefore the project commences its life from inception to realization (Goodman & Love, 1980). A different definition may emphasize the procedures rather than the process itself. For example, a project may be viewed as ". . , planned complex action and investment, at a selected location, that are designed to meet output capacity, or transformation goals in a given provided time, using specific techniques" (Johnson, 1984). This definition holds that planning is the fundamental activity which is required for a project to reach its destination despite its hazardous, uncertain and often costly experiences - in both human and non-human terms.

2.1.2 Empowerment

Empowerment is giving subordinate the resources, both psychological and technical, to discover the varieties of power they themselves have accumulate and therefore which they can use on answer's behalf. Tuuli and Ronwhirson (2009) agree with the lack of specify and find that empowerment means different things to different people but also point out that empowerment can be conceptualized as a structural concept and a psychological concept. Structural empowerment/empowering acts and practices and empowerment climate relate to job and other formal organization techniques aimed at granting individuals greater control over their make and the decisions associated with it. Psychological empowerment sees empowerment as a collection

of cognition in which individuals have a sense of freedom and discretion, a personal connection to the organization, confidence in their abilities and the abilities to make a difference (Speitzer and Qwinn, 2001).

However, Huczynski and Buchaman(2007) believe that empowerment has become a broad term applied to any organizational arrangement which passes decision making responsibilities form managers to lower-level-employees. Calydon and Doyle(1996) ague that empowerment is more myth than reality, as organizational changes introduced under the heading are often cosmetic because managers are reluctant to see a reduction in their power. Empowerment is a progression from employee participation which is itself grow out of the human relations movement of the 1930s which led to the managers recognizing that the input of employees could be valuable in improving organizational effectiveness. Instead of being told how to do their job employees are provided with the resources to make that own decisions about how to carry out their work on the basic of their own knowledge and experience, which leads them to improve performance.

Empowering can also be effective by empowering teams when the tasks being undertaken are interdependent and the teams are of specialists who need to collaborate to achieve their objectives. Empowerment will have no benefits if an organization was it as window dressing and is insincere in its attempts to introduce it. If this to the case employees will soon see it as a charade and become circuit, with counter – productive effects.

2.1.3 Team spirit on construction sites

According to Chan, A.P.C. et al (2004), the building industry relies a great deal upon the co-ordination and teamwork of relative small groups. If any project is to be successful, not only in making a profit, but in also finishing by the specified completion date, all concerned will have to work together in good will and harmony. Team spirit depends to a very large extend upon the ability of the leader, ensuring that the feelings of personalities, likes and dislikes of all the parties in a team are welded into one efficient working until, a very difficult task requiring a great deal of skill. The supervisor who is prepared to spare a few minutes from his duties for a chat with operative, finding out a little of his background, family, hobbies, and general character, will soon rap the rewards when having assessed how each and every man must be treated. It does not mean that the supervisor should allow familiarity to cloud his judgement, if its worth remembering that familiarity breeds contempt. His approach must always be firm but fair whilst at all times he must be prepared to listen to grievances.

2.1.4 Responsibility and authority

According to Butter John T. (1998), any supervisor within the general organization structure has a specific task, this will be his responsibility. That is, he is accountable for the success or failure of his allotted and should receive the awards or penalties resulting from his actions. In general practice, most supervisors pass certain responsibilities to their subordinates and motivates them to greater things in the hope of course that in time he will receive recognition that with the that with the responsibility to carry out any task a supervisor or leader must have the authority to carry out his plans, otherwise a feeling of frustration will prevail which will

soon show itself in the breaking down of team spirit that any efficient section must endeavour to cultivate in order to achieve its end.

2.1.5 Span of control

According to John Butler T. (1988), with the limits of an organization, the groups sections or departments will be ruled and guided by a leader who will have the responsibility of ensuring that his sector carries out its objectives to a final satisfactory conclusion. The leader whether he being contracts manager, a craft foreman, can only control his subordinates if he can communicate with them. Although the ease of communication will vary under different circumstance, it is generally consideration that a practical limit to the number of persons under one's control is between five and seven. With a greater number of persons under one's control, efficiency and production can be affected due to:

a. Poor communication and co-ordination, which in-turn may lead to lowering of standard of work due to lack of correct supervision unofficial sub-groups forming within the main group lowering of morale and the breaking down of team spirit. Poor time keeping and lengthy breaks and many more unfavourable conclusions.
b. Lateral relationship: person being on an equal footing example two general foremen.
c. Direct relationship: one person able to give an instruction or order that must be carried out example foreman to operative.
d. Functional relationship: An advisory nature example safety officer to foreman.
e. Staff relationship: No authority but gives assistance generally found in large concerns example, assistant to managing director.

According to Calvert .E. et al (1995), since there is a practical limit to number of separate items to which the normal human brain can attend at any time, there must be a definite limit to the span of responsibility that the average manager can competently control. When deciding the range of a particular span of control consideration must therefore be given to the following factors.

a. The actual time required for giving decision and guidance to subordinate travailing time involved.
b. The complexity and variety of responsibility concerned.

2.1.6 Sub-contractors

These are small groups that specialize in one particular field of construction, for example:

Plastering, Flooring specialists, Painting contractors, Demolition contractors, Reinforced concrete specialist, Plant hire firms, Scaffolding contractors, Glazing contractors, Roofing contractors. The construction industry is one of the few that still relies a great deal on the individual skill of operatives such as:

Brick layers, Carpenters / joiners, Plasterers, Floor and wall tillers, Glaziers, Slater's and tillers, Plumbers, Electricians, Wood machines, Painter / decorators.

Many others who are generally trained through technical colleges or training schemes to take craft examinations at the end of the apprenticeship period.

Technicians

There has been a group of workers in the industry which operates in the area between the professional and management staff, going under the title of either assistant, junior, trainee and

some other designation. They fulfill a vital role within the industry but the jobs they carry out are wide and varied in content.

Professional

This term is used to describe a person working within a chosen professional and include:

Architects, Quantity surveyors, Service engineers, and Structural engineers.

These professionals carry out most of the design, planning and general stability and serviceability of structures.

2.1.8 The building construction team

According to Foster G. (1986), the industry is a firm either operates as the main contractor managing and directing all works on site as a nominated or ordinary subcontractor. A nominated subcontractor is the choice of the client or architect and the ordinary type is that which the main contractor directly employs. The sub contractor offer either services in such specialist as electrics, plumbing, heating and ventilating air conditioning, sound and thermal insulation, communication systems and many more. The organizational structure of some subcontractors is quite sophisticated principally because they also produce products which they then fix on site, in their own factory or assembly plan. They do not only have their own construction teams who incorporate their product into the site structures, but also have the "back up" services of the design team.

According to Anumba, J. (2005), the organizational structure for any site varies considerably depending on the size of the construction firm and the type of contract work being undertaken.

While this is a pattern operated by some building, and civil engineering construction, no site structure is exactly the same. The usual pattern, however, is for the contract managers, sometimes referred to as site agents, site supervisors, contract controllers or project managers, depending on the firm for which are employed are responsible for the day-to-day running of the contract in their charge. For sound organization, particularly on a large contract, an assistant to the site manager or general foreman is essential and he will issue instructions to site operatives through their foremen and gangers on behalf of and as directed by the site managers. Control of works would be the assistant's responsibility in the absence or incapacitation of the site manager. Trade foreman take instructions from the general foreman who are their immediate supervisors, and in turn allocate work and direct the operations of the respective gangs of tradesmen, with the assistance of their charge hands. It is usual on a medium-large contract to have the resident services of the quantity surveyor, planner, site engineer and others to assist in the administration, cost quality and progress control the work of some of the personnel on construction sites is briefly described as follows:

Site manager

The site manager has the complete responsibility for all operations and personnel on the site. Also visitors must have his approval before renting on to the site whether it is in a professional capacity or simply as inquisitive outside in the project. Therefore he or she is subordinate to the contracts manager superior to the personnel on the site to carry out the policies of the company, to control the site work programme using site meetings and the contract programme.

