UNIVERSITY OF EDUCATION, WINNEBA – KUMASI

COLLEGE OF TECHNOLOGY EDUCATION

ASSESSING CONTRACTORS PERFORMANCE, ON THE BUILDING PROJECT. A CASE STUDY OF NEW JUABEN MUNICIPALITY IN EASTERN REGION.

BY

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AUGUST, 2014

DECLARATION

STUDENT'S DECLARATION

I **Daniel Owusu** declare that this Dissertation with the exception of quotations and references contained in the 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 any other 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 Dissertation was laid down by the University of Education, Winneba.

SUPERVISOR'S NAME: **MR. S. V. BOUR FREMPONG**

SIGNATURE:.....

DATE: …….....……

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DEDICATION

This thesis is first of all dedicated to the Omnipotent God for His protection.

I also dedicate it to my lovely mother for her financial and moral support through my schooling period. This thesis is finally dedicated to my children Augustina Owusu Konadu, Richard Nana Owusu, Mary Owusu Aframeah and finally to my affectionate wife Miss Kate AmmaArko.

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ABSTRACT

The construction sector is an important sector of the economy and contributes significantly to Gross Domestic Product(GDP).The United Nations Environment Programme (UNEP) has noted that about one-tenth of the global economy is dedicated to constructing and operating home and offices(UNEP, 1996).

This work is focused on assessing Contractors' performances on building projects. The study area for this research is the New Juaben Municipality in the Eastern region of Ghana. Qualitative sampling method was used the for study. Respondents that were contacted for the study are the inspectors of Public buildings and the Consultants in the Municipality. In all a total of two hundred and thirty-four (234) out of these,25.6%, representing contractors,27.4% also represent masons, carpenters 25.6% and 21.4 which also representing operators were the respondents for the study.

The SPSS and the spread sheet were used to analyse the primary data obtained. Tables and graphs were the tools used for the processing of the data. The Chi-square was used for further analysis of the data. A result from the study indicates that, inspectors of public buildings are very satisfied with the performance of the contractors in the districts. Also, it has been realised that differences exist between the performance of the First class, Second class and the Third class contractors. The first class contractor performs best compared to the second and the third class contractors. The research recommends that more and alternative ways be put in place to maintain the standard of performance of contractors in the districts. According to the study, good technical knowledge is essential to the performance of the constructional industry.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The construction sector is an important sector of the economy and contributes significantly to gross domestic product (GDP). The United Nations Environment programme has noted that about one-tenth of the global economy is dedicated to constructing and operating homes and offices (UNEP, 1996). UNEP further observes that the industry consumes one-sixty of one-half of the world's wood, minerals, water and energy. It is therefore vital that the construction industry as well as the project participants and stakeholders be aware of the different success measures in order to partake a more holistic and comprehensive approach when it comes to managing their resources. The construction industry is generally defined as economic activities that focus on the construction of physical projects, such as buildings and infrastructure, regardless of the construction being land or marine based (Kirak & Arslan, 2006). The industry generates employment and income for a significant percentage of the population, and covers a wide variety of technologies and practices on different scales. Activities include industrial processes, which transform raw materials into structures.

A major problem faced by the contractor everywhere has to do with the performance of construction. This has resulted in several project failures. Faced with an unprecedented number of external pressures such as eroding profit margins, higher owner expectations, rapidly changing technology, and a dwindling workforce, only contractors who follow best practices will achieve a higher return on investment (ROI) and reduce

their risk. The following eye-opening figures illustrate the difficulty faced by construction firms in this industry.

- Most failures are attributable to poor cooperation execution, and have little to do with bad strategy or the external market.
- Many general contractors are just one difficult project away from bankruptcy.

To actually evaluate the contractor performance in Ghana, the study would like to take a brief look at the construction sector.

1.1.1 The Construction Sector

Building construction comprises construction of office and commercial buildings, airport terminal buildings and public buildings such as schools and hospitals. Construction industry has been described by James and Thomas (2010) as the sector of the economy that transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. The authors categorised the construction industry into building construction and engineering construction. It is also argued by Huang (2009) that the construction industry in developing countries ischaracterized by too fragmented and compartmentalized; public sector dominated market; considerable government interventions; considerable foreign finance (dependency for public construction), and low development of indigenous technology. The author further maintained that the construction industry in developing countries depends on imported input such as construction materials, machinery, and skilled manpower.

The pace has been fast, especially during depressed economic time when building owners often start with simple structures to provide basic shelter and then improve the structures as time and finance permit. The work is done by individual and small firms that are able to adapt to the unpredictable needs of clients, including stopping work whenever funds are not available. A large proportion of this type of construction is residential, while others are residential and commercial developments. Procurement of work is mainly base on informal, verbal relationships and agreements. The sector also has teams of professionals including architects, quantity surveyors and engineers who oversee the design and construction of a project and act as intermediaries between the client and the builders. Contractors usually are responsible for the construction and completion of the projects within a specified time, cost and quality. There is also a formal contract agreement that spells out the responsibilities and legal obligations of each of the parties and that is enforceable by law.

The majority of such buildings are constructed with no consideration of existing bylaws, insurance cover, and other legal requirements. Many owners of developments do not submit their building plans together with their proof of title to the land to local planning authorities. Since this is the yardstick used for documenting construction work, it creates a gap between the recorded statistics and actual construction. Well (2001) has shown the extent of unplanned construction in the urban areas in the 1990s by comparing trends in recorded building activity and cement consumption. The very significant gap is attributed to unrecorded construction activity. An examination of government data shows that between 1995 and 1999, the informal private construction sector made a significant contribution to Gross Domestic Product (GDP). Preliminary work for this study showed that individuals are developing many buildings in low and

middle income, including semi-urban areas with basic capital in an incremental manner. The value of such buildings completed each year cannot be easily quantified.

Contractor's performance may generally come as a result of some internal factors.This may include management and supervision, subcontractor selection and management, schedule, safety, project documentation and closeout procedures. The performance of the contractor on each of the items listed above is acceptable and meets the minimum contractual requirements; the contractor's performance and their positive or negative contributions to the project. Given the difficulty of the construction market, this study would come out with key performance indicators (KPIs) to enhance effective and efficient performance (evaluation and decision-making). KPIs are yardsticks that contractors can see and use to effectively communicate day-to-day operations of the business, supported by the best practices of general construction. Well (2001) found that the best-of-class contractors have fine-returned their organizations by aligning people, processes, and technology to produce results that are better than the industry average.

1.2 Statement of the Problem

The appointment of consultant on a project and the subsequent award of the project have not always seen a guarantee of a successful project. The general approach to a work by the contractor has often determined by overall results of the project most projects have delayed or abandon not only because clients wanted it to be so but also contractors failed to do his/her job properly and diligently or followed instructions.

1.3 Aim of the Study

The aim of this research is to investigate into the performance of contractors in the building sector as a means of identifying areas of improvement in project execution.

1.4 Objectives of the Study

The following objectives will help accomplish the aims of the research:

- To identify key factors by which contractors performance could be assessed.
- To identify how beneficiaries in the construction industry perceive the performance of a contractor.
- To find if there is any significant different in the performance of the classes of contractors?

1.5 Research Questions

The study is guided by the following research questions:

1. To what extent does academic qualification relates with contractors performance?
2. How does power/authority influence contractor's performance on project?
3. How does the type of client have any effect on contractors performance?
4. To what extent does the class of a contractor affect their performance?

1.6 Significance of the Study

The success of this study will be very significant in that it will serve as;

1. Platform for policy maker to formulate a good policy to guide both contractors and other stakeholders in their performance.

2. Bases for other researchers to conduct further research on this study.

3. Base for the building inspectors and consultants to conduct a periodic inspection on project to prevent the occurrence of collapse project.

1.7 Limitations of the Study

There were a lot of limitations that the researcher faced when conducting this study. The first limitation of this study was lack of co-operation from some management, suppliers and staff of construction companies. Most of the staff were of the view that the research was meant to find their strategies and business weaknesses. This was addressed through education on the importance of this study. The research was done at the same time academic work was also taking place. Indeed, the time duration for this research was a major constraint to the researcher. However, greater efforts were made to gather sufficient and relevant data for the study. Services of research assistants were obtained to identify respondents. The research was also limited in the sense that a section of the population was used for the study. This is common with most research projects as it is impossible to engage the whole population for a study.

1.8 Scope of the Study

The study will be restricted to assessing contractor's performance on building project within two (2) selected areas, East Akim municipality and NewJuabenMunicipality. The search with concentrate in contractor performance, monitoring contractors' performance, inadequate awareness, client's involvement and acceptance, continuous improvement and change management and procurement related issues.

1.9 Organisation of the Study

The research is divided into five chapters. Chapter one is the introduction which comprises the background of the study, statement of the problem, objectives of the research, research questions, significance of the study, limitations and delimitations of the study. Chapter two consists of review of related literature on public procurement. Theories that relate to the subject area were also explained. Certain terms in the study were explained as well in chapter two. Chapter three discusses the methodology of the study. The general description of the design of the research including the population and sampling, data analysis method and ethical consideration of the research were discussed. Chapter four presents the analysis and discussion of the study. Finally, chapter five contains the summary, conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The extent of poor performance outcomes is a recurring issue for construction industries worldwide. One of the main causes of these and project failure seems to be the inability of contractors to provide a high level of service quality to the project team. In Ghana, design failures have also been identified as a further contributory factor. To overcome this, different types of subjective performance measurement have been progressively developed. These approaches are typically concerned with client satisfaction, customer satisfaction, home buyer satisfaction and occupant satisfaction, but very seldom consider contractor satisfaction/performance.

This chapter captures the opinions, observations and assessment of some other studies on the subject of study. Among the various topics that have been observed include: contractor performance, monitoring of contractor performance, client involvement and acceptance, continuous improvement and change management, procurement related issues in construction, customer satisfaction, quality system audit etc.

2.2 Contractor Performance

This review examines the implications of good contractor performance, and what is involved in developing satisfaction measures based on contractor perception, public perception instead of the typical sole concern with contractor's performance. As a result, other attributes such as participants, performance, business performance, project performance, external factors and contractor characteristic are also examined.

A lot of work has been done about contractors' performance at various levels of constructional systems and in many places of different climates, cultural beliefs and economic levels. Unfortunately, majority of these works concentrates on areas that have very little or no geographical and economic resemblance of the area of study.

According to Mlinga and Wells (2002), contractor performance is measured based on quality, time and cost. Traditionally time, cost and quality have constituted the parameters within which projects have been procured and managed. The authors further argued that although this traditional approach has been perpetuated by tertiary construction education, client, designers, project leaders and the construction industry, it has not been successful with the greater percentage of contracts not being completed within budget and to quality and time requirement.

Tangen (2005) however posit that efficiency and effectiveness are somewhat cross-functional in regard to performance, profitability and productivity. The authors argued that efficiency and effectiveness measure and compare the actual amount of used resources to the minimum level that is theoretically required, and view he actual output in relation to the expected output respectively.Previous researchers have some relativity of clients, requirement to contractor performance measure of cost, quality and time on project and how the above mentioned items negatively affects contractors. Performance research has also looked at the separation of design and construction and their effects on the construction process and contractor's performance and their relation to procurement related issues.

