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PERFORMANCE EVALUATION OF BUILDING CONTRACTORS ON PUBLIC PROJECTS: A CASE STUDY OF BOLGATANGA MUNICIPALITY

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A DISSERTATION IN THE DEPARTMENT OF BUILDING CONSTRUCTION, FACULTY OF TECHNICAL AND VOCATIONAL EDUCATION, SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES, UNIVERSITY OF EDUCATION, WINNEBA KUMASI CAMPUS IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE AWARD OF THE MASTER OF TECHNOLOGY CONSTRUCTION DEGREE

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DECLARATION

STUDENT'S DECLARATION

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

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SIGNATURE:…….

DATE:……..

SUPERVISOR'S DECLARATION

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

SUPERVISOR: DR. KHENI A. NONGIBA

SIGNATURE:……..

DATE:……..

DEDICATION

Dedicated to my wife Mrs. Awinsom Janet A-ugboba and my lovely children Awinsom Anne Adeliyine, Awinsom Blessing Anamkina, Awinsom Vanessa Ayinbora and Awinsom Jairus Naba-Apusiyine for their immerse moral support and encouragement throughout the programme.

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ABSTRACT

The performance of contractors is essential to the success of construction projects. Enhancing the performance of construction firms will significantly contribute to the productivity of the construction industry. The aim of the study was to examine performance of building contractors on public projects in the Bolgatanga Municipality. The study adopted a descriptive survey approach involving the design and administration of survey questionnaires. The respondents' for the study was 38 consultants using census approach. The findings of the study revealed that consultants evaluate the performance of contractors on public projects in the municipality. It was revealed that the criteria/factors considered in the performance evaluation of building contractors were quality, time, and cost. The main aspects of quality considered by the consultants included; level of skills of contractor's personnel, establishing quality audit (inspections), and adequate equipment holding. The critical aspect of time considered by the consultants included; adequate time estimate, project planning and scheduling and the type of project design. The important aspects of cost considered by the consultants included fluctuations and variations in project execution, financial standing, and delay in project execution. Based on the aforementioned findings, the study recommended that building contractors and consultants should consistently organize intensive and effective education and training programmes for their workers to upgrade their technical knowledge and professional expertise to suit modern architectural requirements for quality delivery of projects. There is also the need to ensure timely completion of projects and cost reduction to clients.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The construction sector is an important sector of the economy of many nations contributing 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 homes and offices (UNEP, 1996). The UNEP further observes that the industry consumes one-sixth to 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 in a more holistic and comprehensive approach when it comes to managing the resources. According to Omar (2006), 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. 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 poor performance of the construction sector. 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 reduces their risk. The following anecdotal evidences illustrate the difficulty faced by construction firms in this industry.

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

The informal construction sector has been defined as comprising "unregistered and unprotected individuals and small enterprises that supply labour and contributes in other ways to the output of the construction sector". These small enterprises and individuals are mainly engaged in housing and building construction activity. But it is now recognized that they also supply labour to contractors engaged in large projects in other sections of the industry (Mlinga and Wells, 2002). Many of these informal construction sectors lack the necessary operational skills to back up their rather resourced industries leading to sometimes project failures. Contractors 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 the day-to-day operations of the business, supported by the best practices of general construction. Rope and McLin (2005) have found that the best-of-class contractors have fine-tuned their organizations by aligning

people, processes, and technology to produce results that are better than the industry average.

1.2 Statement of the Problem

Construction projects are extremely complex and dynamic in nature and for this reason contractors' performance demand critical assessment. According to Rwelamila and Servile (1994), contractor performance is measured based on quality, time, and cost and these often fall short of client's satisfaction in Ghana construction industry. The poor performance is a challenging and recurring issue for construction industries worldwide. One of the main reasons of these project failures seems to be the inability of contractors to provide a high level of service quality to the project team. The poor performance of contractors in many instances has often led to some projects suffering delays and abandonment thereby inflicting financial pain and delay of occupancy for clients. Despite the aforementioned issues relating to the performance of construction projects, little attention has been given by researchers, particularly in developing countries such as Ghana.

1.3 Aims and Objectives of the Study

The aim of this research is to evaluate the performance of building contractors on public projects in the Bolgatanga Municipality in Upper East Region as a means of enhancing the performance evaluation of construction firms.