- Responsible for directing the administrative and communication such as site diary, telephone, weekly returns.

- Responsible for industrial relations, negotiations with union representatives when necessary
- To liaise between the clients representatives and the contract manager or head office
- Site safety supervision, inspection records notification

Site Engineer

The site engineer takes instructions from the site manager and is responsible for Setting-out the framework of the structure accurately from the main drawings for all excavation work, concreting brickwork, steelwork, drains and road setting out levels when required. Assisting in the quality control of concrete and other work and the keeping of records, constantly checking levels and verticality of the structure as work proceeds.

Quantity Surveyor

The quantity surveyor is a subordinate to the site manager but more usually is directed by the chief surveyor or surveying manager or at head office and measures the work done on site in order that an acceptable figure can be agreed with the clients professional quantity surveyor.

- Records variations to the work showed in the “Bills” by the architect, so that claims can be made for payment.
- Prepares final accounts taking into consideration other costs such as day works and fluctuations
- Records and agrees the work done monthly with the various subcontractor
- Is responsible for cost control information being sent to head office

Planner / Programmer

- Assists the site manager to prepare weekly and or monthly programme needs updating whether contract is behind schedule and requires condensing to meet the contract time are: allow overtime working, use more plant and labour, or introduce quicker more efficient techniques
- Records the various stages of wok completed so that progress can be monitored by the contracts manager.

Time keeper and wages clerk

- Records arrival and departure of the site personnel.
- Prepares wages sheets, using.
- Tax deduction cards.
- Time sheets or record.
- Bonus clips from bonus clerk.

Insurance tables

- Arrange for the collection of cash from the bank
- Inserts cash and pay chips into pay packets
- Distribute pay of appropriate time taking care to observe the company security code against robbery.

Storeman and checker

- Ensures adequate materials and expendable items are in stock.

- Calls forward goods when stocks are low and checks deliveries and signs delivery notes.
- Records distribution of materials.
- Issues small plant and records returns.
- Is sometimes responsible for providing storage space for delivered goods.

Clerk and typist

- Receives and open non-personal incoming main.
- Distributes to appropriate offices or sections.
- Posts outgoing mail.
- Prepares letters and files copies.
- Other general administration such as recording, indexing and filing, duplicating and dealing with incoming telephone calls.

Canteen supervisor

The responsibility for supplying meals on site is sometimes subcontract to an individual of a firm. Canteen facilities are normally made available in these instances by the main contractor and the buying-in, preparation and the selling of food and drinks is the responsibility of the canteen manager or subcontractor.

Ganger

Ganger acts in a similar capacity to foreman, but deals primarily with the semi-skilled (concreters, plant laborers) while working for some contractors. He may be called upon to direct the work of the skilled workers that is steel fixers, drain layers, paviors but not the craftsmen(tradesmen).

Visitor to site

According to Foster G. (1986) during construction work on site, the site agent or manager could be constantly forming his supervisory role regarding control of all operations and work people on site. The main visitors, other than the contractors' employees are described as follows

The client

Client usually visits the site to see what progress is being made and should not by-pass architect by giving instructions to the contractor's representative. If instructions are necessary, then the architect approach, requesting the site manager to make a variation, the manager should confirm the request to the architect by letter.

2.2 Project Performance.

There is a general consensus that one of the key objectives of performance measures is to provide benchmarks toward engendering best practice improvement (Barber, 2004). However, it is also acknowledged that the nature of projects executed in the construction industry can particularly impinge on how successful the benchmarking process would be in practice (Dainty et al. 2003). More importantly, the situation can be muddled if there is a lack of common basis for comparison. For instance, Holloway et al. (1997) has noted that, one of the main difficulties in undertaking benchmarking using performance measures is the lack of a suitable basis for comparing information. Other researchers, such as Clarke (1999) and Maylor (1999), have drawn attention to how unreliable benchmarking through performance measures can be, especially if the project types are not similar. Thus, although it is recognized that construction projects are unique in nature, it seems potentially necessary for performance

measures to be categorized to reflect the characteristics of the different project types involved (Ahadzie et al. 2005b). Albeit arguably, the above-presented scenario seems more plausible to contend with, in regards to choice of performance measures for MHBPs. This is because these projects, in particular, differ significantly from many of the one-off projects normally encountered in the construction industry in various ways. For example, these projects must be based on standardized design; there is the need to identify the stages in production at which control is to be exerted; there is the need for production time between stages, including delivery schedule of house units (Burgess and White 1979; Muhleman et al. 1992). Further, because of its nature the setting up of the production system involves two associated problems; the minimizing of synchronizing loss and the maximizing of resource utilization (Muhleman et al. 1992). The implication of these unique attributes is for PMs to be able to evaluate available planning and scheduling tools in order to maintain a continuous flow of work for the repetitive task involved (Ashley 1980; Mahdi 2004; Hyari and El-Rayes 2005). Unfortunately, the literature lacks evidence of a very specific systematic study toward understanding the taxonomy of the PMs' performance profiles in MHBPs. To this effect, potential and experienced PMs lack the knowledge that can help engender and sustain their continuing professional development (CDP) toward best practices. Identification of appropriate performance profiles should therefore serve as an important step for developing the skills of potentially competent PMs who can promote the effective management of MHBPs in a dynamic but difficult business environment, such as those pertaining in many developing countries. Mapping performance measures onto specific project types, such as MHBPs will also help create some common basis for comparison; create familiarization in their use; make it easier for users to understand the performance dimensions involved better; and ultimately help engender better methodological systems for future

improvement (Ahadzie et al. 2005a). Equally important is the contention that performance measures should reflect various phases of the project life cycle. Given the often speculative nature of MHBPs, PMs are normally expected to assist and coordinate activities within the various phases of these projects from inception to completion including facilities management.

However, it is evident that as a project progresses, there may be a set of different factors impeding on each of the various project phases (Lim and Mohammed 1999). Such factors may be inherent in proxies, such as feasibility studies, marketing research, and data of various kinds, site conditions, the weather, and so on (Lim and Mohammed 1999). Indeed, it has recently been affirmed that different personality factors may be significantly related to project success at the various phases of the project life cycle (Belout and Gauvreau 2004). It seems therefore logical to contend that PMs engaged in MHBPs will require different performance measures at the various phases of the project life cycle toward engendering their professional development and improvement. To this effect contemporary researchers in the HRM genre, including construction, are now increasingly relying on competency- based approaches as a viable option for validating superior performance (Tett et al. 2000; Dainty et al. 2003; 2004; 2005; Skipper and Lansford 2006). These competency-based profiles founded on key behavioral measures circumvent many of the weaknesses of the traditional measures (Dainty et al. 2004). Again, these measures offer the psychological understanding needed for selecting and predicting human performance (Motowidlo et al. 1997).

Further, these measures have the potential to assist PMs to contribute more effectively to their personal development by enabling effective understanding of the appropriate performance

domain (Tett et al. 2000; Cheng et al. 2005). Thus, for organizations that are keen to support the professional development of their key managerial staff, the implication is to rather define what constitutes outstanding performance in explicit behavioral terms or in terms of what makes managers successful (Latham et al. 1979; Ahadzie et al. 2007a). The onus therefore is for organizations who want to achieve best practice in the performance of PMs to strive toward identifying the appropriate behavioral profiles. The evidence suggests that to have a better understanding of the behavioral performance domain, the measures involved should be separated into contextual and task performance behaviors (Borman and Motowidlo 1997). Task performance behaviors are job-specific, prescribed and rewarded, alternatively contextual performance behaviors relate to those discretionary job-relate acts that are not formally recognized as part of the job and therefore not rewarded (Organ and Piane 1999). Thus, although task performance behaviors will arise from job descriptions and work assigned to individuals, contextual performance behaviors arise out of volition and predisposition (Borman and Motowidlo 1997; Motowidlo et al. 1997; Conway 1999). The implication for the distinction of the performance domain into contextual and task performance behaviors suggest that in a any job situation, the reasons why contextual performance behaviors are desirable or undesirable may be different from the reason why contextual performance behaviors are desirable (Borman and Motowidlo 1997; Motowidlo et al. 1997). The knowledge, skills, and habits associated with task performance behaviors would therefore normally be different from those associated with contextual performance behaviors (Motowidlo et al. 1997). Subsequently the contextual task distinction should be useful for distinguishing the determinants of generic and specific competency profiles for specific project-based sectors and/or industries (Tett et al. 2000). Mainly because of its multidimensional perspective there is also the potential to use this framework to

identify and develop a detailed analysis of the PMs' performance dimensions so that an appropriate and rigorous training programmes can be developed for specific industries and/or project based sectors (Motowidlo et al. 1997; Tett et al. 2000; Scullen et al. 2003).