Pekuri, Haapasalo and Herrala (2011) argue that for a company to be successful, it is critical that the company can control and manage its operations effectively. Authors further maintained that the more efficient the controllability is, the better the company's

ability to react to changes will be. To have good controllability, a company must have access to indications of past, present and future trends from the operative environment.Measurement enables increased visibility of the quality and progress of a certain task and helps to justify, manage and evaluate quality and productivity improvement programs at the operations level.

In relation to this research, contractor performance is defined as the extent to which contractors are able to deliver or implement project to meet the set targets usually; cost, time, and quality to satisfactory of the project consultant (if any).

2.3 Monitoring Contractor Performance

The degree to which contractor performance can be effectively monitored depends in large measure upon the adequacy of project planning the objectives of the project must be clearly stated and, hopefully, well aligned with the business information requirement of the organization (Morris & Hough, 1987). Mlinga and Wells(2002) also posit that the technical requirements should narrowly be specified to meet the needs of the customers, i.e. those who are called upon to use the system to carry out the business requirements. The authors argued that the contractor should be expected to meet minimum professional requirements and should be able to produce evidence of having successfully performed similar applications, including statements of recommendation from previous customers. This implies that the contractor should be willing to guarantee the interoperability of the components of the project as well as the quality and timeliness of the work of the contractor's employees in carrying out the integration and installation processes. The contractor should therefore agree and be held

accountable to provide comprehensive documentation of the project that is found to be acceptable by both the managers and well as the users of the system.

In the opinion of Mustapha and Naoun (1997), the amount of post-acceptable technical support that may be required should be agreed upon in advance and the contractor provide evidence of capability to provide such support at reasonable cost. In tandem with a capable contractor, the authors maintained that the skills of the project leader and his or her technical representative are critical to success. Karz (1971) also provided that the contract officer and contracting officer's Technical Representative (COTR) should be well trained to carryout their roles in monitoring contractor performance. Measurable performance objective and time lines should be established. The project leader should ensure that measurable outcome objectives are established. The COTR should ensure that the outcome objectives are stepped down to measure output objectives. The contracting officer should ensure that the contract provisions are clear and enforceable.

Hughes (1986) suggests there are two principal aspects to contract monitoring. The first entails looking at whether the contractor is achieving predetermined milestones effective on their face, these appear to be opposite sides of the same coin, a difference without a distinction. The second involves assessing the time taken to accomplish a task against the predetermined time. Hughes distinguishes them in terms of regular periods of time versus the schedule of deliverables, which may be irregular. However, there is no point in meeting if the meetings bear no relationship to the project schedule. Nor on the other hand, should information system project deliverable be scheduled so infrequently as to result in lengthy periods between reviews of incremental components.

Dissanayaka and Kumaraswamy (1999) pointed out that the principal reason for the construction industry's poor performance has been attributed to the inappropriateness of the chosen procurement system. Pekuri et al. (1999) also remarked that the three important structures underlying the dynamic of a project performance which are: the work accomplishment structure, feedback effects on productivity and work quality and effects from upstream phases to downstream phases. The main performance criteria of construction projects as financial stability, progress of work, standard of quality, health and safety, resources, relationship with clients, relationship with consultants, management capabilities, claim and contractual disputes, relationship with subcontractors, reputation and amount of subcontracting (Thomas at al., 2002). Again, Chan and Kumaraswamy (2002) stated that construction time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization.

Karz (1971) pointed out that pressure often arises that change a project's original scope, and it is common for disputes to arise over whether specific changes were authorized or not. Regardless of who is responsible for paying for them, the customer or the contractor, change generally increases costs. Karz highlights that such costs are not just monetary but may also be institutional, in terms of confusion and loss of confidence associated with "abandoning old commitments and making new plans "frame emphasizes: in order to deal with change, change control procedures must be implemented. The procedures have important contractual implications. With well-established procedures distinctions can be made between authorized and unauthorized changes.

Indeed, change is inevitable and Kivrak and Arslan (2008) suggests that "change management" is a contradiction in terms. The authors further maintained that change

cannot be managed change can be ignored, resisted, responded to, capitalized on, and created. But it cannot be managed and made to march to some orderly step-by-step process. However, whether change is a threat or an opportunity depends upon how prepared contractors are toward that end. It is important that the prospective users be represented in the contract monitoring process through a User Acceptance Team (UAT).

According to Huang (2009), members of the UAT should be adequately trained on each component as soon as it is ready for prototyping and or acceptance, and other users should be trained immediately prior to roll out of each component. Traditionally, user acceptance has been considered to follow completion of projects. Hall (1994) also pointed out that customer acceptance occurs at the point in the life cycle when the customer determines whether the deliverable meets the terms and conditions of the contract. Grünberg (2004) made a point that proper measurement goals are those that focus as much on communication as on evaluation and targets.

This determination frequently occurs in conjunction with tests of the deliverable to see whether it meets specifications.

2.4. Performance measurement in the construction industry

A three-level framework on how the concept ofbenchmarking could be related and adapted to construction, providing insights as to why and at what level the benchmarking and performance measurement should occur was presented by Mohamed (1996). These are internal, project and external benchmarking. Mohamed provided that internal benchmarking is the examination of an individual organization's current

processes and practices for the purpose of identifying improvement targets that relate to how the organization does business and how its customers evaluate their services.Project benchmarking according to Mohamed (1996) measures the performance ofprojects in which the organization is involved; its aims are meeting customer requirements, measuring productivity rates, and validating and maintaining its estimating databases whilst external benchmarking is mainly concerned with the selection and implementation of managerial and technological breakthroughs developed by other industries, in order to generate significant improvement in construction.

Pekuri, Haapasalo and Herrala (2011) argued that since the construction industry is mostly project-oriented, interest has focused on project performance. However, the authors added that project success means different things to different people.Kagioglou et al. (2001) contend that these measures are insufficient, and that many other factors exist that can influence customer satisfaction and the client's willingness to pursue a given procurement route in the future. Also according to Chan and Chan(2004),the absence of criteria related to legal claims has recently been highlighted.

Pekuri et al. (2011) further maintained that the traditional measures known as the 'iron triangle' provide an indication of the success or failure of a project, but they do not provide a balanced view of the project's performance. Chan and Chan(2004) also assert that usually they are apparent only at the end of the project and should therefore be classified as lagging indicators of performance. Chan and Chan further contended that performance measurement frameworks have been proposed where project success is divided into dimensions, and where project success is considered during the different stages of a project as well as from various perspectives.

2.5 Techniques for Assessing and Predicting Company Performance

There is renewedconcern in credit risk assessment which is driven by the explosive growth in the credit derivatives market (James & Thomas, 2010). This, and the concern about the lack of theoretical support of traditional accounting-ratio-based models such as the Altman (1968) z-score, has led to the application of the contingent claims valuation methodology for predicting corporate failure with the KMV model now extensively employed by banks and financial institutions. However, empirical tests of the relative power of the two approaches are lacking in the literature. The only published study, that ofHillegeist et al. (2004), is deficient in comparing the market-based approach with the Altman (1968) and Ohlson (1980) accounting-ratio-based models which are known to suffer from high misclassification rates. It also does not take into account differential error misclassification costs and the economic benefits of using different credit risk assessment approaches. In any case, a more valid comparison would be with the commercially available Zeta (Altman, 1968) model which has far superior performance.

Recently developed corporate bankruptcy prediction models adopt a contingent claims valuation approach. However, despite their theoretical appeal, tests of their performance compared with traditional simple accounting-ratio-based approaches are limited in the literature. It is also argued by Daily and Dalton (1994) that there is a relationship between corporate failure and corporate governance characteristics. The global financial crisis has therefore left many organizations in limbo about their going concern. This is evident from some of the world's top organizations filing for bankruptcy. This has renewed the debate among various stakeholders in the quest to identify firms with bankruptcy alerts.Numerous models related to the prediction of business failure have been. However, little research has been done to predict the failure

of construction firms when comparing with the banking and finance sectors. Relevant prediction techniques for construction company failures include; the ratio analysis; multiple discriminant analysis; and conditional probability models.

2.8.1 Ratio analysis

In essence, the ratio analysis assesses various financial ratios of a business to ascertain the financial weaknesses of a company in advance of failure. A cut-off point is estimated for each measure or ratio in the analysis. The classification procedure is carried out separately for each measure, based on a firm's value for the measure and the corresponding optimal cut-off point. Landford et al. (1993) asserted that the ratio analysis should enable the analysts to examine the operating performance in terms of: whether the firm is utilising its assets;whether its profit margins are in line with assets; whether there is excessive investment in fixed assets; whether the business is adequately financed; whether there are signs of liquidity strains and whether collection of receivables is efficient.

James and Thomas (2010) argue that a full scale inter-firm comparison of the ratio analysis would enable the above questions to be resolved into more essential factors such as, whether production costs are higher than competitors, whether the labour costs and utilisation rates are in line with the industry's average and how one's overheads compare with others. The extremes could readily be identified and a cut-off point be established from predictive experience in order to measure the healthiness of a company. Based on a study by Harris and McCaffer (1995) the traditional financial ratios are classified into four broad categories:

Liquidity ratios (e.g. current ratio, solvency ratio) which measure a company's ability tomeet its short-term commitments;

Profitability ratios (e.g. return on investment, return on equity, net profit margin etc) which measure the overall performance, or returns, which management has been able to achieve;

Leverage ratios (e.g. gearing ratio, interest cover) which also measure the extent to which a company has been financed by debt and shareholders' funds; and

Activity ratios (asset turnover, stock turnover) that also measure how well a company has been using its resources.

Tamari (1966) stressed that an analyst cannot merely rely on one ratio, particularly when it comes to analysing construction companies. A trend of the performance of a business can be depicted by comparing with the industry's norm over a long period of time. The assessment would indicate areas worthy of attention by the managers of the construction companies. The univariate analysis is a relatively simple method and the application requires minimal statistical knowledge (Balcaen&Ooghe, 2006). On the other hand, this technique is based on the stringent assumption of a linear relationship between all measures and the failure status. Chan et al. (2005) adopted this approach to review the financial performance of construction contractors in Hong Kong before the formulation of appropriate corporate strategies. However, in the strict sense, ratio assessment cannot be considered a prediction but rather an early warning mechanism of failure.

2.8.2 Multiple Discriminant Analysis (Z - Score)

The Z-score model developed by Altman (1968) which is based on the Multiple Determinant Analysis (MDA) has been extensively used by government agencies and the commercial sector to identify potential insolvent companies. The approach first constructs the profile of a company on the basis of its published financial accounts and then compares it with the profiles of known financially healthy or previously insolvent companies. The closer the company in question resembles previous insolvency, the more likely it is to fail and vice versa. The solvency profile is summarised in a single index, known as a Z-score, derived from the MDA. Altman selected66 large US companies including 33 non-bankrupt companies and 33 bankrupt companies to develop the Z-score model with five financial ratios. However, no construction companies were involved in the analysis.