The following specific objectives will help accomplish the aim of the research:

- to identify the criteria used to evaluate the performance of contractors on public projects in the Bolgatanga Municipality

- to find out the extent to which consultants evaluate the performance of contractors ‘on public projects in the study area; and.
- to make recommendations for improving the performance of contractors in the Bolgatanga Municipality.

1.4 Research Questions

The study is guided by the following research questions:

- What criteria can be used to evaluate the performance of contractors on public projects in the Bolgatanga Municipality?
- To what extent do consultants evaluate the performance of contractors ‘on public projects?
- What recommendations would be made to improve performance of building contractors on public projects in the studied area?

1.5 Significance of the Study

The study will help create adequate awareness on the part of clients to be involved in monitoring and assessing the quality and acceptability of the work of contractors. The study will help unearth skills that a project manager 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. The research will be beneficial to Government since most public structures are funded by the state, non – governmental organizations (NGO’s) philanthropies who share the goal of improving the infrastructural growth of the country and lastly, it will better the lives of the ordinary citizenry.

1.6 Delimitations and Limitations

This section of the study would talk about the following sub headings delimitations of the study and limitations of the study.

1.6.1 Delimitations of the Study

The research is limited to the performance assessment of building contractors on public structures in the Bolgatanga Municipality of the Upper East Region of Ghana.

1.6.2 Limitations of the Study

The study was confronted with a number of constraints and challenges. Some respondents were unwilling to provide responses to the questionnaire which posed as a major challenge. They were not comfortable to give out information on their places of work. The researcher solved this problem by assuring them of the confidentiality of the information they provided. Time was another constraint of the study since a lot of time was spent retrieving the questionnaires administered to respondents. However upon frequent visits all the questionnaires sent were retrieved for analysis.

1.7 Organization of the Study

The study was organized into five chapters. The first chapter which is the general introduction covers the background of the study, followed by problem statement, aims and objectives of the study, research questions, delimitations and limitations of the study and organization of the study. Chapter two, reviewed extensive related empirical literature on the subject matter. Chapter three covered the methodology for the study. It comprises the research population, sample size and

sampling techniques, research design, sources of data and data collection instruments, data analysis method, questionnaire design and measures of variables.

The data presentation and analysis are contained in chapter four. Chapter five which is the last chapter contains the summary of major findings, conclusions, recommendations, suggestions for further research and finally the references and appendix.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents a review of related literature on the performance of building contractors on public buildings, the building process, and the roles of project managers in meeting client's satisfaction. The chapter concludes with a summary of the literature. This review examines satisfaction measures based on contractor perception and literature relating to project participants' performance, business performance, project performance, external factors and contractor characteristics. Several potential attributes are derived from contractors worldwide, namely: performance (direct attributes) and contractor characteristics (indirect attributes) that possibly influence contractor satisfaction levels.

2.2 Performance Evaluation in the Construction Industry

Contractor performance can be 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 satisfaction of the project consultant (if any). According to Rwelamila and Servile (l994), 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 (Smallwood, 2000). Although this traditional approach has been perpetuated by tertiary construction education, clients, 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 (Allen, 2001). 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 processes and how contractors' performance relates to procurement issues. Performance has been described as “the degree of achievement of certain effort or undertaking”. It relates to the prescribed goals or objectives which form the project parameters (Chitkara, 2005).

From project management perspective, it is all about meeting or exceeding stake holders‟ needs and expectations from a project. It invariably involves placing consideration on three major project elements i.e. time, cost and quality (Project Management Institute [PMI], (2004). It has been pointed out that, in today’s highly competitive and uncertain business environment, the client who is the major stakeholder, want speedier delivery of their project with early start of construction work, certainty of performance in terms of cost, time and quality, value for money for their investment, minimal exposure to risk and early confirmation of design Formoso et al. (2005). Although many tend to focus on the elements of cost, quality and time, all others are also important parameters of project performance. By the needs of the clients, it is prudent that at every stage of the project delivery, some kind of checks is done to ascertain discrepancies. Thus performance measurement as defined by Neely et al. (1995), as the set of metrics used to quantify both the efficiency and effectiveness of action.