A bridged version of a much more comprehensive conceptual model linked to the project life cycle, namely: conception, planning, design, tender, construction, and operational phases (see the Appendix). Drawing on the theoretical framework, Fig. 1 purports to evaluate the PMs' performances by establishing the behavioral attributes that best contributes to predicting performance outcome in MHBPs at the construction phase. The model takes the view that, to establish the PMs' performance domains from a Multidimensional perspective it should conceptually be based on: contextual performance behaviors, task performance behaviors and the performance outcome (see Fig. 1).

Further, the multidimensional methodology takes the view that performance is not only a function of the PMs' attributes but also a function of the expected outcome (see also Cheng et al. 2005). Task performance behaviors as evidenced in the literature are best predicted by individual differences in the constructs cognitive ability (Campbell 1993), job-specific knowledge, task proficiency, and experience (Hunter 1983; Schmidt et al. 1986; Van Scotter and Motowildlo 1996: Gelattly and Irving 2001), whereas contextual performance behaviors are best predicted by job dedication and interpersonal facilitation (Conway 1999). Success model and also the notion that in MHBPs, PMs have to exhibit the relevant knowledge in repetitive construction works, a success framework was developed for MHBPs to represent the constructs for the performance outcome and subsequently the dependent variables (Ahadzie et al. 2007b). Against the

background that PMs should have management intuition in repetitive techniques to be successful in MHBPs, (Ahadzie 2007).

2.3 Consultants' Role in Project Performance.

The role of the consultant on a construction project is often not fully understood by the other parties involved on the project, including the consultants' client, and the owner, consequently, the consultant may find itself under utilized. According to CCDC (2008), during construction, the role of the consultant is to administer the contract a described in the 'contract documents'. However, the contract documents do not reference the agreement between the owner and consultant which outlines the professional services to be provided to the project. As noted above, the impact of the services provided by the consultant can be significant. With increased awareness and understanding, all parties can benefit from the advantages of having a consultant involved in the construction process. With a clearer understanding of its obligations, the consultant can better carry out their obligations to the owner and others. Project Consultants manage the project by application of their knowledge, skills, and experience at various stages. However, PMC has to face various challenges like design issues, constructability issues, long lead material issues, inter contractor coordination issues, engineering issues, safety issues could be tackled by a well organized approach of the PMC. In addition to Project Consultancy is effective and efficient only when it is involved in total Project Life Cycle from conception to closeout (Enshassi, 2009). Project Consultancy plays multifaceted part in projects and provides the services from inception to completion of projects. At every stage of project life cycle, the principle of pro-activeness and creating the win-win situation is necessary keeping in mind the customer or client's requirements. Use of Project Management Consultant (PMC) offers one of

the effective management solution to increase and improve the efficiency and outcome of a project in construction (Nikumbh, 2014). Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction. Consultation is happening if the client's seek expert knowledge or some opinions on some engineering problems or anything that involves engineering matters. Consultation may be brief or extended which involve only few hours of time, with the clients sitting across the desk of the consultant. Other consultation may require travelling, some period substancial portion of a consultant's time over a period of several months, and repeated presentations and discussions with the client (Maxwell, 1982).

2.3.1 Design Stage

According to McLachlin et al(1994), involving the consultant at an early stage of the construction project is often beneficial fir the owner. A consultant may even be involved in the pre-design in order to assist an owner with tasks such as project budgeting and management, site selection, space relationships, and environmental studies. The consultant determines the feasibility of the project from an artistic, technical, logistical, and financial standpoint. The consultant creates project design concept and seeks approval for this design concept. It is also during this stage that the consultant obtains the required development permit for the project. During schematic design stage, the consultant determines the feasibility of the project. The consultant considers and proposes the preliminary concept and estimated cost of the project. In making its proposal regarding the concept and cost of a project, the consultant must review and consider the characteristics of the chosen site, various design approaches, the type of

construction contracts, structural, mechanical, and electrical design concepts. Whether the consultant is an architect or an engineer, he or she will have to coordinate with his or her counterpart at all stages of the project's development. The consultant will thoroughly review everything that may impact the cost of a project prior to giving its reasonable estimate of cost, as generally consultants are held to their estimate unless they can meet the stringent test of justifying an increase in costs. Consultants are bound to possess a reasonable amount of skill in their profession and to use a reasonable amount of care and diligence in the carrying out of work which they undertake. If the cost of the project is not reasonably close to the consultant's estimate, it is the responsibility of the consultant to show how the discrepancy arose. Any changes to the cost estimate during the project caused by forces such as inflation or design changes must be accurately and promptly presented by the consultant for the consultant to avoid negligence (McLachlin et al 1994).

2.3.2. Design Development

As cited by McLachlin et al (1994), it is in this stage that the consultant moves forward with concept approval. It is likely that he or she will take a more in depth look at some of the items considered during the schematic design stage and coordinate and develop the actual design of the project. The consultant's responsibility to determine which licence and advice the owner regarding the same. The consultant has a duty to ensure the owner is aware of the options available during this process. While the consultant is not expected to be at the project site every moment of construction, either the consultant, or a qualified person acting on his or her behalf, should be at the project site during all significant phases of the project. Before crucial elements of the project are concealed from inspection, the consultant is obligated to ensure they comply

with the project drawings and specifications, Chitkara(2000). The more complex the project is, and the greater the risk is, if something with the project goes wrong, the more attention the consultant has to give it. The consultant's responsibility to inspect the project goes beyond merely looking at it, rather the consultant has a positive obligation to ask the questions necessary to satisfy him or herself that the project drawings and specifications are being complied with, as sited by Joy (1999).

According to Maxwell (1982), project is a temporary endeavor with a specific beginning and end and creates a unique product, service or result. Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve pre-determined objectives of scope, cost, time, quality and participation satisfaction.

Table 1 shows the roles and responsibility matrix for the various stakeholders of the project at different stages of construction.

Table 1: Roles and Responsibility Matrix

(R-Responsibility, I – Participatory responsibility)

Code	Description of Project Management Consultancy's Roles and Responsibility Matrix at Industrial Projects.	Client	PMC	Architect
A	**Pre-Construction Stage:**			
A. 1	Analyze Client's project related requirements	I	R	R
A. 2	Prepare the Design Brief in terms of function ability, cost, time, quality and safety.	R	R	R
A. 3	Develop Project Control Systems.	I	R	I
A. 4	Finalization of Project Organization Chart.	R	R	I
A. 5	Establishment of Project Communication and Reporting System.	I	R	I
A. 6	Preparation of Works Breakdown Structure.	I	R	I
A. 7	Preparation of Project Master Schedule with Base Line.	I	R	I
A. 8	Preparation of Design/Drawings Deliverables Schedule.	I	R	I
A. 9	Feedback on the Master Budget of the Project.	I	R	I
A.10	Co-ordination and follow-up with Architect and other Design Consultants for their inputs.	I	R	I
A.11	To identify and suggest consultants designers for specialized requirement.	I	R	I
A.12	Lead project meetings as necessary for review of progress.	I	R	I
A.13	To set-up, track, monitor a deliverable schedule.	I	R	I
A.14	Checking & verification of design's submissions(design basis reports, value engineering, cost benefit, drawings)	I	R	I
A.15	Cost control during all stages of design and design development.	R	R	I