Mason and Harris (1979) therefore developed a six-variable Z-score model based on a sample of 20 failed and 20 non-failed companies in the civil engineering sector of the UK. Applying the MDA, the discriminant function was developed as an equation. A positive Z-score indicates a long-term solvency, while a company with a negative value was classified as a potentially failure. The z-score is calculated with the formula;$Z = 25.4 – 51.2X1 + 87.8X2 – 4.8X3 – 14.5X4 – 9.1X5 – 4.5X6$

where X1 is the profit before interest and tax to net assets, X2 is the profit before interest and tax to capital employed, X3 is debtors /creditors, X4 is current liabilities / current assets, X5 is log10 days debtors, and X6 is the creditors trend measurement. Abidali (1990) also developed a Z-score model for used in vetting construction companies on the tender lists. However, inconsistent coefficients were found in the model (Edum-Fotwe et al., 1996).

Although the MDA is called a 'continuous scoring' system, a discriminant score is simply an ordinal measure that allows the ranking of firms. In addition, it should be noted that it is possible that variables that seem insignificant on a univariate basis actually supply significant information in the multivariate context of the MDA model (Altman, 1968) or that some coefficients have unexpected, counter-intuitive signs (Ooghe and Verbaere, 1985). Furthermore, it should be stressed that the coefficients of the MDA model do not indicate the relative importance of the composing variables as they cannot be interpreted like the coefficients of a regression (Taffler, 1983) i.e. the output if the MDA model has little intuitive interpretation. In addition to the above observations, there are certain statistical requirements imposed on the distribution properties of the predictors (Yang et al., 1997).

A number of business failure models for construction companies were developed using conditional probability modelling approach. For instance, Kangari et al. (1992) developed a quantitative model based on the financial ratios to assess the financial performance and the grade for a construction company, and hence its chances of survival. The current ratio, total liabilities to net worth, total assets to revenue, revenue to net working capital, return on total assets, and return on net worth were used for developing the model. Based on questionnaires surveys, Russel and Jaselskis (1992) and Hall (1994) also identified factors which can distinguish the survivors from failures in US and UK respectively for predicting purpose. Using logit regression analysis, apart from financial ratios, a wider range of independent variables including company profile, management attributes, etc. were tested.

Business failure, information provides critical guidance to entrepreneurs who are contemplating to start a business. It gives a clear indication of the risk factors in the industry. It also provides experience for the professionals who are involved in

managing risks. However, theoretical development in this area has been less sophisticated than those on the start-up and growth of business. Since construction is an important industry in any economy whilst companies in the Ghana construction industry are facing fierce competition, establishing a reliable model to assess the performance for the construction companies is timely and important.

2.6 Client Involvement and Acceptance

The involvement of a client towards the success of a construction work cannot be underestimated. Clients must continuously monitor their works and offer suggestions to the contractors in order to provide the preferred output demanded. However, that approach has led to many failures. Hughes (1986) provided that problems often occur at the customer acceptance stage customers may complain that the deliverable does not satisfy all their needs and wants, as captured in the statement of work to avoid such problems, users should be involved at every step of the project, from conception to completion. In particular, users should be involved in monitoring and assessing the quality and acceptability of the work of contractors.

Information system users may have little to say about who is hired and fired within their own organization, since that is still presumed in most organizations to be the province of upper-level managers, on the other hand, there is no reason that users should not be intimately involved in determining the quality and acceptability of each component of information systems delivered by contractors (Grünberg, 2004). After all, it is the clients who will be left to work the systems long after the contractors have departed. The simple fact is that no project leader or contracting officer's technical representative (COTR) can be as fully prepared as Grünberg suggests so as to deal with

change as it affects the users themselves. The author further argued that the core of management is the art of mobilizing and pulling together intellectual resources of all employees in the service of the firm. We know that the intelligence of a handful of technocrats, however brilliant, is no longer enough only by drawing on the combined brain power of all its employees can a firm face up to the turbulence and constraints of today's environment.

Some organizations use integrated project teams (IPTs) that are "charged with managing application development while assuring the efficiency of existing ones (Cooke, 2001). The author noted that IPTs are a good approach to use in many instances, but in order to obtain the highest level of objectivity, agencies have generally turned to contractors to conduct independent verification and validation (IV & V). However, the question is whether that is the best approach, particularly if the actual success of the project depends significantly upon the subjective judgement of its users. To the degree that proven important components are used, user acceptance problems can be minimized (Tangen, 2005). Special care should be taken to apply user scrutiny to customizations applied by the contractor. Each digression from the important components should be treated in effect as a change order, specifically approved in advance by the COTR, if not the project leader, and field tested by users on a component by component basis in the routine course of the project development process. Customisations should be monitored on a weekly, if not daily basis, by at least one person who will actually be using the customized features.

OFPP suggests that acceptable surveillance method include:

- 100 percent inspection:as the most appropriate method for infrequent task or tasks with stringent performance requirements, e.g. where safety or health is a concern.
- Random sampling: for recurring task that are too expensive to be monitored in every occurrence.
- Periodic inspection: sometime called "planned sampling" this method relies upon a pre-determined plan for inspecting part of the work, using subjective judgment and analysis of agency resources to decide what to inspect and how frequently to inspect it.
- Customer complaints: as a supplement to more systematic methods. In all cases, OFPP says complaints should be documented, preferably on a standard form.

NotwithstandingOFPP's assertions, it might be argued, in effect, that 100-percent inspection is the only true alternative in the real world. The only difficulty is at what point the "inspection" will occur before or after the project has been "accepted" and the contractor has been paid and released from further obligation. In other words, operationally speaking, from the perspective of the user who is by definition the "customer" there is no difference between the 100-percent inspection and the customer complaint method. Sooner or later, the cows will come home to roost. Tangen (2005) argues that too many agencies have units that provide programme evaluation, but their tools are applied only after the programme generates results. What is need is a lifecycle activity that begins with defining the functional requirements and stays with the programme through final development. While the project leader and COTR should be held accountable for ensuring that the functional and technical output requirements are met by each component, user satisfaction should be taken as the most important

measure of project outcome. The author further emphasizes your overarching goal in developing measurement and feedback loops should always be simplicity. Ideally, you want to identify the vital few measures within each area that have the biggest impact on performance. User satisfaction is one such measure, and measuring it should be considered to be an inherent part of the contractor monitoring process, rather than as a post project-acceptance activity.

Bakker et al. (1983) notes, the Government used to look at a contractor's experience what it had done. But it was rare to consider how well or poorly the contractor did in its prior efforts and use the information for source selection while acknowledging that it is only common sense to begin to consider such qualitative information, Petrillo, argues that past performance indicators have been oversold as a means of discriminating among contractors for source selection particularly for the bulk of the contractors who fall in the middle of the standard distribution. At the same time, he highlights that government policy makers are worried about grade inflation (i.e. that all contractors will receive the highest rankings) while contractors fear being unjustly downgraded. As Tangen (2005) asserts, an assessment of the performance of a contractor's work is subjective to. Thus, in fairness both to contractors as well as to users, should be given a structured survey based upon the functional and technical requirements, to be used in assessing each component, in near – real time, as each component is developed. The structure of the survey will lend a measure of certainty for the benefit of both parties. Beyond the issue of certainty and fairness, still more important is the focus that a structured process brings to bear on the desired outputs and outcomes, which should be clearly reflected in the questions asked in the survey. Without such structure cutting directly to the core of the issue to be addressed output and outcome measures risk being

fuzzy and inefficient, if not completely ineffective in achieving the objectivity required to facilitate responsible decision-making.

Other measures of contractor performance include quality of the product, or service, cost control, timeliness, and business relations. Such factors are certainly important, but "quality" and "business relations" are both subjective and closely related to customer satisfaction. Cost control and timeliness can be more objectively measured against pre-agreed standards. However, neither is any substitute for customer satisfaction, and negative performance on either of them is likely to be reflected in customer dissatisfaction. Moreover, a project that is within budget and schedule but which fails to satisfy the customers can only be characterized as well – managed rush to failure.

2.7 Continuous improvement and change management

Tangen (2005) asserts, it may be impossible to manage change. It may also be true, as Cooke (2001) argues, that the benefit of considering past performance has been oversold as a means of discriminating among most vendors. After the initial baseline acceptance levels have been established for each component, Cooke (2001) recommends that an E-forms should also be used to facilitate and suggestions for continuous improvement, as well as to periodically survey all or selected groups of users for insight into business process and technology improvement opportunities. However, the author cautioned that by applying E-forms technology to facilitate a continuous user-feedback loop, contractor performance can be more effectively monitored in near-real time, not only for the benefit of current projects but for future awards as well.

According to Bakker et al. (1983), rather than being viewed as relatively large, discrete monoliths, projects themselves can be considered more properly as collection of smaller, interoperable components each with its own life cycle within the continuous and over-expanding flow of knowledge. Moreover, change itself can be transformed from a threat into an unending stream of opportunity as stream within which performance measures will be far more accurate and valid, knowledge management will be more effectively fasted, high performers will be more fully satisfied, and tax payers will obtain greater returns on their investment in government services.

2.8 Procurement related issues

Procurement systems and related issues are important as they affect many aspects of construction activities including contractual relationships, the development of mutual goals, the allocation of risk, and ultimately, provide the framework within which projects are executed (Bakker et al., 1983).A research conducted by Tangen (2005)among General Contractors (GCs) in South Africa, a number of important indicators arose from the GCs stated frequency of exposure to various procurement system characteristics.

- The traditional construction procurement system (TCPS) is used most frequently;
- Design is not complete before selecting a contractor;
- Prime costs, which do not constitute finality, are frequently made use of in contract documentation;
- Architects are not always able to co-ordinate and supervise the design team;
- Contractors are selected predominantly on price;

- Design in separated from construction;
- The incidence of lump sum contracting is increasing and
- Contractor's expertise is not included in design.

2.9 Customer Satisfaction

Cooke (2001) developed a customer satisfaction model when he conducted a research among a range of electrical contractors in USA. The model consists of five satisfaction quality dimensions; safety; project management; contractor/customer relationship, cost and prepared/skilled workforce. Safety entails understanding and following safety regulations, maintaining a safe work environment and employing worker who practice safe work habits. Project management includes the ability to plan, schedule, manage, and execute all aspects of a project from the conceptual design stage to project completion. Contractor/customer relationship encapsulates the overall relationship and is addressed in terms of trust, respect, integrity, and willingness to partner, responsiveness, and communication ability. The dimension of cost includes initial project estimates, value engineering services, lower cost alternatives, variation order pricing and project billing activities. Staff who are knowledgeable in the building code of practice, skilled in construction techniques, take pride in quality work and understand advanced technologies, constitute prepared/skilled workforce. A national survey was conducted which indicated safety to be the most important quality dimension, followed by project management and contractor/customer relationship. The prepared/skilled workforce and cost dimension were jointly ranked lowest in importance.

Further investigation determined a strong negative correlation between contractor/customer relationship and cost, which can be interpreted in two ways.