Alwi et al. (2002) indicated that performance measurement is a management tool which has the power to focus attention on desired behaviour and results. This means that, measuring performance allows an organisation to objectively determine what is working and what is not. In order to measure performance or calculate the effects of any given change on the construction process, one must first determine the

appropriate Key Performance Indicators (KPIs) to focus on to measure their impact on project delivery. However, Ofori and Chan (2001) have indicated that measuring performance is a complex problem. This is because every contractor is unique in terms of the manner in which he follows design specifications, method of delivery, administration, and composition of team members. Performance measurement is a good exercise to undertake in that. Stevens (1996) asserted that performance measurements are needed to track, forecast, and ultimately control the success of a project. Despite the importance of performance measurement, it has not been widely implemented in construction companies and information on the performance of the construction industry as a whole is also scarce (Dayana et al., 2005).

For example, in Nigeria according to Amu, et al. (2005), the untimely completion of construction projects has been found to be a major setback in the construction industry. Earlier, Odusami and Olusanya (2000) have indicated that projects executed in Lagos metropolis experienced an average delay of 51% of planned duration for most projects. Therefore an improved contractor performance can lead to increased client satisfaction, improvement in reputation and competitiveness in the market (Ogunsemi and Jagboro, 2006). However contractor performance is critical to the success of any construction project which is the determinant of cost, time and quality standard because the contractor converts the design into practical reality (Xiao and Proverbs, 2003). Having stated this, the study further discussed the link between construction success and performance.

2.2.1 Public Construction Projects and Performance of Building Contractors

Success of construction projects depends mainly on success of performance. Many previous researches had studied performance of construction projects.

Dissanayaka and Kumaraswamy (1999) remarked that one of the principal reasons for the construction industry's poor performance has been attributed to the inappropriateness of the chosen procurement system. Reichelt and Lyneis (1999) remarked three important structures underlying the dynamics 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. Kumaraswamy et al., (2002) identified 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. 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.

Cheung et al. (2004) studied the project performance related to project managers. He remarked that development of a Web-based construction Project Performance Monitoring System (PPMS) can assist project managers in exercising construction project performance indicators and can help senior project management, project directors, project managers, etc., in monitoring and assessing project performance. Pheng and Chuan (2006) stated that while project management is only one of the many criteria upon which project performance is contingent, it is also arguably the most significant as people formulating the processes and systems who deliver the projects. Ugwu and Haupt (2007) stated that an adequate understanding and knowledge of performance are desirable for archiving managerial goals such as improvement of institutional transformations, and efficient decision making in design,

specification and construction, at various project-level interfaces, using appropriate decision-support tools.

Ling et al. (2007) investigated project management (PM) practices adopted by Singaporean construction firms. It was determined that the performance level of their projects in China; identifies PM practices that led to better performance; and recommended key PM practices that could be adopted by foreign construction firms in China to improve project performance. Having briefly discussed the link between construction projects and performance it is appropriate to highlight some of the problems associated with performance in the construction industry.

2.2.2 Challenges associated with Performance of Projects in Construction Industry

The failure of any construction project is mainly related to the problems and failure in performance. Moreover, there are many reasons and factors which attribute to such problem. Long et al. (2004) stated that the construction industry performance problems in developing economies can be classified in three layers: problems of shortages or inadequacies in industry infrastructure (mainly supply of resources), problems caused by clients and consultants and problems caused by contractor incompetence/inadequacies. Okuwoga (1998) identified that the performance problem is related to poor budgetary and time control. Long et al. (2004) remarked that performance problems arise in large construction projects due to many reasons such as: incompetent designers/contractors, poor estimation and change management, social and technological issues, site related issues and improper techniques and tools. Navon (2005) stated that the main performance problem can be divided into two groups: (a) unrealistic target setting (i.e., planning) or (b) causes originating from the

actual construction (in many cases the causes for deviation originate from both sources).

Samson and Lema (2002) found that the traditional performance measurement systems have problems because of large and complex amount of information with absence of approaches to assist decision maker understand, organize and use such information to manage organisational performance. Navon (2005) remarked that traditional project performance control is usually generic (e.g., cost control techniques). It relies on manual data collection, which means that it is done at low frequency (normally once a month) and quite some time after the controlled event occurred (i.e., not in real-time). Moreover, manual data collection normally gives low-quality data. Ling et al. (2007) remarked that architectural, engineering and construction (AEC) firms may face difficulties managing construction projects performance in China because they are unfamiliar with this new operating environment. Kim et al. (2008) stated that international construction projects performance is affected by more complex and dynamic factors than domestic projects; frequently being exposed to serious external uncertainties such as political, economic, social, and cultural risks, as well as internal risks from within the project. To be able to discuss problems associated with contractors‟ performance there is the need to identify performance indicators that are used to evaluate contractors' performance.