A.16	Preparation of Procurement Plan.	R	R	I
A.17	Review of Technical Specification and Bill of Quantities (BoQ).	I	R	R
A.18	Monitoring the statutory approvals process by follow-ups with liaison consultants and reporting the progress.	R	R	R
A.19	Conducting Pre-bid Meetings and Feedback for Completeness of Tender Specifications and Technical Parameters.	R	R	I
A.20	Comparative Statements & Techno-Commercial Evaluation Report	R	R	I
A.21	Submitting Weekly and Monthly Progress Report	I	R	I
B	**Construction Stage**			
B. 1	Full time supervision of All construction works/activities for the project.	I	R	I
B. 2	On-site design co-ordination and issue of drawings/clarifications	I	R	R
B. 3	Organize approval to contractors shop drawings, product data sheets, samples.	R	R	R
B. 4	Refinement of Works Breakdown Structure.	I	R	I
B. 5	Monitoring the progress of work with the Master Construction Schedule.	I	R	I
B. 6	Prior flagging of anticipated bottlenecks and analysis of its reasons.	I	R	I
B.7	Day to day correspondences including contractual issues	I	R	I
B.8	Change order management for design changes and extra items	I	R	I
B.9	Prepare QA/QC plan and Method Statement.	I	R	I
B.10	Quality assurance and control to ensure conformance to drawings and specification.	I	R	I
B.11	Establish EHS plan (Environment, Health and Safety)	I	R	I

B.12	Scrutinize and check Working Drawings received from Architect Designer.	I	R	I
B.13	Organize progress review meetings on weekly basis.	I	R	I
B.14	Collect, Review and Maintain all the records of contractors' daily progress reports.	I	R	I
C	**Post-Construction Stage:**			
C. 1	Advice about probable date of completion.	I	R	I
C. 2	Preparing & addressing the schedule of defects punch lists.	I	R	I
C. 3	Provide assistance in Testing and commissioning of the facility.	I	R	I
C.4	Collection and integration of various manuals, commissioning & test certificates.	I	R	I
C.5	Reconciliation and Certification of Final Bills of Contractors, Suppliers, Vendors and Consultants.	I	R	I
C.6	Preparation of project close-out report including learning.	I	R	I
C.7	Collate and Verify all As-built drawings.	I	R	I
C.8	Addressing any queries during defects liability period.	I	R	I
C.9	Coordinating with the Contractors to rectify the defects liability period.	I	R	I

Maxwell (1982).

2.4 Project Success Factors

Project success has eluded the construction industry to the point where keeping existing clients has become a battle, let alone attracting new clients (Toor & Ogunlana, 2005: 150). An assumption is made that, if a project is completed on time, within the agreed budget and set quality referred to as the 'golden triangle', then the project is deemed successful. Evidence

suggests that this is far from the truth. Hence the construction industry needs to pay special attention to critical success factors, besides the 'golden triangle', if it is to survive the challenges posed by globalization (Toor & Ogunlana, 2005: 154).

Zwikael (2009: 381) believes that the work of construction companies is project-oriented, that is, it is unique and has a definite start and finish point. This requires the use of project management tools and techniques as opposed to conventional management techniques. Proper use of project management tools within the project life cycle ensures smooth execution of activities. The project life cycle is the framework upon which the project is carried out. The project manager acts as a single point of contact responsible for harnessing identified critical factors towards achieving project success. According to Yang, Shen & Ho (2009: 162) the unique nature of projects dictates that critical success factors identified in one industry cannot be directly transferred to other industries.

The construction industry is one of the largest job creators in developing countries and has become highly competitive with the advent of globalization (Nguyen, Ogunlana & Lan, 2004: 409). According to Ojiako, Johansen & Greenwood (2008: 414), project success in the construction industries in most developing countries is measured by the 'golden triangle' parameters of time, cost and quality. The high number of project failures suggests the existence of underlying critical success factors which have not been identified. This research, therefore, seeks to identify the critical factors that lead to project success.

Achieving project success is becoming more important in the highly competitive construction industry. Large and complex construction projects are becoming more difficult to complete successfully in developing countries (Swan & Khalfan, 2007: 123). It is against this background that this research focuses on critical success factors pertaining to the construction industry in the Tema Metropolitan, Ghana. Han, Yusof, Ismail & Choon (2012: 90) advocate the suitability of the four COMs model proposed by Nguyen, Ogulana & Lan which is considered suitable application in emerging economies. The aim of this research is to access the perceptions of contractors and project managers regarding critical success in the construction industry in the Tema Metropolis – Ghana.

Critical success factors are those inputs to the project management system that directly increase the likelihood of achieving project success. Nguyen, Ogunlana & Lan (2004: 404-413) identify and group success factors under four categories which are referred to as the 'four COMs', viz., *comfort*, *competence*, *commitment* and *communication*.

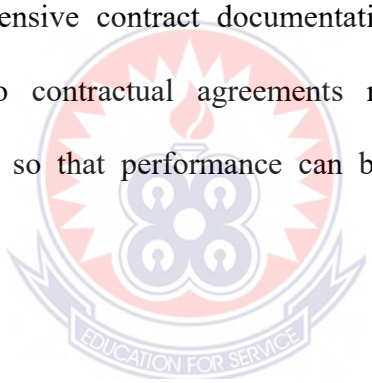
2.4.1. Comfort

The comfort component emphasizes that successful projects include the involvement of stakeholders. This includes both primary stakeholders who have a legal relationship to the project, example subcontractors and secondary stakeholders who do not form a direct part of the project, but influence decisions, example community forums. The needs of stakeholders have to be managed and influenced in a manner that ensures project success (Swan & Kalfan, 2007: 120). It is essential that a competent project managers be appointed. Malach-Pines, Dvir & Sadech (2009: 284) believe that such an individual should possess both technical skills, which

include being a subject matter expert and having an in-depth knowledge of structures, and 'soft' skills, which include team management, emotional intelligence, transformational leadership and conflict management. According to Newton (2005: 110), the availability of resources is a further critical factor. A resource management plan needs to be developed in conjunction with all relevant stakeholders.

Competition for resources is a common phenomenon in projects. Unexpected developments during the course of the project must be carefully managed in terms of resource planning. It must be ensured that there is adequate funding throughout the project. A financial plan, which takes into account the project activity schedule, needs to be developed.

Finally, there must be comprehensive contract documentation. It must be ensured that all relevant stakeholders enter into contractual agreements regarding activities and quality parameters need to be specified so that performance can be assessed (Johnson, Scholes & Wittington, 2006: 826).



2.4.2 Competence

The competence component identifies the following four aspects as being central to successful project management in the construction industry. First, utilization of up-to-date technology. Nguyen, Ogunlana & Lan (2004: 411) believe that adopting new technology and utilizing it to its full potential has become critical in achieving a competitive advantage in the construction industry. The construction industry has withnessed significant technological developments in recent years. Selecting the appropriate new technology and optimal utilization is key to project success.

Secondly, there must be proper emphasis on past experience. According to Parthirage, Amaratunga & Haigh(2007: 117), tacit knowledge plays a key role in this regard. In addition, project members should be encouraged to document tacit knowledge gained from the project in order to prevent mistakes in subsequent projects.

Thirdly, there must be competent teams in place, implying that staff members must have the necessary skills (Melkonian & Picq, 2010: 82). This requires a comprehensive skills analyses that should reveal gaps in skills.

Finally, the aspect of awarding bids to the right project manager/contractors needs consideration. Other considerations when selecting contractors include company track record, quality management, health and safety, and technical proficiency (Philips, Martin, Dainty & Price, 2008: 312).

2.4.3 Commitment

Commitment emphasizes the support of top management commitment to the project, clear objectives and scope, and political support. The support of top management goes beyond the provision of funds and making resources available (Johnson, Scholes & Wittington, 2006: 504). Kerzner (2006:200) believes that commitment to the project is very closely linked to a sense of collectivism, rather than individualism. An environment needs to be created in which team members experience job satisfaction and are, therefore, motivated to be part of the team. Optimal performance by team members is important. Having clear objectives and scope are key in providing direction to team members. Objectives must be clear and scope should be as simple as possible in order to avoid 'grey areas'. It is inevitable that changes will occur during the course of the project. Flexibility and adaptability are therefore, central to achieving success.