First, customers who value long-term contractor relationships and partnering places less importance on cost issue when determining satisfaction levels. A second interpretation could be the nature of the bidding process. For example, a public sector customer may be forced to consider cost the most important dimension, thus minimizing the importance of long-term contractor relationships. Kometa et al. (1996) conducted research in the UK among consultants to determine the fundamental needs of clients. Based upon a relative importance index, functionality of a building was ranked first, followed by safety, both during construction and throughout the life of a building, quality time, and cost. However,Thomas et al. (2002) adopts a different approach. He maintains customers have two requirements for any service or product namely needs and wants. The need, referred to as the hard issues, are the items which the product must fulfil, namely time, initial cost, quality, size and whole life costing. The wants are the soft issues that the customer desires; values; trust, and security. However, these are highly individualistic and the perceived level of requirement is different for each individual. A further aspect is that the supply of the hard issues is based upon the lowest price. The customer will only divert from the lowest price through a perception of an increased value by another supplier. This decision is based upon the supplier's influence on the soft issues. Research conducted investigated that degree of importance of project parameters according to architects and based upon an importance index, client satisfaction was ranked first, followed by project quality, project cost and project schedule.

2.9.1 Status quo

According to Allen (1999) a construction client's forum survey conducted in the UK in the first quarter of 1999 revealed that:

- Clients were experiencing time overruns on more than half their projects, only one third were completed on time, with 9% finishing early;
- Almost one-third of projects were over budget; and
- Zero defect was achieved on handover on 10% of projects.

2.9.2 Image

Gido and Clements (2003) argue that poor contractor performance in the form of cost over-runs, rework, late completion, an unacceptably high accident rate, insensitivity to environmental considerations, poor work practices and adversarial relationships result in a poor image of contractors and the industry the civil engineering and building. Hughes (1986) also stresses the importance of environmental human and back-up factors. Environmental factors such as plant and equipment and sites, and human factors such as employees' presentation attitude and behaviour impact on the visual image. Back-up factors such as stationery, signage and various public relations related activities also affect the image of construction works.

2.9.3 Role of Clients

Gido and Clements (2003) state that the construction industry potentially has higher proportion of dissatisfied and critical clients than any other industry. The authors concluded that there is an evidence to suggest that clients are largely misunderstood and

dissatisfied with the performance of their consultants and contractors. If that is true, one then wonders whether the clients themselves play their roles in satisfying other stakeholders.Mlinga and Wells(2002) argue that the construction industry service providers have been unable to fully grasp the issue of client satisfaction largely because of the absence or unawareness of a mechanism for measuring satisfaction in the procurement process. Mlinga and Wells (2000) found out those shortcomings of labour management such as poor motivation, unfair wages and lack of training contributed to client dissatisfaction. Yet the clients themselves can directly influence these. Construction clients have project needs such as timeliness of completion, aesthetics, and cost of the project and safety of production. These needs are part of project schemes and should be satisfied by building teams.

Clients' performance criteria are defined as those measures used to assess the performance of clients based on review of literature on client's responsibilities. Performance in construction has traditionally been assessed on cost, quality, schedule and resources. The client has the responsibility in selecting design consultants who are able to offer designs that are capable of being built safely. The client must appoint a contractor who is competent and can build the project in a safe way. This may involve safety records being inspected, as a qualification for selection of a tender (Mlinga & Wells, 2002). At times, client use nominated subcontractors to provide for specialized items. The advantages of subcontracting are that due to limited specialization the labour and plant or the goods supplied will be suitable for the work to give increased productivity and quality. The client has a role to arrange finances for the project and make predications of the total cost of the project and the associated fees and charges. One of the main problems faced by contractors is delay in receiving payments from the client. This, in turn has a knock on effort on suppliers and subcontractors who may not

be paid until the main contractors have received the relevant interim payment from the client.

Risks that cannot be controlled by contractors should ultimately be borne by the clients who pay for the insurance policies that they enter into to protect the works. The client should facilitate the contractor to obtain a joint name policy for the work. Morris and Hough (1987) assert that lack of access to finance is arguably the most critical of these constraints. At least, it prevents contractors from satisfying the financial requirements necessary to secure projects, and procuring the other resources such as managerial and technical expertise. Client's needs and requirement in the development process can be categorized broadly into design, management, and construction services (Gido & Clements, 2003). In the UK, the client has a statutory duty to appoint a planning supervisor for the purposes of preparing a safety plan and monitoring the implementation of the plan on site. The client needs to provide the planning supervisor with details of the project to enable him perform properly.

2.10 The Performance of the Construction project Contractor

A project manager co-ordinates the activities of every project team member in ensuring they realize their intended task within an appropriate time frame, which in turn will contribute towards a more efficacious project team (Gido & Clements, 2003). This is important to the project manager or the contractor being a conductor. The project manager is entrusted with and responsible for allocating the necessary project resources, monitoring of actual physical work progress as well as motivating and inspiring the project team members (Gido & Clements, 2003). According to Cooke (2001), the performance of the project manager hinges on his ability to control and

monitor the processes and system which make up the project. The authorconcluded based on his research that traditionally the success of a project indirectly infers to the capable performance of the project manager with emphasis on the achievement of time, cost and quality objectives. Nevertheless, there are still various other factors that can still be used to gauge the performance of a project manager with the context of today's construction industry.

Greenberg (2000) explain that job performance is related to the willingness and openness to try and achieve new aspects of the job which in turn will bring about an increase in the individual's productivity. Gido and Clements (2003) on the other hand, states that job performance is actually related to the importance of social standing within the vocation and to a certain extent, this opinion is similar to the earlier views put forth by Greenberg (2000) who point out a positive relationship between job performance and the status of the work itself. This positive relationship is brought on by the perks and benefits normally associated with a high standing occupation such as a higher remuneration, a more flexible working condition as well as an occupation which is less dependent on physical labour.

2.10.1 Project Performance

The success of a project is the ultimate the aim of every project manager. The means to achieve this success is normally done through the use of appropriate project management tools and techniques. Traditionally, the success of a project is measured through the accomplishment of time, cost and quality objectives. However, the definition of project success over the years has come to include other more comprehensive aspects. Bakker et al. (1983) define project success by including the

elements of achieving the desired technical specification as well as the accomplishments of the intended objectives. The authors went further to add that success in a project will also be defined by the level of satisfaction of all important stakeholders, namely the client and the end-user. This definition brings into focus the aspects of technical achievement as well as customer satisfaction. Therefore as Mlinga and Wells(2002) concluded, the performance of a contractor on project will be a based on different things for different individuals, usually dependent on their role and responsibilities within a certain project. Gido and Clements (2003) share similar views as they state that the concept of project success is open to interpretation as it is reliant on individual perception. These differences in viewing success may often lead to protracted arguments whether a specific project is truly successful or otherwise. Morris and Hough (1987) state that the perceived success or failure of a project can be categorized into two sets of views. The first is the macro level perception which pertains to the achievement of the original and basic objectives of the project. Secondly, the micro level perception that deals with the accomplishment of smaller components within the same project. The authors further analogized these two different perceptions by comparing them to a forest and a tree, i.e. is the measure of success gauged from the forest or from the trees? Therefore, there are two distinct ways to gauge performance; one would be by evaluating the end product of the construction process while the other would look more into the aspects of the process itself. Literature relating to construction research normally attempts to incorporate both these elements to act as one single entity in terms of measuring contractor performance. According to Well (2001), it is however more effective if these two elements were seen as different but complementing aspects and the measure of project success needs to be tailored to be able to cater for both this macro and micro level elements. It is in the element of the

process that the role of project manager comes in. In executing his roles and responsibilities, the project manager is undoubtedly influenced by his work circumstances and environment. As such, it is only pertinent that job environment factors that can affect the effectiveness of the project manager be studied and reviewed.

2.10.2 Work Environment factors that Influence the Effectiveness of a Contractor

According to a research done by Mustapha and Naoun (1997), there are basically five main categories of factors that will influence or affect the overall performance of a project manager. These five categories are as follows:

- Factors related to individual and personal characteristics.
- Factors related to work conditions
- Factors pertaining to nature of the project and its characteristics.
- Factors concerning the environment.
- Organizational factors

For the purpose of this study, focus will be given towards the factors of work conditions, nature of project and organizational factors. Work conditions factors as researched by Katz (1971) as well as Stewart (1967) incorporate the variables of remuneration, job satisfaction, security issues, working hours as well as available project information. The second group of factors concerning the nature of project consists of variables pertaining to project environment, project size, available project duration, project complexity, project team relationships as well as materials and resources. Factors within the organization are made up of variables concerning company size, level of power/authority and type of client. Due to its inherent nature and characteristics, measuring the success of a construction project is a complex and

complicated endeavour. Theoretically, the measure of productivity and level of quality may appear simple enough but in practice it may be very hard to replicate. Well (2001) explains that due to this complexity in measuring contractor's success, the bigger context should then be used, which is to say, a success of a contractor should be dependent on the satisfaction of the client in realizing his or her intended objectives. These objectives would normally centre on cost, time and quality.

However, Hall (1994), point out that sometimes success for one party often comes at the expense of another party. The case in point is when project management success neglects or overlooks project product success. A project may have been objectively and appropriately managed but the overall goals of the client may still have not been achieved. Kometaet et al. (1996) list criteria which may generally be used to measure and evaluate contractor performance on a project. These criteria include time, cost aesthetics, function, quality, customer satisfaction and team relations. This view is somewhat shared by Hughes (1986) who stated that the use of cost-quality-time triangle alone to measure success is too simplistic in nature and that the element of customer satisfaction should take precedence above all else. Greenberg (2000) on the other hand propose five other criteria to gauge project success, namely technical performance, excellence of execution, management and organizational elements, self-development and finally business and productivity capacity. It is therefore vital that the project manager as well as the project participants and stakeholders be aware of the different success measure in order to look for a more holistic and comprehensive approach when it comes to managing projects.

- Effective quality management is a critical factor in the successful management of building projects at the design and construction stages. Little efforts have

been made to introduce quality management programmes and schemes in the Ghanaian construction industry.

- Quality in Construction is concerned with meeting the requirement defined by the owner, designer and regulatory agencies. The responsibility of meeting these requirements lies squarely on the design consultants and contractors but these requirements are not always met.

Quality management is a systematic way of guaranteeing that organized activities happen the way they are planned. It is a management discipline concerned with preventing problems from accruing by creating the attitudes and controls that make prevention possible. Problems arising from incomplete or incorrect information are often serious and costly. They are often not discovered until the project is in the completion stage or in use. Such problems include cost and time overruns, disputes between parties, omissions, errors, ambiguities in plans and specifications, reduced life span and increased maintenance costs quality management system components include quality planning, quality assurance and quality control (Project Management Institute (PMI), 2004). The quality of a project is assessed by its conformity to a quality plan chat is designed to meet the needs of a customer. Quality assurance in a construction project entails establishing a programme that will maintain effective quality procedures for the entire duration of the construction project to prevent, correct, identify, segregate and control non-conformities whether they are procedure-related, service – related or product – related. A quality assurance programme entails taking a decision on what has to be measured and who measure it (Hughes, 1986). Quality control entails the actual measurement of the conformance of activities by the contractor to standards previously set in the quality plan.Although these processes interact and at times overlap with each

other, they comprise all activities required to ensure that the project will satisfy the quality requirements (PMI, 2004).