2.2.3 Performance of Tendering Contractors

The lowest bidder is one whose bid contains the lowest total amount when compared with other bids submitted for the same work. There are definite risks associated with the low bid award system. A number of studies have shown that the lowest bid does not guarantee the lowest cost. Also, the lowest bidder is subject to the

winner's curse; the contractor with the lowest bid is the one most likely to have underestimated the cost of the project (Capen et al., 1971). Lowest bidders are required to complete a construction project that no one else was willing to do at that price (Wolfsetter, 1996). It is known that many construction projects exceed the contract cost. Thus, using the bid price (lowest bid) solely for contractor selection cannot guarantee the lowest total construction cost.

In addition, construction bid evaluation is one of the primary challenges for the public sector. Its purpose is to choose the best qualified contractor who can accomplish the project on time, within budget, and with the quality specified in the contract documents. In finding a best qualified contractor, two terms, evaluation and selection, are commonly referred to in the literature. Holt et al. (1998) defined contractor evaluation as the process of investigating or measuring contractor attributes, and contractor selection as the process of aggregating the results of evaluation to identify an optimum choice. If a contractor submits a bid that is significantly lower than the client's estimate and the other bidders, it is difficult to understand how that contractor could complete the job profitably and efficiently. The European Union defines those bids as Abnormally Low Tenders (DGIII, 1999). In that regard the EU introduced legislation to allow public sector clients the option of awarding a construction project using either the traditional low bid or the Economically Most Advantageous Tender (EMAT). The legislation allowed public sector clients to reduce their exposure to some of the adverse effects of abnormally low tenders (ALT), including unsatisfactory quality through the desire to reduce construction costs (Winch, 2000); and predatory pricing and unfair competition that distorts the market, negatively affecting the other bidders (Alexanderson and Hulten, 2006).

Some researchers have identified a long list of factors that can influence a contractor's decision to bid and the price they submit (Chua and Li, 2000; Fayek, Ghoshal and Abou Rizk, 1999). In addition to the many factors involved in determining a price, there are a number of reasons that the bid submitted could be considered abnormally low. Imprecise and ambiguous contract documentation including incomplete drawings may cause a contractor to make a serious omission in calculating costs. Errors may also arise due to insufficient time to prepare the bid. One of the most concerning reasons is the practice of a contractor intentionally submitting an artificially low bid in anticipation of making their profit through change orders and claims (Zack and James, 1993). Some bidders carefully review the bid documents searching for mistakes and ambiguity in areas that could lead to change orders and claims during the project (Dowle and DeStephanis, 1990). These bidders can then use this knowledge to submit a lower bid with the expectation of recouping the money later. This practice can be equated to a gambit strategy in chess: making a small sacrifice early to setup up the opponent to be in a vulnerable position later (Crowley and Hancher, 1995). In all cases, the abnormally low bid is not reflective of the final contract cost or the hidden costs incurred by the client when dealing with numerous change orders and claims. One of the remedies that these researchers have suggested is the use of median bid to select contractors. The median bid is more reflective of the market value than the mean because it is not influenced by outlying high and low bids. For example, it is common for contractors to submit a "courtesy" bid that is high with no expectation of winning the tender to remain in good standing with the owner. Using the postulate that the median bid reflects the fair market value, one could expect that if all of the bidders are tightly clustered around the median, then they have a general consensus of the complexity and the costs of the project.

2.3 Factors to be Considered in Evaluating Contractors' Performance

Factors that affect contractors' performance have been identified by a number of researchers and are discussed below;

2.3.1 Prequalification of Building Contractors

Prequalification, according to Hughes et al. (2006), is the primary mechanism for short-listing contractors. This means that prequalification serves as means of identifying bidders who are most capable of doing the work. One of the main functions of prequalification is to reduce the risks of non-performance from contractors which construction clients are likely to experience (Hughes et al., 2006). Writing in the same vein other writers such as MlingaLema and Price (1999) among others identified some key principles or factors that are used for prequalifying building contractors. These principles are presented here as: technical capability; financial capacity; quality management; and occupational health safety experience licence /classification.