Finally, political support is important for project success, given that a large proportion of projects are public projects. To this end, support from non-governmental organizations and the ruling party is important (Jacobson & Choi, 2008: 646).

2.4.4 Communication

Communication plays an important role in leading, integrating people, and taking decisions to make a project a success. There must be shared project vision, where the project manager identifies the interests of all relevant stakeholders and ensures that there is buy-in to the project (Yang, Shen & Ho, 2009: 166). According to Zwikael (2009: 385), once the project objectives are set and the scope classified, there must be constant update as the project progresses. Progress on activities assigned to individuals or groups needs to be monitored with a view to achieving overall goals. These updates must be communicated to the relevant parties. Newton (2005: 38) believes that a detailed communication plan is necessary for the effective dissemination of information. To this end, frequent project meetings are necessary. Apart from consulting with the community, local and direct involvement is a key element for project success. Given the relatively high unemployment rates in Ghana, consideration must be given to local residents. This could include sourcing materials from local suppliers and employing local residents. It is advisable to use an influential community members as a liaison between the project manager and the community (Teo 2010: 222). Finally, proper handover procedures need to be developed. This is an important consideration , given that the consideration industry is being increasing viewed as a service industry (Karna, Junnon & Sorvala, 2009: 117).

2.5 Summary

This chapter has identified the key literature and manuals developed for critical success factor and related research and presents a theoretical model for defining these factors. It also looked at the description of project management consultancy's roles and responsibility matrix at industrial projects.

The next chapter presents the methodology of target population, the administration of questionnaire and how the collection of the questionnaire is carried out.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the research design, the population, the sample and sampling technique used in the study. Being a quantitative study, the survey method was used to gather primary data (Easterbay-Smith, Thorpe & Jackson 2008: 11). The study is descriptive and cross-sectional in nature. The study was confined to commercial projects, hence excluding residential construction. Further, the research instrument which was used to collect data, the procedures for data collection and method of analysis were also described.

3.2 Research Design

Research designs according to "is the vehicle that transports the researcher from a state of ignorance to a state of knowledge" Nwandiniqwe (2002, p. 33). Similarly, Babbie and Mouton (2001) stipulated that "research design is a plan or structured framework of how one intended conducting the research process in order to solve the research problem" (p. 647).

A quantitative research methodology was adopted for the study as it enabled relevant information to be obtained from the sample group through a questionnaire. Furthermore, (Bless, Higson-Smith & Kagee, 2007) had highlighted that quantitative research relies primarily upon measurement and uses various scales. Numbers form a coding system by which different cases and different variables may be compared. Systematic changes in scores are interpreted or given

meaning in terms of the actual world that they represent. Numbers have the advantage of being exact. Another advantage of numbers is that they can be analysed using descriptive and inferential statistics (Bless, Higson-Smith & Kagee, 2007).

The task of the study was to identify an evaluation of the success factors on construction project performance. Therefore, the descriptive survey design was adopted for the study. The descriptive survey gathers data at a particular point in time with the intention of describing the nature of the existing conditions and determines the relationship that exists between specific events. In the view of Neuman (2006, p. 34), 'a descriptive research presents a picture of the specific details of a situation, social setting or relation. Hence, the research can only account on what has happened or is happening'.

According to Fraenkel and Wallen (2001), the descriptive survey is often directed towards determining the nature of a situation as it exists at the time of the study. Cresswell (2008) added that the descriptive survey design is used to determine individual opinion about a policy issue or programme. The cross-sectional survey design according to Creswell descriptive survey provides useful information for decision-makers since it has the advantage of measuring current attitudes or practices. The design was therefore, found appropriate for the study because the study was about collecting views of project managers/contractors and, foremen on civil and building construction sites. This design was chosen because it was used to describe the present practices on evaluation of success factors on construction project performance. The research is practical in nature as it sought to address a real construction problem. Both primary and secondary data were used in the research. Primary data were collected through questionnaires, whiles books, journals, and policies on records management were consulted for secondary data.

3.3 Population.

Leedy (1989) argued that, one crucial element of a descriptive survey is the ability of the researcher to visibly and carefully distinct the population of the study in order to set exact parameters for ensuring discreteness to the population. There were two target populations, namely Project Managers/Contractors and foremen who worked on both private and public sector projects. Project Managers comprised independent professional practitioners who are principal agents that were the interface between the client and the contractor. For the purpose of this study, only active project managers/contractors and foremen were selected. Population details of project managers/contractors were obtained from Tema Metropolitan Assembly (T.M.A) and Tema Development Corporation (TDC) which indicated the population size of active contractors as 205 within the Tema Metropolis. Population details in respect of foremen were obtained from the construction sites of the contractors which indicated a population size of 205 for the Tema Metropolis. Contractors registered with the Tema Metropolitan Assembly, and Project Managers registered with Tema Development Co-operation (See table 3.1). The breakdown of the target population is presented in Table 3.1

Table 3.1: Population of Targeted Respondents

Categories	Frequency	Institution Registered with
Project Managers	205	Tema Development Corporation.
Contractors	205	Tema Metropolitan Assembly.
Total	**410**	

3.3 Sample and Sampling Procedure

For the purpose of this study, the unit of analysis was the Civil and Building construction sites in the Tema Metropolis and the population was the Project Managers/Contractors and the foremen to ensure that, adequate information was obtained, respondents were selected from various construction sites based upon their influence on the success factors of project performance. Using the Sample Size Determination Table by Krejcie and Morgan (1970), a sample size of, this comprises of Project Managers/Contractors and foremen. An attempted census was conducted owing to the relatively small population sizes. According to Brown & Suter (2008: 113), a census is a type of sampling plan was data is collected from every member of a population. Table 3.2 indicates the sample distribution of respondents.

Table 3.2: Sample Distribution of Respondents

Categories	Frequency
Project Managers	205
Foremen	205
Total	**410**

All Project Managers/Contractors and foremen were purposively involved in the study because they served as direct representatives of the various clients as the heads of planning for effective, success and high performance.

3.4 Data

3.4.1 Research Instrument

Armstrong (1999) mentioned four methods each of which, or in combination, can be used in conducting surveys. These are the use of:

- Structured questionnaire,
- Interview,
- A combination of questionnaire and interview, and
- Focus group.

The instrument chosen to collect data was the questionnaire designed based on a 4-point Likert type scale to limit the respondents to make a choice from option provided (i.e. from strongly disagree to strongly agree). Ary, Jacobs and Razavieh (1990) indicated that the questionnaire is more reliable when taking into account a large number of respondents and provides immediate information from them. The questionnaire was personally designed taken into account the research questions posed in Chapter One. Also, the constructive criticisms by the lecturer made adequate design of questionnaire. The questionnaire provided me with the relevant statistical data and was less time consuming.

Questions in the questionnaire were divided into two sections, namely a biographical section and a section relating to critical success factors. The biographical section was included in order to test for significant differences between the selected biographical factors and perceptions of critical success factors. The section relating to critical success factors consisted of 18 questions with five questions pertaining to "comfort", four questions addressing "competence", four questions pertaining to "commitment", and five questions addressing "communication". These comprise closed-ended questions using a five-point likert scale (Strongly Disagree – Strongly Agree). Closed-ended questions were prepared , as they reduce the respondent's bias and facilitate coding of the questionnaire (Akintoye & Main, 2007: 597-617). According to Armstrong (1999), closed-ended questions are easy and quick to answer, have response categories that are easy to code, and permit the inclusion of more variables in a research study because the format enables the respondent to answer more questions. Respondents were given the opportunity to make relevant comments at the end of the questionnaire. Descriptive and

inferential statistics were used to analyse the quantitative data. The data analyses were performed using the Statistical Package for Social Sciences (SPSS).

3.4.2 Reliability and Validity of Instrument.

To collect data for the research, a letter of Introduction was obtained from the various Project Managers introducing me to the respondents and establishing the legitimacy of the study. Clear and precise information about the research was given to the respondents prior to beginning of the questionnaire administration.