A quality management system is the collection of all processes, tools, techniques and subsystem that run simultaneously with a production system effectiveness, efficiency and productivity (Kometa et al., 1996). It is important to point out the quality management in the construction setting is far more difficult to achieve than it is in other industries.

2.11.1 Quality System Audits

The concept of total quality requires organisations to establish a well-structured and explicit system that identifies, documents, coordinates and maintains all the key quality related activities throughout all relevant company and site operations (PMI, 2004).The PMI (2004) defines a total quality system as the agreed companywide and plant wide operating work structure, documented in effective, integrated technical and managerial procedures, for guiding the coordinated actions of the workforce, the machines and the information of the company and plant in the best and most practical ways to ensure customer quality satisfaction and economical costs of quality (Hughes (1986). The author furtheropined thata quality audit is a methodical and autonomous evaluation to determine whether quality activities and results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable for achieving the objectives.

2.12 Project Level Quality Attributes in Construction

Project level quality can be examined in the following six area:

1. Briefing by the client
2. The design process
3. Materials and component selection
4. Project assembly on site
5. Project management activities
6. Systems to promote project quality.

2.13. Project Success Factors

Project success and failure factors were initially introduced by Hall (1994), wherehe indentified that the experience of the project manager has a relationship with the success or failure of the project. They concluded that a project manager's past experience has minimal effect on the project performance while the size of past managed project will influence the performance of the project manager. In the study to identify sources of project failureHarris and McCaffer (1995) surmised that the key causal factors of failure are the wrong choice of a project manager, unscheduled project cancellation and lack of support from top management. The authors further expanded the study on the success factors and list the following as key elements for project success:

- A realistic and precise project brief
- Efficient project implementation
- Understanding of the project environment
- Choice of implementing organization
- Clear project policies
- Strong project organization
- Selection of project team leader
- Dynamic management control and monitoring
- Reliable information and communication systems

Hall (1994) conducted a research of the main factors they are considered to affect the success of a project. These factors included organizational structure, level of power designated to the project manager and project size. The author discovered that there was a weak correlation between organizational structure and project success but evidently no relationship between the size of a project and its success. On the aspects of the failure of a project, Hughes (1986) concludes that project failure is caused by inappropriate managerial principles as well as a weak communication and delivery system. Cooke (2001) report that the critical success of a project is dependent on ten factors as follows:

- Clear project vision
- Ample support from top management
- Project schedule
- Consultations with the client
- Staff acquisition
- Technical specifications

- Client's acceptance
- Monitoring and reporting
- Communication
- Problem solving

Wells (2001) goes on further and elaborates on the factors that may improve project success, which include planning efforts during design and construction phases, a committed and objective project managers, motivation of the project team, the technical capabilities of the project manager, work and scope definition as well as control systems.

2.15 Conclusion

The construction industry is one of the more important economic activities that contribute towards the economic growth of any nation. This industry is often seen as a very important generator towards a nation's Gross Domestic Product (GDP). The success of a project is a very critical issue in the industry. Research has been vigorously done on successful project in the hopes to discover the factors that contribute towards achieving project success. Wells (2001) has listed five critical success factors for construction projects, which are namely, the efficiency of the project manager, the appropriate scheduling of activities, a systematic responsibility and monitoring approach, project supervision and finally, continues project involvement. Harris and McCaffer (1995) on the other hand has identified eight success factors of a project, entailing comprehension of objective, the organizational philosophy, management support, apt job delegation and scope, selection of project team members, sufficient allocation of resources, a practical information mechanism and a review of project planning. Cooke (2001) through their study has come up with nine project success

factors. These factors include a clear project objective, innovativeness towards technological change, community participation; priority based scheduling, finance, legal requisites, contractual ties and problem solving. It is clear that there are numerous factors that can be attributed to project success with a few factors that are naturally emphasized by various researchers. These common factors and task and activity scheduling as well as the clear comprehension of projects objectives. What is study intends to do is to extend these factors to include a vital cog in the implementation of any construction project, i.e. the project contractors. The study delves on the individual capacities of the project manager and how work environment factors may influence his job performance.

Other authors have also listed skills that a project manger should possess in influencing the success of project, namely skills pertaining to social interaction, decision-making, problem handling, adeptness in identifying opportunities and the ability to adopt managerial change. But the fact remains: a majority of projects still report poor performance even with the presence of capable project manager. This leads to the notion that individual capacity and inherent skills of the project manager alone are insufficient to guarantee project success. Therefore, the environment in which the project manager operates and practices during his project tenure should be delved into to ascertain how it influences the performance of the project manager. The work environmentin this context refers to the perception of the environment and is continuously changing from one project to another.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter basically spell out how the research was conducted. The specific methodology used to gather the data for the research, the nature of study, the study area and the population of the study are also outlined clearly. The techniques to be use in selecting the sample size, data collection tools or instruments, data analysis method and the ethical consideration of the research are also specified in this chapter.The underlying and driving context of this study was on the performance of building contractor on projects, factors do have an influence on the performance of the construction project contractor. The research model for this study was based on the relationships between identified variables in terms of work environment and contractor performance.

3.2 Research Strategies

The research adopted a survey research strategy for the study. A survey is a systematic method of collecting data from a population of interest. It tends to be quantitative in nature and aims to collect information from a sample of the population such that the results are representative of the population within a certain degree of error. The purpose of a survey is to collect quantitative information, usually through the use of a structured and standardized questionnaire measuring people's perceptions, opinions, knowledge, attitudes, behavioural intentions, and behaviour using primarily closed-ended questions.

3.3 Research Design

The study used primary data. Relevant literatures from both academic and non-academic sources were reviewed. A search was undertaken within libraries of academic institutions and documentation centres of organizations focusing on the construction sector, such as UN – HABITAT, Ministry of Roads, Public works and Housing, Building Research Centre and College of Technology Education.The information gathered provided a good base for raising research questions, and finalising the research instrument. The primary data was collected in all towns with public building project in the East Akim and New Juaben Municipalies, between August 2011 and July 2012. The data was collected in three phases: a questionnaire for the selected public, to the district assembly and municipal directors and consultancies, aimed at gathering basic information on issues of investigation, the main survey of 100 workers which researched issue relating to performance of contractors within the construction sector.

3.4. Data Collection Instruments and Procedures

There are a number of methods through which data can be collected and their appropriateness depends on many factors. These factors range from the educational background of the researcher and respondents to the subject matter under study. Data collection instrument entails a set of tools such as questionnaires, interviews, discussions and observations that the researcher uses to obtain relevant information from chosen respondents. For the study under review the study employed questionnaire.

Questionnaires are series of questions formulated by the researcher on areas which are of special interest that could help the study. The reason why the researcher used the questionnaires is that the respondents could fill the forms at their convenience. The

availability of a number of respondents in one place makes possible an economy of time and provides a high proportion of usable responses (Agyedu, 2010). Again, the use of questionnaires allowed the respondents to fill the questionnaires at their own free time.This may result in better answers and because they can consult other sources for more facts.

The researcher observed certain principles when designing the questionnaires. The questions were short, simple, straight forward and clear. Both open and closed ended questions wereused.The researcher with the help of friends distributed all the questionnaires and collected them personally.

3.5 Pilot Testing

A pilot test is evaluation of the specific questions, format, question sequence and instructions prior to use the main survey. Sample questions were giving to a number of respondents to answer pilot testing is a crucial step in conducting a survey to avoid costly errors.

3.6 Revising the Questionnaire

The results of the pilot test indicate that question needed no revision because they were not difficult to understand. They provided useful information unless there was some rationale for why everyone would respond differently to a question which may be useful. Questionnaires were administered by the researcher to consultants, building inspectors and operators and the respondents themselves to evaluate how well the questionnaire works. New and serious problems were not found.

3.7 Data Collection Procedures

The first phase of the field research, the scoping exercise, was conducted during the month of April 2014. During this phase, the researcher developed a checklist of questions to be raised and discussed with lead persons in various construction companies within the area of study. The questions included the following:

Type of project, materials in use, tools in use, nature of procurement, cost of project, persons employed, and terms of employment, health safety and productivity. The researcher then held discussions with foremen, sub-contractors, contractors and site engineers who were in charge of the various purposively sampled projects. The aim of the scoping exercise was to gather relevant information for developing and raising questions on the terms and conditions of contract for contractors in Ghana, using East Akim and New Juaben Municipal as a case study.

The output of the scoping exercise was analysed by the researcher. The information gathered was used to develop a comprehensive research instrument for the main study. It would particularly be useful in developing closed questions, and providing a pointer to the nature of performance trends within the sector. The exercise would also help in identifying public projects within the areas, where construction work was carried out or on-going, the general nature of the sector and for deciding which specific activities the main survey would focus on. At the end of the exercise some of the projects in New Juaben and surrounding suburbs, were purposively sampled for a detailed survey using a standard questionnaire. The questionnaire was administered to some of the workers. It is presented in Appendix I.

3.8 Sampling

The study limited itself to purposive sampling. Although the scoping exercise covered a number of projects within the East Akim and New Juaben Municipality, the main survey focused on New Juaben and surrounding areas. This was for a number of reasons. Among the numerous projects in the areas covered during the scoping exercise, New Juaben was found to have the most vibrant construction sector. At the same time, the scoping exercise revealed that there were a number of incomplete construction projects within New Juaben, which attracted the interest of the researcher, especially due to the number of public projects. At study site level, the researcher used a non-projects. This involved going round across the residential area looking for active construction sites. This was after the failure to develop a sampling frame due to many non-active projects. Since the concern of the survey was to gather information on the contractor performance, the non-systematic approach used in locating public projects within New Juaben and its surroundings was found to be adequate.

Within the sample of active construction site in New Juaben and surrounding areas, a number of respondents were interviewed. These respondents were mainly working on residential buildings for the New assembly workers. The respondents interviewed were mainly identified by foremen/owners of development: this was because most of those in charge of the sites were suspicious of the intentions of the research. Information gathered through questionnaires was supplemented with the key informant interviews conducted during this exercise.

3.9 Data Analysis

Data was analysed using both content analysis and Statistical Package for Social Science (SPSS) analysis based on information gathered using a checklist of issues was

developed. The columns included information on the following: sample number and zone of project, type of projects, the class of contractors, tools and equipment, nature of procurement, estimated cost, and persons employed, terms of employment, health and safety, and academic qualification of contractors. This grouping made information accessible for analysing issues of concern to the study.

The Statistical Package for Social Science (SPSS) was applied in processing information gathered using questionnaires. All of the information gathered during the survey was entered into the computer package. Once entry was complete, frequency distributions for all variables were generated to enable basic understanding and analysis. Further grouping and analysis of variable was also done using the Chi-square tool.