2.3.2 Assessing the Technical Capacity of the Building Contractors

Technical capacity is broadly defined as having recent previous experience and demonstrated capability relevant to a monetary threshold in one or more of the prescribed field of work types (Brown and Adams, 2002). To meet the requirements of technical capability, Adams (2002) asserted that contractor(s) must provide information on areas of work that includes: expertise or specialisation, past experience, staffing levels, and management and administration capabilities including the use of sub-contractors and consultants and plant and equipment resources, evidence of appropriate qualifications including current licenses to practice in a particular field. Again, indication from Brown and Adams (2002) seem to suggest that

at the tender stage, contractors are required to nominate specified personnel or a team, such that their qualifications and experiences proposed for the particular job tendered for. Implications from Brown et al. (2002) are that with the required technical personnel on projects there is likelihood of good performance of contractors.

2.3.3 Evaluating the Financial Capacity of the Building Contractors

The financial capability of the contractor for funding of a project is very important and crucial to the success of a project. An indication from the Ghanaian Public Procurement Act 663 of 2003 seems to suggest that, the financial good standing of a contractor is an indication of good performance in terms of project delivery. Writing in similar vein, Costa and Formoso (2004) suggested that the submission of bank statement from reputable financial institution serves as a guide for contractors to work promptly and satisfactorily.

2.3.4 Evaluating the Quality Delivery of Building Construction Projects

Numerous indications and complaints of low quality of work have been made by consumers /users through media and authorities which lead to decreased quality of life in uncomfortable and unfriendly environments (Egan, 1998). Poor quality control at site, common problems such as project delay and possible economic losses are constant dilemma for the client. Late delivery of work will often result in late occupancy of the building, and this brings about inadequacy of public facilities. As a result, end-users will not be happy if the end product does not meet their requirement in terms of functionality and quality of service. In essence, successful stakeholders‟

performance has to be measured and managed in order to ensure their continual participation and co-operation in a construction project (Fitzgrerald et al., 1991).

2.3.5 Quality Assurance Plan

In its best practices guide, the Office of Federal Procurement Policy (OFPP, 1997) offers the following description of a Quality Assurance Plan (QAP) and its relationship to contractor surveillance: The QAP specifies how government quality assurance surveillance of the contract tasks set forth in the Performance Work Statements (PWS) will occur. It is needed to ensure the government receives the services for which it contracted, and pays only for the services it receives. Accordingly, the Q AF provides the method to determine if the contractor meets the performance standards in the PWS. The QAP provides how and when surveillance, in accordance with the PWS, will be performed. Since the QAF is intended to measure performance against standards in the PWS, these interdependent documents must be coordinated, and both should be included as part of the solicitation. OFP also asserts: "The QAP should focus on the quality, quantity, and timeliness etc. of the product to be delivered by the contractor, and not on the steps required or procedures used to provide the product or service." In other words, it is the outputs, or deliverables, that are of concern to the customer. How they are produced should be left up to the contractor (OFPP, 1997).

2.3.6 Quality Management of Building Projects

Design quality is a concept that depends on individual consultant ability to identify and discuss the client's requirements and at the same time to act professionally as a technical specialist, Griffiths and Goodchild (2004).The need to

exert a special effort to improve quality in the design process is fully recognized. Quality in the design phase is a primary consideration in the construction industry. If it is not well managed, the requirements of the client will be not 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 occurring 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 (PMI 2004).

The quality of a project is assessed by its conformity to a quality plan that 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 nonconformities 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 measures it Kagan (1989). 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 of 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

(Evans and Lindsay, 1996). It is important to point out that quality management in the construction setting is far more difficult to achieve than it is in other industries (Tam and Olusanya, 2000).