In collecting data for the study, the researcher adhered to the spirit of research ethics. Firstly, privacy of respondents was not invaded and that no damage was caused to participants. Secondly, respondents were made aware of the voluntary nature of responding to questions on the questionnaire for the research. Also, the anonymity and confidentiality of participants were assured by not identifying the respondents. Respondents were assured about this before they completed the questionnaires. On the questionnaire, no space was provided for respondents to provide their names.

To ensure adequate return of questionnaires, a number of follow-ups were made. Working hours were used but the week-ends were mostly used since firms were working on Saturdays and sometimes on Sundays in collecting the data. This enabled me to get access to all the targeted respondents on the various construction sites. In all, one month was used to retrieve the completed questionnaires.

3.5 Data Analysis

This section constituted how data gathered from the field were analysed. A template was designed in the SPSS (version 17.0). For effective statistical analysis of data, the questionnaires retrieved from respondents were edited and coded for analysis.

To Simpson and Tuson (1995) the frequencies and percentage tables enable a researcher to gain an overall view of the findings, to identify the trends and display relationship between parts of the findings. Subsequently, frequencies, simple percentages, mean and standard deviations were used extensively in the analysis. The results obtained from the analysis were presented through tables and cross-tabulations. Specifically, the research questions were analysed using frequency, percentages, and means.

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents how data was gathered from the field and analysed. The chapter also presents discussions of the results of the study in the context of the objectives of the study and previous studies.

To Simpson and Tuson(1995) the frequencies and percentages tables enable a researcher to gain an overall view of the findings, to identify the trends and display relationship between parts of the findings. Subsequently, frequencies, simple percentages, and mean were used extensively in the analysis. The results obtained from the analysis were presented through tables. Specifically, the research questions were analysed using frequency, percentages and means.

4.2 Survey Response Rate

A total of four hundred and ten (410) questionnaires were administered to projects managers/contractors and foremen of various construction firms in the Tema Metropolis. The total number of questionnaire completed and returned was one hundred and sixty-one (161). Out of the one hundred and sixty-one questionnaires, one hundred and fifty-six were valid and formed the basis of the analyses of the survey responses. The response rate was therefore, 38.05% (Refer to table 4.1).

Table 4.1 Response Rate.

Respondents	Total number of questionnaire administered.	Number of questionnaires returned.	Response.
Project manager/ Contractor	205	95	46.34%
Foremen	205	61	29.76%
Total	**410**	**156**	**38.05%**

4.3 Demographic Characteristics of the Survey Respondents

The results, indicated in Table 4.2, show that the vast majority of respondents were male, with 80% of project managers/contractors and 79% of foremen being male, clearly indicating the dominance of males in the sector. The largest proportion of respondents for both project managers and contractors was in the 40-59 age group (47.4% of project managers/contractors and 45.9% of foremen). Interestingly, 18.9% of project managers/contractors and 29.5% of foremen were over 60 years of age. This suggests a need for capacity replacement in the long term as the latter group is expected to retire in a few years' time.

All the respondents have over five years experience in the industry with 74.7% of project managers and 60.7% of foremen having over 10 years experience in the industry. This can be attributed to the fact that it takes a significant number of years to gain enough experience and a good reputation which would enable one to do consulting or undertake challenging projects.

A total of 80.3% of the contractors were employed in the public sector as compared to 67.4% of the project managers being employed in the public sector indicating a relatively small proportion of respondents being employed in the private sector. This is mainly due to the fact that Ghana is a developing country, and the public sector offers most of the tender-based projects. Ideally, the private sector should be awarding a larger number of tenders to the industry which , in turn, would create more employment opportunities.

Table 4.2: Biographical details of Respondents.

Respondents	Project Managers/contractors $N = 95$	Foremen $N = 61$
Gender		
Male	80.0	78.7
Female	20.0	21.3
Total	100.0	100.0
Age		
20-39	33.7	24.6
40-59	47.4	45.9
60^{+}	18.9	29.5
Total	100.0	100.0
Years in industry		
Less than 5 years	0	0
5-10 years	25.3	39.3
Over 10 years	74.7	60.7
Total	100.0	100.0
Industry sector		
Public	67.4	80.3
Private	32.6	19.7
Total	100.0	100.0

4.4 Respondents perception of Key Success Factors of Construction Projects

The following is a descriptive account of respondents' opinion on the importance of the elements that constitute the four key success factors.

4.4.1 Comfort

The frequency distribution of items relating to comfort, in respect of project managers, as indicated in Table 4.3, reveal that all respondents were in agreement that the items that constituted comfort were important, with a minimum of 80% of project managers considering the items that constituted comfort as being 'extremely important'. Having comprehensive contract documentation was ranked the highest, highlighting the importance of having sound contractual agreements. The findings as presented in Table 3 indicate that all contractors also considered the items that constituted comfort as being important, with at least 78.7% of foremen, however ranked the involvement of stakeholders as being the most important item. Interestingly, foremen ranked comprehensive contract information the lowest. Both project managers/contractors and foremen ranked the involvement of stakeholders very highly. This suggests a greater appreciation for consultation with the relevant interest groups.

Swan and Khalfan (2007: 120) advice that, the inclusion of all stakeholders, including the public, is essential for successful project delivery. Yang, Shen and Ho (2009: 166) believe that the project manager has to identify the interests of all relevant stakeholders and ensure that there is buy-in to the project. Anantamula (2010: 14) believes that a competent project manager is able to carefully define roles and responsibilities of project team members. According to Newton (2005:

110), a resource plan has to be adequately developed and distributed to every section involved in the project. In addition, Johnson, Scholes and Whittington (2006: 305) stress the importance of adequate funding throughout the project. This will ensure that no activity is hampered, due to funding shortages. The importance of contract documentation is highlighted by Kerzner(2006: 826), who suggests that, if no contract is signed, it would be difficult to ensure performance of the necessary activities.

Table 4.3: Frequency distribution of factors relating to comfort: Project Manager.

	Items that constituted comfort.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Involvement of stakeholders.	%	0	0	0	10.5	89.5	100	4.89	2
2	Competent project manager	%	0	0	0	14.7	85.3	100	4.85	3
3	Availability of resources.	%	0	0	0	19.1	80.9	100	4.79	5
4	Adequate funding.	%	0	0	0	20.0	80.0	100	4.80	4
5	Comprehensive contract documentation.	%	0	0	0	4.2	95.8	100	4.95	1

Table 4.4: Frequency distribution of factors relating to comfort: Foremen.

	Items that constituted comfort.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Involvement of stakeholders.	%	0	0	0	8.2	91.8	100	4.92	1
2	Competent project manager	%	0	0	0	8.2	91.8	100	4.80	3
3	Availability of resources.	%	0	0	0	19.7	80.3	100	4.90	2
4	Adequate funding.	%	0	0	0	19.7	80.3	100	4.79	5
5	Comprehensive contract documentation.	%	0	0	0	21.3	78.7	100	4.79	5

4.4.2 Competence.

The frequency distribution of items relating to competence in respect of project managers/contractors and foremen are reflected in Tables 4.5 and 4.6, respectively. It is evident that, majority of the respondents identified the items as being 'extremely important' for the successful management of construction projects. A minimum of 73.7% of project managers and 75.4% of foremen however ranked utilizing up-to-date technology as being the most important. Both project managers/contractors and foremen however ranked the utilizing up-to-date technology very high. On the issue of competence, specifically, utilizing technology, Nguyen,

Ogunlana and Lan(2004: 411) suggest that, the project manager identifies all technology needs during the briefing stage. Chong, Wong and Lam (2006: 912) stress the importance of past experience among project managers with a view to increasing the chances of protect success.