3.10 Follow-up survey

Analysis of the data collected during the scoping exercise and the main survey revealed a gap in my understanding of the performance of contractor's between jobs in formal and informally contracted construction projects. In order to throw lighton this issue a follow-up survey was undertaken in October, 2014. A total of 10 projects were visited, the original plan was to cover 15 projects, but four respondents from some projects failed to cooperate. On each site visited one public member, one from the assembly and the consultants was interviewed. The respondents were asked some questions, as outlined in the questionnaire in Appendix III.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

In the previous chapter the method of data analysis was discussed. In this chapter the various analyses will be dealt with in their various respective headings as mentioned in the objectives. Tables and graphs were used to present the results. The chi-square was employed for further investigation. The statistical Package for Social Scientists (SPSS) version20.00 and the spreadsheet were used to explore and analyse the data. The SPSS was employed in the tables, cross tabulations as well as Chi-square test.

4.1 Educational Background

The number of distribution of highest education attained by both inspectors and consultants in the New Juabengis shown in Table 4.1.

Table 4.1: Educational Background of Respondents

Education Attained	**Inspectors**		**Consultants**	
	Number	**Percentage**	**Number**	**Percentage**
Basic	13	10.8	14	12.3
Sec/Tech	67	55.8	77	67.5
Tertiary	40	33.3	23	20.2
Others	-	-	-	-
Total	120	100	114	100

Source: Field Work, 2014

From Table 1, it can be seen that majority of the respondents have secondary/technical educational background in both inspectors of public building and consultancy sectors; a percentage of 55.8% and 67.5% respectively. The least was Basic education for both sectors. It is interesting that apart from the listed educational background, there was no other background for both sectors.

4.2. Working Experience

The next background information is the number of years the respondents had worked. For the sake of this research, the years have been structured into four categories. Table 2 shows the distribution.

Table 4.2: Years of Working as public building inspector and consultant

	Inspectors		Consultants	
Years of Working	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Less than 4 years	27	22.5	22	19.3
4-6 years	64	53.3	57	50
7-9 years	25	20.8	30	26.3
above 9 years	4	3.4	5	4.4
Total	120	100	114	100

Source: Field Work, 2014

From Table 2, it is clear that majorityof the respondents had served in their various sectors for 4-6 years. Thus for the inspectors and the consultants the percentages are 53.3% and 50% respectively. Only few had worked in the respective industry for a

period of above 9 years representing a percentage of 3.4 and 4.4 for the inspectors of public building and the consultants respectively.

4.3. Profession

The next background information is the profession of the respondents before entering into the construction sector in the New Juaben and East Akim District. In order to make the work for easy visualization and understanding, the results for both inspectors of public building and the consultants are given in Table 3.

Table 4.3: Profession of respondents before entering into Construction

	Inspectors		Consultants	
Profession	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Builder	46	38.3	42	36.8
Constructor	39	32.5	45	39.5
Engineer	15	12.5	21	18.4
Supervisor	16	13.3	6	5.3
Architect	4	3.3	-	-
Total	120	100	114	100

Source: Field Work, 2014

From Table 4.3, it can be observed that majority (38.3%) of the inspectors in building were Builder whilst few (3.3%) were Architect before entering into the inspection industry. With respect to the consultancy, majority (39.5%) of them were Constructors and few (5.3%) were supervisors before entering the field of consultancy. It is

interesting to see that there was no Architect in the sectors before becoming consultants.

Table 4.4:Factors that affect Performance of Building Contractors on Project

Factors affecting the Performance of Contractors	Weighted mean	Rank
Management Supervision	2.7	7
Technical Knowledge	3.02	1
Site Organization	2.85	2
Quality Of Workmanship	2.81	4
Site safety Proceeding	2.76	6
Occupants Safety	2.71	7
Project Documentation	2.70	8
Time Of Completion	2.79	5
Contractors Relationship	2.84	3
Casualty at Work	2.68	9

Source: Field Work, 2014

Out of the responses from the data collected from the questionnaires, "technical knowledge" received mean response of 3.02 which is ranked between *good* and *very good*but closer to *good*. However, nine factors received mean responses of between 2.68 and 2.85, which is ranked between *average* and *good* but closer to *good*, these are "site organization", "contractors relationship", "quality of workmanship", "time of completion", "site safety proceeding", "occupants safety", "project documentation" and "casualty at work".

"Casualty at work" received the least mean response of 2.68. Overall, the factor which had the highest mean response of 3.02 is "technical knowledge".

This revelation corroborate with the findings of Wells (2001) who argued that the factors that may improve project success, which include planning efforts during design and construction phases, a committed and objective project managers, motivation of the project team, the technical capabilities of the project manager, work and scope definition as well as control systems. However, a research conducted by Hall (1994) and Cooke (2001) are at variance to this findings. Hall (1994) maintained that the main factors they are considered to affect the success of a project. These factors included organizational structure, level of power designated to the project manager and project size whilst Cooke (2001) also reported that the critical success of a project is dependent on ten factors comprising; clear project vision, ample support from top management, project schedule, consultations with the client, staff acquisition, technical specifications, client's acceptance, monitoring and reporting, communication and problem solving. This indicates that there are many factors that affect project performance depending on the circumstances and location.

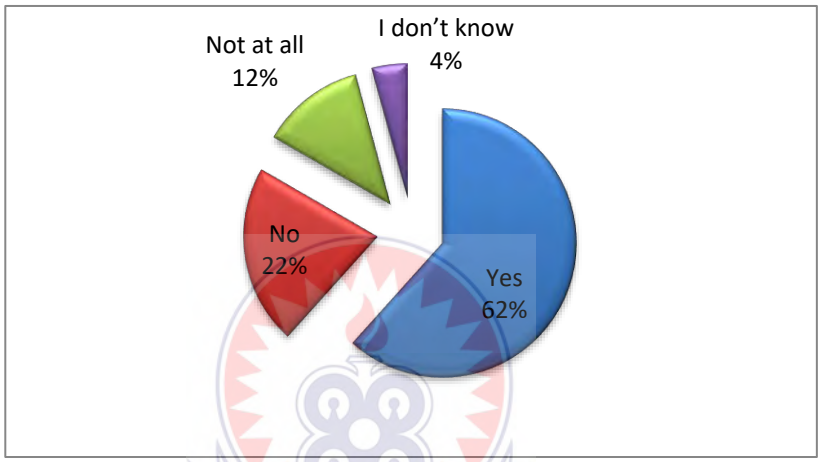
4.4. General Contractors Performance

The study found that the performance of contractors is measured by team work among members in construction, interaction with other team members, ability of constructors to establish effective communication in line for positive impact, ability of contractors come out with alternative method, contractors' reaction to problem involving workers and environment, and Procedures of contractors. These are presented below;

4.4.1. Team work

One of the ways by which beneficiaries in the construction industry perceive the contractors performance is team work. The chart in figure 1 shows how beneficiaries perceive contractors in terms of field work.

Figure 4.1. A pie chart showing how team work is practised in the construction firm



From figure 4.1, it can be seen that majority (62%) of the beneficiaries of public building have seen that contractors in the construction firm said that there is team work among contractors whilst few (4%) of the respondents do not know whether there is team work among the contractors.

4.4.2. Interaction with other team members

Interaction with other team members is one of the measurements of contractor's performance in the construction industry in the New Juabeng Municipality. Table 4.5 shows how contractor's interactions with other team members professionally have positive performance on projects.

Table 4.5: Contractors interaction with team members

Response	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	78	65.0	65.0	65.0
No	31	25.8	25.8	90.8
Not At All	11	9.2	9.2	100.0
Total	120	100.0	100.0	

Source: Field Work, 2014

From Table 4.5, it can be seen that majority (65%) of the responses was Yes whilst few(9.2%) of the responses was Not At All to the fact that contractors' interaction with other team members professionally have positive performance on projects.

4.4.3 Communication

The other ways by which contractors' performance can be assessed in the construction industry is by the way they establish effective communication line for positive impact. Figure 2 gives the distribution for the responses from the respondents.

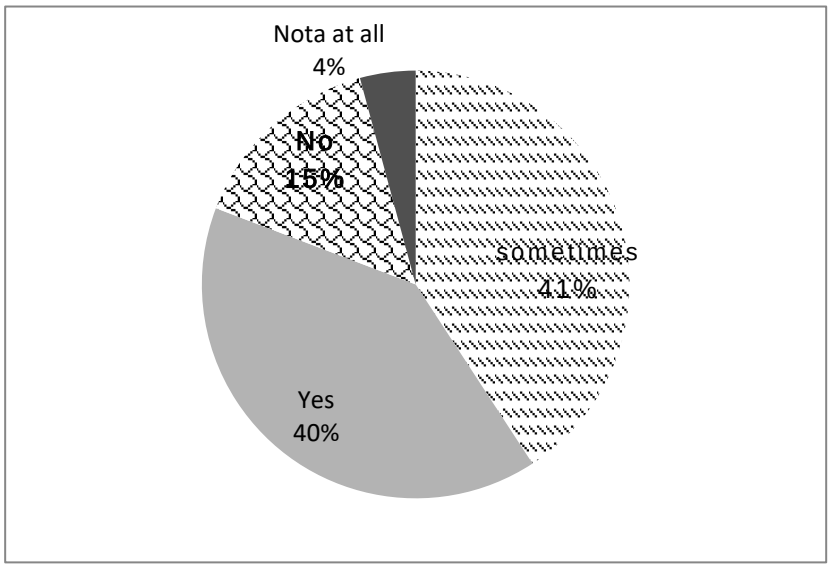


Figure 4.2: Effective Communications among Contractors

From Figure 4.2, it can be seen that majority (41%) of the contractors sometimes have communication among themselves whilst only 4% of the responses have seen contractors not having communication with themselves. It is interesting to see that the percentage of respondents who have seen effective communication among contractors and those that have sometimes seen effective communication among contractors is almost equal, a percentage of 40% and 41% respectively.

4.4.4. Contractors Ability to Come out With Alternative Methods of Construction

The next measure of the performance is the contractor's ability to come out with alternative methods of construction or value engineering measures as proposed. Table 4.6 gives the distribution of the responses.

Table 4.6: Contractors Ability to Come out With Alternative Methods of Construction

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Always	18	15.0	15.0	15.0
Yes	46	38.3	38.3	53.3
Sometimes	46	38.3	38.3	91.7
No	10	8.3	8.3	100.0
I don't Know	-	-		
Total	120	100.0	100.0	

Source: Field Work, 2014

From Table 4.6, it can be seen the percentage of responses for Yes and Sometimes, are the majority(38.3%) and are equal whilst those who have seen contractors not coming

out of alternative methods or values engineering measures proposed are few(8.3%). It is interesting to see that there was no response for "I don't know".