2.3.7 Evaluating the Occupational health and safety Policies of the Building Contractors

The occupational health and safety (OHS) is seen to be concerned with physical and mental well-being of the individual at a place of work (Danso, 2011). In the construction industry, the physical and mental well-being of the individual at the construction site appears to be affected through accident. Construction accident is defined to include all minor injuries through fatalities (Danso, 2011). Literature available on this subject indicates that the construction industry all over the world is among the leading cases of accidents. For example, the ILO‟s global estimates for 2003 indicate that each year at least 60,000 fatal accidents occur on construction sites around the world or one fatal accident in every ten minutes. In Ghana, despite strategic importance of the Ghanaian construction industry, the industry is fraught with occupational health and safety (OHS) issues. For example, it was reported that the construction industry, recorded 902 accidents cases comprising 56 fatalities in 2000 and 846 non-fatal accidents (Danso, 2011). In that same report, Kumasi (the regional capital of Ashanti Region) alone recorded 124 construction fatalities from 1999 to 2004. In attempting to find the causes of this breach in Occupational Health and Safety issues, a number of factors are discussed and researched, among them are first-aid equipment, safe drinking water, sanitary facilities, provision of personal protection equipment (PPE) and training of construction workers on safety procedures, were the measures needed for addressing the occupational health and safety issues confronting the industry. Understanding gathered from other researchers

on Occupational Health and Safety issues suggest that contractors who provide welfare facilities and safety equipment to their workers on sites during construction are likely to perform satisfactory and deliver the project on time.

2.3.8 Evaluating the Previous Experience of the Building Contractors

Danso (2011) stated that previous experience of the tenderer needs to be assessed in relation to the fields of expertise required achieving the intended outcomes of the project. Recent experience is more valuable than historic experience. The company's previous experience in technical areas comparable to the tendered project, the scale of past projects and the role undertaken within those projects should be considered. Information required should include a list of relevant projects undertaken and for each project provide: description and relevance to the tendered project; role of the tenderer, project cost; and duration of project and performance of the contractor on the projects involved. The tendering organization's performance in completing past projects to the quality standards required, time performance, within budget, claims history, project management, and product value need to be assessed. Extension to the contract completion date and claims for variations also give an indication of performance capability. Similarly, the satisfaction of previous clients regarding the management of the project and project outcome provide useful subjective information on performance of the tenderer.

2.3.9 Evaluating the License and Classification of the Building Contractors

"Classification" means the area of operation that a contractor can engage in based on the technical experience and resources. In Ghana, building contractors are classified as D1K1, D2K2, D3K3 and D4K4 according to their resource levels,

experience and capabilities. On the international level, regulatory policies relating to control of land use, technical requirement, building permits and inspections, registration of contractors and professionals, wages and remunerations, classification of contractors, foreign equity limitation, transfer offends between projects and lack of recognition of professional qualification have all impacted on the competitiveness and performance of contractors operating abroad (Chan et al., 2001). Nationally, politicians have voiced their concerns regarding regulation of the industry and the economy in general. In UK parliamentary debate, a case was cited of a small construction firm who had to turn down major contracts because it could not secure insurance cover for accidents, which were extremely costly. This had resulted in loss of employment for the workforce (Chan et al., 2001). In many developing countries, after obtaining license and registering to operate as a construction business, contractors who wish to engage themselves on government sponsored projects are further required to register with appropriate government departments and then be categorized into financial groups. In Tanzania, contractors are categorised into five groups, and within each group contractors are categorised in seven financial classes (Neely and Adams, 2001). In Ghana, contractors are classified under four financial classes as indicated earlier. Contractors are required to obtained certificate from Ministry of Water Resources, Works and Housing before they can tender for government projects. The classification system is justified on the basis that construction product is a social good, so effort should be made to select the most efficient contractor; and that the client (this case the government) needs protection from unscrupulous contractors. Construction clients all over the world, including private clients in developing countries, have employed these well-researched procedures in judging the competence of contractors. Furthermore, professionals such

as architects, engineers and quantity surveyors take responsibility (letter of assurance) and bear the liability for their action in each process. The question is why a classification system which could damage the very small contractors whom efforts are being made to develop.

2.3.10 Evaluating the Programme of work of the Building Contractors

The clause 17 of the Ghanaian conditions of contract and the Article of Agreement of 1996 (Pink Form) indicates, contractor having taken possession of site is expected to regularly and diligently proceed with the works and complete them. It is evident from clause 17 that failure of the contractor to regularly and diligently proceed with the works may lead to the determination of his employment by the employer. Allowing projects to be awarded based solely on one criterion as in lowest bid has inherent flaws. Criteria such as time and quality are negated. Also, the low bid award system encourages unqualified bidders (Carr, 2005). As part of requirements for engaging contractors, they are expected to submit programme of work indicating the various activities that would be performed and when they would be performed which cumulatively give the possible project completion date. An incompetent contractor is most likely to submit a more unreliable and unrealistic programme of work.