In addition, tacit knowledge, as an element of past experience plays a vital role in enhancing organizational performance in achieving competitive advantage in the construction industry (Pathirage, Amaratunga and Haigh, 2007: 117.). Competence among teams is a further consideration. According to London, Chen and Bavinton(2005. 301), a comprehensive skills analysis needs to be undertaken to identify skills gaps. These can then be addressed through the relevant interventions, with a view to having competent teams. Phillips, Martin, Dainty and Price (2008: 308) advocates the use of multiple criteria when selecting contractors. These criteria need to take into consideration, inter alia, track record, safety practices, quality management, technical ability and in Ghana black Economic Empowerment.

Table 4.5: Frequency distribution of factors relating to competence: Project Manager.

	Items that constituted competence.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Utilizing up-to-date technology.	%	0	0	0	16.8	83.2	100	4.83	3
2	Proper emphasis on past experience	%	0	0	0	26.3	73.7	100	4.74	4
3	Competent project team.	%	0	0	0	17.9	82.1	100	4.74	4
4	Awarding bids to the right project manager/contractor.	%	0	0	0	14.7	85.3	100	4.85	1

Table 4.6: Frequency distribution of factors relating to competence: Foremen.

	Items that constituted competence.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Utilizing up-to-date technology.	%	0	0	0	11.	88.5	100	4.89	1
2	Proper emphasis on past experience	%	0	0	0	18.0	82.0	100	4.82	2
3	Competent project team.	%	0	0	0	24.6	75.4	100	4.75	4
4	Awarding bids to the right project manager/contractor.	%	0	0	0	19.7	80.3	100	4.80	3

4.4.3 Commitment

The frequency distributions of items relating to commitment in respect of project managers, as indicated in Table 4.7 reveal that the items comprising the commitment dimension were regarded as 'extremely important' in over 80% of the instances. As reflected in Table 7, at least 82% of foremen regarded the items that constitute competence as being 'extremely important'.

Thus the vast majority of respondents identified the commitment dimension as a critical success factor the successful completion of construction projects. Projects managers ranked political support as being the most important factor, whereas the support of top management was considered most important by foremen. Both parties ranked political support very highly, understandably, considering that the majority of projects are based in the public sector. Projects especially public projects, are influenced by the politics of the day hence the need for political support. Jacobson and Choi (2008: 646) identify non-governmental organizations and political parties as the key political players.

According to Johnson, Scholes and Whittington (2006: 504), projects come about due to a strategic objective that the organization has to achieve. The support of top management is therefore, essential. Commitment to the project is vital. Having clear objectives and scope are key elements. Lindahl and Ryd (2007: 152) believe that project objectives have to be iterated and validated on an ongoing basis. Forsythe (2008: 480) indicates that construction clients make quality judgments progressively throughout the project, hence the need for clear objectives and scope.

Table 4.7: Frequency distribution of factors relating to commitment: Project Managers

	Items that constituted commitment.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Top Management Support.	%	0	0	0	20.0	80.0	100	4.80	4
2	Commitment to Project.	%	0	0	0	19.0	81.0	100	4.81	3
3	Clear Objectives.	%	0	0	0	11.6	88.4	100	4.88	1
4	Political Support.	%	0	0	0	14.7	85.3	100	4.88	1

Table 4.8: Frequency distribution of factors relating to commitment: Foremen.

	Items that constituted commitment.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Top Management Support.	%	0	0	0	11.5	88.5	100	4.89	1
2	Commitment to Project.	%	0	0	0	14.8	85.2	100	4.86	3
3	Clear Objectives.	%	0	0	0	18.0	82.0	100	4.82	4
4	Political Support.	%	0	0	0	11.5	88.5	100	4.88	2

4.4.4 Communication

It emerged that at least 71.6% of project managers/contractors and 78.7% of foremen considered the items that constitute communication to be 'extremely important', once again suggesting that the vast majority of respondents considered communication to be a key success factor in the management of construction projects. These findings are reflected in Tables 4.9 and 4.10. Both project managers/contractors and foremen agreed that handover procedures were the most important item that constituted communication. This points to the adoption of a more client-orientated approach. With regard to handover procedures, Karna, Junnonen and Sorvala(2009: 117) view the construction industry as increasingly becoming a service industry. This means that industry players have to become more client-orientated, where the emphasis shifts from 'working for the client' to 'working with the client'.

With regard to the regular update of project plans, Zwakael(2009: 385) advices that special focus be given to activity definition and project plan development as these serve as bases for project plan updates. Newton (2005: 38) suggests that the project manager must communicate, on a regular basis, with the project team, legitimate stakeholders, the client and where applicable, the project sponsor. Kotler and Keller (2006: 286) support community involvement, as this indirectly enhances the organization's responsibility standing.

Table 4.9: Frequency distribution of factors relating to communication: Project Managers

	Items that constituted communication.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Shared project vision.	%	0	0	0	28.4	71.6	100	4.72	5
2	Regular update of plans.	%	0	0	0	19.0	81.0	100	4.81	3
3	Frequent project meetings.	%	0	0	0	11.6	88.4	100	4.88	2
4	Community involvement.	%	0	0	0	19.0	81.0	100	4.81	3
5	Handover Procedures.	%	0	0	0	7.4	92.6	100	4.92	1

Table 4.10:Frequency distribution of factors relating to communication: Foremen.

	Items that constituted communication.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Shared project vision.	%	0	0	0	14.8	85.2	100	4.85	2
2	Regular update of plans.	%	0	0	0	21.3	78.7	100	4.79	5
3	Frequent project meetings.	%	0	0	0	18.0	82.0	100	4.82	4
4	Community involvement.	%	0	0	0	14.8	85.2	100	4.85	2
5	Handover Procedures.	%	0	0	0	13.1	86.9	100	4.87	1

4.5 Relationship between Biological Variables and Opinions on Critical Success Factors.

The Mann-Whitney test, based on the responses of the project managers/contractors and foremen was used to compare the mean scores across the four dimensions at the 95% level of significance ($p = 0.05$). The results, presented in table 10, indicate no significant differences between project managers/contractors and foremen with regard to their opinions of the four COMs at the 95% level of significance. These findings suggests that the critical success factors were considered equally important to both industry players, that is, project managers/contractors and foremen.

Table 10: Differences between Project Managers/Contractors and foremen on opinions of Critical Success Factors.

Group	N	Mean	P (Perception)
Comfort			
Project Manager	95	4.83	
Foremen	61	4.84	0.751
Competence			
Project Manager	95	4.87	
Foremen	61	4.81	0.108
Commitment			
Project Manager	95	4.83	
Foremen	61	4.85	0.263
Communication			
Project Manager	95	4.83	
Foremen	61	4.83	0.974

Furthermore, the results reflected no significant differences between male and female project managers/contractors as well as male and female foremen at the 95% level ($p > 0.05$) of their perceptions of the critical success factors.

A Kruskal-Wallis test showed a significance only on the communication dimension among the age groupings of project managers ($p<0.05$). The perception that communication was an important dimension was higher among 40-59 and over 60 age groups. This could be attributed to these respondents being in the industry for a relatively longer time, hence considering communication to be more important than respondents below the age of 40. The Mann-Whitney test also showed no significant differences between years of service among project managers or

foremen and their perceptions of the critical success factors (p> 0.05). It could be that, irrespective of tenure, the critical success factors have been identified with no ambiguity by project managers and contractors.

In addition, the Mann-Whitney test showed no significant differences between project managers and foremen from the public and private sectors and their perceptions of the critical success factors (p>0.05). Thus, the critical success factors remain relevant for both the public and private sector respondents. Chan, Wong and Lam (2006: 924) suggest that project managers should have experience in public housing in order to increase the likelihood of project success. This is, to a large extent, due to the nature of the public sector projects. For example, the nature of stakeholders is more complex than in private sector projects. Public sector projects involve a multitude of stakeholders ranging from the local municipality to the affected community and even political parties with divergent interests. Hence, past experience in the public sector could enhance the likelihood of a project manager achieving success.

When asked to make additional comments which they viewed as critical for the successful completion of projects, a few respondents pointed to misunderstandings arising out of contractual documents resulting in lawsuits and delays in payment from public sector clients thus causing cash flow problems.