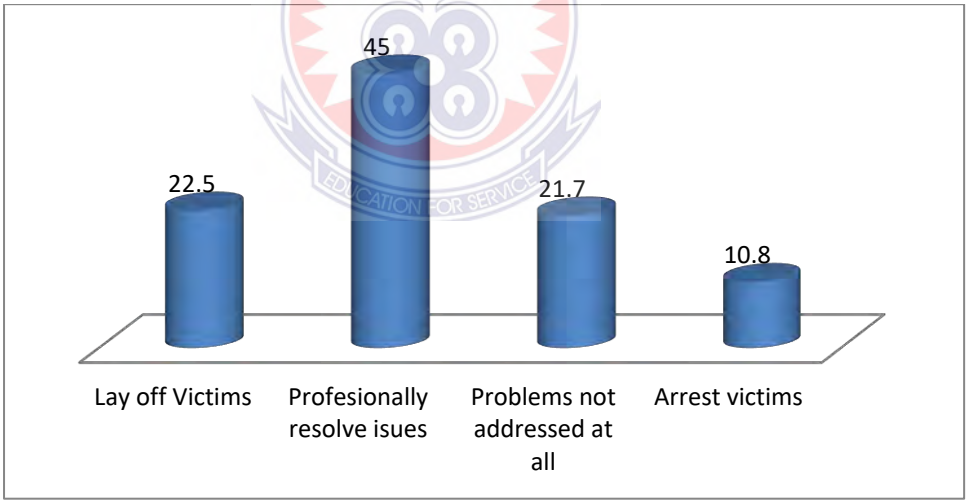
4.4.5 Contractors Reaction to Problem involving Workers.

Contractors reaction towards problems solving involving workers and the environment are identified as

1. Lay-off victims
2. Professionally resolve issues
3. Problem not addressed at all and
4. Arrest Victims

The response is illustrated with a Bar Chart in Figure 3

Figure 4.3: Contractors Reaction towards Problems



From Figure 3, it can be observed that majority (45%) of the contractors react to problem solving by professionally resolving issues whilst only few(10.8%) of the contractors arrest victims as ameans of reaction towards problems in the industry.

4.4.6 Assessment of site Procedures of Contractors

In conclusion to the general performance of contractors in the new JuabenDistrict assembly, is the assessment of the site procedures. Table 4.7 shows the distribution.

Table 4.4.7: Assessment of site Procedures of Contractors

Assessment of site procedure of contractors	Weighted Mean	Rank
Satisfactory	1.2	2
Very Good	1.36	1
Good	0.9	4
Average	0.42	3
Not Encouraging	0.11	5

Source: Field Work, 2014

Out of the five assessment of site procedures of contractors in Table 4.7, two out of the five received mean responses of between 1.2 and 1.36. These assessments are "satisfactory and very good". The other three assessments also received mean responses of between 0.9 and 0.42; these are "good, average and not encouraging". This implies that the highest weighted mean is 1.36 which is very good and the assessment of site procedures of contractors with least weighted mean is good which 0.9 is. The response therefore shows that the site procedures of contractors are very good.

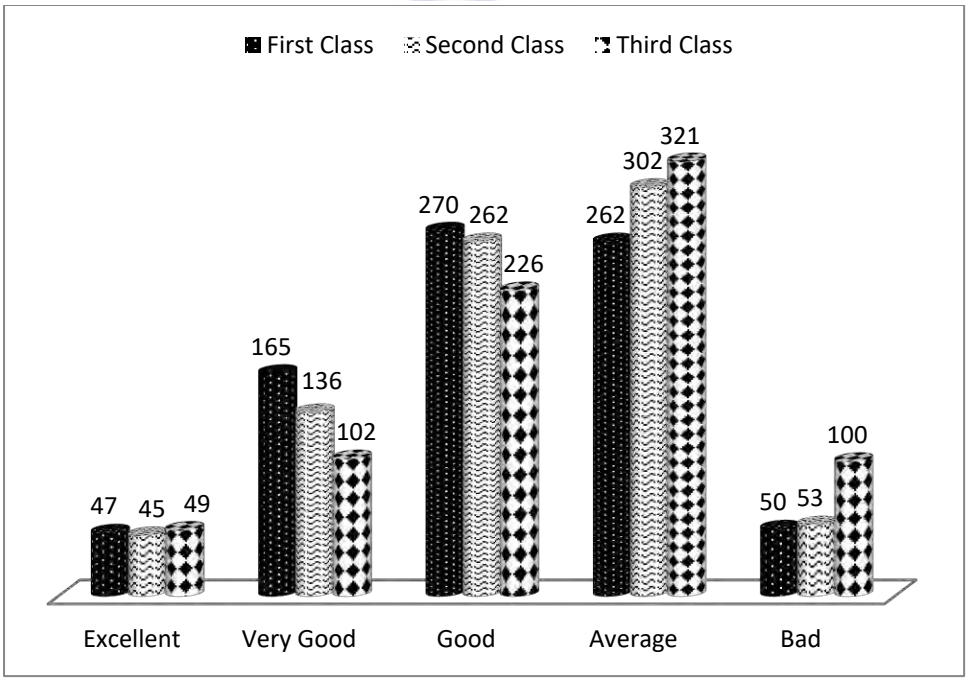
Whist the findings agrees with a number of research findings, a considerable number of research findings also do not agree with the findings. First, the findings agree with a research conducted by Gido and Clements (2003) that showed that a project manager co-ordinates the activities of every project team member in ensuring they realize their intended task within an appropriate time frame, which in turn will contribute towards a more efficacious project team.The findings are also in consonance with Cooke (2001) who argued that the performance of the project manager hinges on his ability to control

and monitor the processes and system which make up the project. The author concluded based on his research that traditionally the success of a project indirectly infers to the capable performance of the project manager with emphasis on the achievement of time, cost and quality objectives. However, this research finding disagree with Greenberg (2000) who explained that job performance is related to the willingness and openness to try and achieve new aspects of the job which in turn will bring about an increase in the individual's productivity.

4.4 Performances of classes of Contractors

The final objective of this study is to find out if there is any significant difference in the performance of the classes of contractors. The classes of the contractors are the 1st Class Contractor, 2nd Class Contractor and the 3rd class Contractors. For the sake of the objectives set forth, the total number of responses for all item in each of the Class of contractors are summarised and the result is presented in Figure 4.4.

Figure 4.4: Performances of Classes of Contractors



In Figure 4.4, it can be observed that the number of responses for first class contractors is Excellent, Very good and good in that order. First class is the highest followed by second class contractors and the least is the third class contractors. For the average and the bad, the highest is the third class followed by second class and the third class contractors.

It is interesting to see that, in general the first class contractor's performance is the best and third class contractorsare the least. This might be due to the adequacy of resources at the disposal of fist class contractors. First class contractors undertake large projects and therefore qualified staff and adequate resources are available to them. They also make good use of modern techniques, technology and best practices which are all lacking in third class contractors. It is therefore not surprising to see the performance of first class contractors as the best.

4.5.1 Relationship between performance of the classes of contractors

In order to find if there is a significant relationship between the performances of the classes of contractors, the chi-square was used to test for the significance of the relationship. Table 4.8 gives the Chi-square test for the distribution.

Table 4.8: Chi-Square Tests For the performance of contractors

Test	Value	d.f	Asymp. Sig. (2-sided)
Pearson Chi-Square	49.278	8	0.0001
Likelihood Ratio	48.390	8	0.0001
N of Valid Cases	2394		

Source: Field Work, 2014

From Table 4.8, a chi-square significance value of 0.0001lessalpha value of 0.05 signifies a highly significant relationship exist between the performance of the three Classes of contractors. This can be explained that the performance of the first class, second class and the third class contractors varies and that their performances are not the same.The final objective of the study is to find out if there is any significant different in the performance of the classes of contractors. Basically, there are three classes of contractors; the first class contactors, the second class contractors and the third class contractors.

Results from analysis in Chapter four, Table 8, indicates, a chi-square significance value of 0.0001 less alpha value of 0.05 signifies a highly significance relationship between the performance of the three Classes of contractors. This can be explained that the performance of the first class, second class and the third class contractors varies and that their performances are not the same in terms of the factors considered for the study. A further investigation to know which class of contractors performs well in the building industry observed that in general the first class contractor's performance is the best with third class contractors being the least.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, conclusions and recommendations of the study. The aim of this research is to investigate into the performance of contractors in the building sector as a means of identifying areas of improvement in project execution.

5.2 Conclusion

The study revealed that the factors that are used to assess the performance of contractors include; management supervision, technical knowledge, site organization, quality of workmanship and site safety proceeding. Other factors affecting contractors' performance include occupants' safety, project documentation, time of completion, contractors' relationship, casualty at work. The responses indicate that the only factor among all the factors in Ghana which is "Technical Knowledge" is good. The implication is that contractors are only concern about their technical knowledge they have gained to enable them perform better during the execution of projects avoiding other areas of factors which can also help them improve on their performance on building projects.

The study also brought to the known that the performance of contractors is measured by team work among members in construction, interaction with other team members, ability of constructors to establish effective communication in line for positive impact,

ability of contractors come out with alternative method, contractors' reaction to problem involving workers and environment, and procedures of contractors. However, the results showed that most contractors are perceived to have improved in their performance on building projects because of team work. Group of workers are involved in activities and so every one of the member get themselves involved in the project and they bring out their best in them. The respondents further indicated that sometimes most contractors had effective communication among contractors and workers.

It is indicated from the findings that contractors' interaction with team members on site is quite encouraging. The analysis shows that not all but rather only 50% of contractors are able to think outside their area of study to bring out innovative ideas or methods which will speed up building projects and increase the performance of contractors. The result of the analysis indicates that not up to 50% of contractors professionally resolve issues involving workers. The analysis shows that site procedures of contractors are very good; however some of the site procedures of contractors are not encouraging at all. The responds shows that the performances of contractors is usually based on their classes, this implies that the higher the class the higher their performance on building projects.

5.3Recommendation

On the bases of the above conclusions the researcher came out with the following suggestions;

1. That contractors should look at other factors which will improve their performance on building projects and practice them so that they will not be one-sided contractors.

2. It is suggested that effective and more serious group should be motivated once a while by contractors either in kind or in cash this appreciating their effort or giving them bonus on the extra they do.

3. It is suggested that all contractors in Ghana must communicate effectively when discerning information to workers and also allow workers to add up to knowledge during the execution of building projects.

4. It is recommended that contractors in Ghana should widen up their scope of researching more on their area of profession through the internet, reading of journals, attending more educative seminars so as to enable them gain knowledge in the profession, this will also enhance them gain the ability to create new ideas or methods needed for the building project.

5. It is suggested that contractors should at least visit a psychologist or a counsellor once a year so he/she will be psychologically and emotionally strong to solve the problems of the workers in a professional way to prevent any conflict of interest among workers.

6. It is recommended that contractors who do not follow procedures, rules and regulations must refrain from those actions and add value to them so that it will also have great impact on the performance of building project.

7. It is suggested that D3 to D4 contractors should upgrade their educational status, add more or buy heavy machinery and equipment and develop themselves so

that they can also match up to the D1 and D2 contractors in terms of performance on building projects.

REFERENCE

Abidali, A.F. (1990) A methodology for predicting company failure in the construction industry, PhD thesis, Loughborough University of Technology, Loughborough.

Agyedu, G.O., Donkor, F, &Obeng, S. (2010). *Teach Yourself Research Methods*, University press, KNUST, Kumasi, Ghana.

Altman, E.I. (1968) Financial ratios, discriminant analysis, and prediction of corporate bankruptcy, Journal of Finance, 23(4), 589-610.

Bakker, B. N.,Nurphy, D. C. and Fisher, D. (1983)Factors affecting project success: project management Handbook, New York: Van Nostrand Reinhold.

Balcaen, S. and Ooghe, H. (2006) 35 years of studies on business failure: an overview of the classic statistical methodologies and their related problems, The British Accounting Review, 38(1), 63-93.

Chan, A.P.C. and Chan A.P.L. (2004). Key performance indicators for measuring construction success," Benchmarking: An International Journal 11(2), 203-321.

Chan, D. W. M. and Kumaraswamy, M. M. (2002). Compressing construction durations: lessons learned from Hong Kong building projects, International Journal of Project Management, Vol.20, PP. 23-35

Chan, J.K.W., Tam, C.M. and Cheung, R.K.C. (2005) Construction firms at the crossroads in Hong Kong, Engineering, Construction and Architectural Management, 12(2), 111-124.

Cooke, D (2001), The Real Success factors on projects International Journal of Project Management, 14:pp. 185 – 190.

Daily, C. M., & Dalton, D. R. (1994). Bankruptcy and corporate governance: The impact of board composition and structure.

Dissanayaka S. M. and Kumaraswamy M. M., (1999). Comparing contributors to time and cost performance in building projects, Building and Environment, Vol. 34, PP. 31- 42

Edum-Fotwe, F., Price, A. and Thorpe, A. (1996) A review of financial ratio tools for predicting contractor insolvency, 14(3), 189-198.

Gido, J and Clement P. (2003) Successful Project Management. United States: Thompson South Western.

Greenberg, J (2000), Behaviour in Organisation, New York: Prentice Hall.

Grünberg, T. (2004). Performance improvement: Towards a method for finding and prioritizing potential performance improvement areas in manufacturing operations," International Journal of Productivity Management 53(1), 52-71.

Hall, G. (1994) Factors distinguishing survivors from failures amongst small firms in the UK construction sector, *Journal of Management Studies*, 31(5),737-760.

Harris, F. and McCaffer, R. (1995) *Modern Construction Management*. Blackwell Science, Oxford.

Hillegeist, S. A., Keating, E. K., Cram, D. P. and Lundstedt, K. G. (2004), "Assessing the Probability of Bankruptcy", *Review of Accounting Studies,* vol. 9, no. 1, pp. 5-34.

Hong Kong, Engineering, Construction and Architectural Management, 12(2), 111-124

Huang, Y. (2009) Prediction of contractor default probability using structural models of credit risk: an empirical investigation, *Construction Management and Economics,* 27(6), 581- 596.

Hughes, M. W. (1986), why project fails? The Effects of Ignoring the Obvious, Industry Engineering, 18: pp 18-64.

James M.W. W. and S. Thomas N. H. K. (2010). Company Failure in the Construction Industry: A Critical Review and a Future Research Agenda. Project and Organisation Management I. PP 1-17

Katz, R. (1971), Skills of an effective Administrator, Harvard University Press Kluver Academic Publishers, Netherlands.

Kivrak, S. and Arslan, G. (2008) Factors causing construction company failure, *Building Abroad*, vol. 23. 297-305.

Kometa, S. T., Olomolaiye, P. O. and Harris, F. C. (1996). A Review of Client Generated Risks to project Consultants, International Journal of project management, 14: pp 273-279.

Mlinga, R.S. and Wells, J. (2002). Collaboration between Formal and Informal Enterprises in the Construction Sector in Tanzania." *Habitat International* 26, no. 2, pp. 269-80.

Mohamed, S. (1996). Benchmarking and improving construction productivity," Benchmarking for Quality Management & Technology 3(3), 50-58.

Morris P. W. G. and Hough, G. H. (1987), the Anatomy of a major project: A Study of the Reality of project management New York: Wiley & Sons.

Mustapha, F. H. and Naoun, S. (1997) Factor Influencing the Effectiveness of Construction site managers, International Journal of project management, 16: pp. 1-8.

Ohlson, J. A. (1980) Financial ratios and the probability of bankruptcy, *Accounting Research,* 18(1), 109-131.

Ooghe, H. and Verbaere, E. (1985) Predicting business failure on the basis of accounting data: The Belgian experience, *The International Journal of Accounting*, 9(2), 19-44.

Pekuri, A., Haapasalo, A. and Herrala, M. (2011). Productivity and Performance Management: Managerial Practices in the Construction Industry,*International Journal of Performance Measurement, 2011, Vol. 1, 39-58.*

Project Management Institute (PMI). (2004). A guide to the project management body of knowledge (PMBOK Guide) (3rd ed.). Newtown Square, PA, USA: Project Management Institute (PMI).

Russell, J.S. and Jaselskis, E.J. (1992) Predicting construction contractor failure prior to contract award, *Journal of Construction Engineering and Management ASCE*, 118(4), 791-811.

Stewartt, R (1967) Manager and their job, New York Penjuin Press.

Taffler, R.J. (1983). The assessment of company solvency and performance using a statistical model, *Accounting and Business Research*, 13(52), 295-307.

Tamari, M. (1966). Financial ratios as a means of forecasting bankruptcy, *Management International Review*, 4, 15-21.

Tangen, S. (2005). Demystifying productivity and performance," International Journal of Productivity and Performance Management 54(1), 34-46.

Thomas, S. N, Palaneeswaran,, E. and Kumaraswamy, M. M. (2002), A dynamic e-Reporting system for contractors performance appraisal, Advances in Engineering Software, Vol. 33, PP. 339-349UNEP, 1996).

Wells, J. (2001). Construction Management and Economics.

Yang, Z.R., James, H. and Packer, A. (1997) The failure prediction of UK private construction companies. *In COBRA Construction and Building Research Conference of The Royal Institution of Chartered Surveyors*, September 10-12, University of Portsmouth, UK.

APPENDIX 1

QUESTIONNAIRE FOR CONSULTANT

THESE QUESTIONNAIRE DESIGN FOR CONSULTANTS TO ASSESS THE PERFORMANCE OF A SELECTED PROJECT CONTRACTORS

Please tick in the appropriate box below.

1. Gender; Male ☐ Female ☐

2. Age; Under 20 years ☐

21- 30 years ☐

41- 50 years ☐

51- 60 years ☐

61 and above ☐

3. Highest education attained: Basic ☐ Secondary/Technical ☐ Tertiary ☐

Others please specify……..

4. For how long has he/she been working as contractor?

Less than a year ☐ 1- 3yrs ☐ 4 - 6 years ☐ 7 – 9 years ☐ 9 and above ☐

5. What was his/her profession before entering into construction?

Builder ☐ Contractor ☐ Engineer ☐ Supervisor ☐ Architect ☐

6. For how long have you been working as stated in question 5?

Less than a year ☐ 3 – 5 years ☐ 6 – 8 years ☐ – 11 years ☐

12 and above ☐

Rate the classes of contractors according to their performance in the following areas.

First Class Contractors

Please tick in the appropriate box below.

	Excellent	Very good	Good	Average	Bad
7. Safe guards and security performances	☐	☐	☐	☐	☐
8. Conforming to contract requirement	☐	☐	☐	☐	☐
9. Timely completion	☐	☐	☐	☐	☐
10. Adequacy of contraction's quality assurance	☐	☐	☐	☐	☐
11. Accomplishment of contract objectives	☐	☐	☐	☐	☐
12. Technical Knowledge	☐	☐	☐	☐	☐
13. Right documentation	☐	☐	☐	☐	☐

Second Class Contractors

Please tick in the appropriate box below

	Excellent	Very good	Good	Average	Bad
14. Safe guards and security performances	☐	☐	☐	☐	☐
15. Conforming to contract requirement	☐	☐	☐	☐	☐
16. Timely completion	☐	☐	☐	☐	☐
17. Adequacy of contraction's quality assurance	☐	☐	☐	☐	☐
18. Accomplishment of contract objectives	☐	☐	☐	☐	☐
19. Technical Knowledge	☐	☐	☐	☐	☐
20. Right documentation	☐	☐	☐	☐	☐

Third Class Contractors

Please tick in the appropriate box below

	Excellent	Very good	Good	Average	Bad
21. Safe guards and security performances	☐	☐	☐	☐	☐
22. Conforming to contract requirement	☐	☐	☐	☐	☐
23. Timely completion	☐	☐	☐	☐	☐
24. Adequacy of contraction's quality assurance	☐	☐	☐	☐	☐
25. Accomplishment of contract objectives	☐	☐	☐	☐	☐
26. Technical Knowledge	☐	☐	☐	☐	☐
27. Right documentation	☐	☐	☐	☐	☐

APPENDIX 2

QUESTIONNAIRES

THESE QUESTIONNAIRES WERE DESIGN FOR MUNICIPAL AND ASSEMBLY BUILDING DEPARTMENT AS THE COMMUNITY REPRESENTATIVE TO ASSESS THE PERFORMANCE OF SELECTED PUBLIC PROJECT CONTRACTORS.

Please tick in the appropriate box below. ☐

1. Gender; Male Female ☐

2. Age; Under 20 years ☐

21- 30 years ☐

41- 50 years ☐

51- 60 years ☐

61 and above ☐

3. Highest education attained; Basic ☐ Secondary/Technical ☐ Tertiary ☐

Others please specify……..

4. For how long has he/she been working as contractor?

Less than 4years ☐ 4 - 6 years ☐ 7 – 9 years ☐ above 9 ☐

5. What was his/her profession before entering into construction?

Builder ☐ Contractor ☐ Engineer ☐ Supervisor ☐ Architect ☐

6. For how long have you been working as stated in question 5?

Less than a year ☐ 3 – 5 years ☐ 6 – 8 years ☐ – 11 years ☐

12 and above ☐

On the average how would you rate the performance of building contractors on project?

Please tick in the appropriate box below.

	Excellent	Very good	Good	Average	Bad
7. Management supervision	☐	☐	☐	☐	☐
8. Technical knowledge	☐	☐	☐	☐	☐
9. Site organisation	☐	☐	☐	☐	☐
10. Quality of workmanship	☐	☐	☐	☐	☐
11. Site safety proceeding	☐	☐	☐	☐	☐
12. Occupant safety	☐	☐	☐	☐	☐
13. Project documentation	☐	☐	☐	☐	☐
14. Time of completion	☐	☐	☐	☐	☐
15. Contractor relationship	☐	☐	☐	☐	☐
16. Casualty at work	☐	☐	☐	☐	☐

17. Do most projects have negative effect on existing or adjacent facilities on site?

Sometimes ☐ Most at times ☐ Always ☐ Not at all ☐

18. Is team work participation practised in construction?

Yes ☐ No ☐ Not at all ☐ I do not know ☐

19. Does contractor's interaction with other team members professionally have positive performance on projects?

Yes ☐ No ☐ Not at all ☐

20. Do contractors establish effective communication line for positive impact?

Sometimes ☐ Yes ☐ No ☐

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION – KUMASI

ASSESSING CONTRACTORS PERFORMANCE,

ON THE BUILDING PROJECT;

A CASE STUDY OF

NEW JUABEN MUNICIPALITY

BY

DANIEL OWUSU

AUGUST, 2014