4.6 Measure of Project Performance.

The frequency distributions of items relating to measures of performance in respect of project managers, as indicated in Table 11 reveal that the items comprising the dimension of the measures of performance were regarded as 'extremely important' in over 80% of the instances. As reflected in Table 12, at least 82% of foremen regarded the items that constitute measures of performance as being 'extremely important'. Both the project manager and the foremen ranked quality of project execution the most important item.

There is a general consensus that one of the key objectives of performance measures is to provide benchmarks toward engendering best practice improvement (Barber, 2004). However, it is also acknowledged that the nature of projects executed in the construction industry can particularly impinge on how successful the benchmarking process would be in practice (Dainty et al.2003). Clarke (1999) and Maylor (1999) have drawn attention to how unreliable benchmarking through performance measures can be, especially if the project types are not similar. Thus, although it is recognized that construction projects are unique in nature, it seems potentially necessary for performance measures to be categorized to reflect the characteristics of the different project types involved (Ahadzie et al. 2005b).

Table 4.4.1: Frequency distribution of measures of performance: Project Managers.

	Measures of performance.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Project Cost.	%	0	0	0	14.9	85.1	100	4.83	4
2	Project Completion time.	%	0	0	0	11.7	88.3	100	4.87	3
3	Quality of project execution.	%	0	0	0	10.1	89.9	100	4.91	1
4	Client satisfaction with the project.	%	0	0	0	10.5	89.5	100	4.89	2
5	Project safety performance.	%	0	0	0	28.0	72.0	100	4.80	5

Table 4.4.2: Frequency distribution of measures of performance: Foremen.

	Measures of performance.		1 = Not important 5 = Extremely important					Total	Mean	Ranking
			1	2	3	4	5			
1	Project Cost.	%	0	0	0	13.3	86.7	100	4.83	4
2	Project Completion time.	%	0	0	0	11.7	88.3	100	4.85	3
3	Quality of project execution.	%	0	0	0	11.2	88.8	100	4.90	1
4	Client satisfaction with the project.	%	0	0	0	11.5	88.5	100	4.87	2
5	Project safety performance.	%	0	0	0	19.1	80.9	100	4.80	5

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction.

This chapter deals with the summary of findings, conclusions and the recommendations on the critical success factors of construction projects. Further research was also recommended for future students and stakeholders of various organizations who wants to further research on the topic.

5.2 Summary of Findings.

Given the difficulty in defining project success, the four COMs model has been advocated as being a useful tool in assessing project success, especially in developing countries. This research sought to assess the perceptions of project managers and foremen regarding the critical success factors that lead to project success. The findings suggest that both project managers and foremen strongly support the critical success factors identified in the four COMs model as being significant in achieving project success. It emerged that there were no significant differences between project managers and foremen regarding the critical success factors. The findings also show no significant differences between project managers and foremen on the biographical variables of gender age, tenure in the industry and sector (public and private) and their perceptions of critical success factors.

5.2.1 Key Success Factors.

The key success factors include;

- Involvement of stakeholders.

- Up - to – date Technology.
- Political Support.
- Handover Procedures.

5.2.2 Relative Importance of Project Performance Variables.

The relative importance of project performance variable as per the perceptions of the project managers and the foremen are;

- Project Completion Time.
- Quality of Project Execution.
- Client Satisfaction with the Project.

5.3 Conclusions.

Over and above, an enabling environment should be established which will ensure that construction project are executed in comfort by competent individuals with a clear communication plan (including skills) and receive commitment from all relevant stakeholders. Simplification of contracts should be one of the Metropolitan's key priorities, as this issue has recently resulted in the increase of lawsuits. This has created an atmosphere of mistrust mainly between project managers and foremen, since, in most instances, contractors do not deal directly with the client.

In order to avoid individualism, which can lead to declining commitment to a project, a clear line of responsibility should be demarcated, for example, in the form of a linear responsibility chart. Tools such as work breakdown structure should be used to breakdown activities assignable to specific individuals.

5.4 Recommendations

It is recommended that, working on several projects simultaneously should be avoided, as this may potentially compromise the quality of the project. The Metropolis could institute legislation that allows contractors to work on a certain number of projects at a given interval of time. This legislation will also ensure that projects are evenly spread across contractors.

In addition, awarding of bids to the right project managers/contractors and foremen in the public sector must be conducted by an independent body which is not aligned to the local authorities, municipalities or metropolis.

Organizations undertaking government work should lobby for more efficient payment processes, especially timely payments. Delays in payments can place a burden on the liquidity position of operators.

Another key issue that needs to be addressed is capacity-planning for the future in respect of project managers. The current situation reflects a dominance of males in the industry. Furthermore, a significant proportion of project managers and contractors are close to retirement age, making it necessary for the appropriate measures to be taken to ensure capacity in the industry in the future.

The results would help public construction project professionals in taking proactive measures for

successful completion of projects.

5.5 Further Research

The researcher suggests that, any researcher or student could research on the topic on series of in-depth case studies on various public projects should be undertaken in future in other metropolis, municipals and/or districts as well in order to verify the applicability and reliability of the success factors identified in this study. Effective strategies can also be suggested for enhanced project performance and improved compliance with anti-corruption and financial norms.

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Questionnaire for an *evaluation of the success factors for construction projects in Ghana*; a case study at the Tema Metropolis.

This questionnaire is designed with the purpose of finding out ***an evaluation of the success factors for construction projects*** with reference to workers gender, age, years in industry, and the industry sector (Private or Public).

The researcher is a final year Master of Technology, Construction Technology student of the above named institution and would be very grateful if you could give your view by responding to the following questions as they may be applicable to you in order to help him contribute his quota to the body of knowledge.

Please, be fully assured that all information given will be treated with much confidentiality.

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

a) Tick against your response.

b) Please do not write your name, house number, or telephone numbers on the forms.

c) Note the meaning of the following responses in the various questions and tick as appropriate.

1- Not important (NI)

2- Of little importance (LI)

3- Important (I)

4- Very important (VI)

5- Extremely important (EI)

That is, ***1 - not important,*** is the lowest score and ***5 - extremely important*** is the highest

You are however, requested to answer all the questions that follow as objectively as you can.

Thank you for your cooperation.

SECTION A: BIOGRAPHICAL DATA

Questionnaire for Project Managers and Contractors.

Please tick [√] in the box where appropriate.

1. Gender:

   Male ☐ Female ☐

2. Age group (in years):

   20-39 ☐

   40-59 ☐

   60^{+} ☐

3. Years in Industry.

   Less than 5 years ☐

   5 – 10 years ☐

   Over 10 years ☐

4. Please indicate the industrial sector in which you work.

   Public institution ☐

   Private consulting organisation ☐

   Construction firm ☐

   Others ☐ Please state……

SECTION B: QUESTIONNAIRE FOR AN EVALUATION OF THE SUCCESS FACTORS FOR CONSTRUCTION PROJECTS IN GHANA.

5. Please indicate the level of importance of the following factors in construction project success. *Please indicate your level of importance by ticking [√] the appropriate box.*

No.	Project Success Factors	Level of Importance				
		NI 1	LI 2	I 3	VI 4	EI 5
	A – Factors that constitute "COMFORT"					
1	Effective involvement of stakeholders.					
2	Competent Project Manager.					
3	Availability of Resources.					
4	Adequate funding.					
5	Comprehensive contract documentation.					
	B – Factors that constitute "COMPETENCE".					
6	Utilizing up - to – date technology.					
7	Proper Emphasis on past Experience of contractor.					
8	Competent Project Team.					
9	Awarding Bids to the right Project Manager/Contractor.					
	C – Factors that constitute "COMMITMENT".					
10	Top Management Support.					
11	Commitment to Project.					
12	Clear Objectives.					
13	Political Support.					
	D – Factors that constitute "COMMUNICATION".					
14	Shared Project Vision.					
15	Regular update of plans.					

16	Frequent Project meetings.					
17	Community Involvement.					
18	Handover Procedure					

6. Please write down any other *success factor(s)* which you view as critical for the successful completion of projects and rate their level of importance using the rating scale given in question five. Please write in the space below.

Thank you.