2.3.11 Evaluating the Project Completion Time of the Building Contractors

Chan and Kumaraswamy (2002) have indicated that project completion time is the actual construction time at practical completion. Indications from Aitah (1988); Adams et al., (2002) suggest that selection of contractors using the lowest bidder as unique criteria can sometimes leads to the selection of incompetent contractors,

excessive claims by the contractor against the client, disputes and litigation between two parties, bid shopping and other problems. All these are potential ingredients or elements for project time increase (Adams et al., 2002).

2.3.12 Evaluating the Project final Cost

This is the total construction cost at practical completion (Chan, 2001). Researchers such as Carr (2005); Amu et al. (2005) have shown that the lowest bid does not guarantee the lowest cost. Lowest bid is normally used to ensure competitive bidding. Its purpose is to choose the best qualified contractor who can accomplish the project on time, within budget, and with the quality specified in the contract documents. However, one of the most concerning reasons is the practice of a contractor intentionally submitting an artificially low bid in anticipation of making their profit through variation orders and claims (Zack and James, 1993). Some bidders carefully review the bid documents searching for mistakes and ambiguity in areas that could lead to variation orders and claims during the project (Dowle and De Stephanis, 1990). The project final cost can therefore be used to assess the performance of contractors when other factors that can lead to cost increase such as fluctuation, variations by client or consultant, etc remain the same.

2.3.13 Assessing Client satisfaction of the Public Building Projects

This is defined as how satisfied the client was with the process and outcome of the project and the service received from contractors and professionals, using a client survey of satisfaction. Client satisfaction, according to Ugwuand Haupt (2007), is one of the major factors used in determining the performances of contractors. A

satisfactory performance of a contractor means that complaints by client are virtually minimal (Hancher as cited in Carr, 2005;).

2.3.14 Evaluating the Organizational Structure of the Building Construction Firm

Costa and Formoso (2004) showed how job tasks are formally divided, grouped and coordinated within an organisation and suggested how managers/leaders need to focus on those parameters when designing an organisational structure, Work Specialisation, Departmentalisation, Chain of Command, Span of Control, Centralisation/Decentralisation, and Formalisation. These elements, according to Boateng et al. (2008), provide solutions to many key questions in organisational structure design. The scope of a contracting firm encompasses not only the operating models internal to the organisation, but also its collaborators, customers, and environmental factors. Benchmarking on the other hand and according to Ofori, (1991), is a management tool that can help supplier organisations to understand how their performance measures up to their peers and drive improvement up to „world class" standards. It is also an important aid to clients, helping them to compare their own internal processes with those of similar organisations, in order to identify priorities for improvement.

Iyer and Jha, (2005) appear to suggest that the Key Performance Indicators have been particularly useful to organisations with unsophisticated performance measurement systems. Some organisations have used the indicators selectively to measure aspects that are important to their business and to their clients, and to supplement their own performance measurement systems. Again, for Xiao-Hua et al. (2006) the Key Performance Indicators are not a substitute for more comprehensive

performance measurement systems and benchmarking, which can provide more rigorous assessments. They do, however, enable organisations to gauge their performance in relation to other organisations. The indicators are less suitable as tools to manage projects, suppliers or companies or as criteria for evaluating tenders or in evaluating the success of a construction project in reducing the operational costs of a building.

Affirmation from Ugwu and Haupt (2007) suggest that benchmarking is a management technique to improve business performance. It can be used to compare the performance of the organisation as a client with that of similar organisations, or the performance of different suppliers in the same industry. For construction projects it can be used to: assess performance objectively expose areas where improvement is needed to identify other organisations with processes resulting in superior performance, with a view to their adoption test whether improvement programmes have been successful.

2.4. Evaluating the Warranty Period of the Building Contractors

Two types of warranties are currently used in construction according to Winch (2000) and these warranties are (i) materials and workmanship warranties, and (ii) performance warranties. These warranty types differ by the degree to which the contractor is liable for product failure. In a materials-and-workmanship warranty, the contractor is responsible only for defects that result from poor materials and workmanship (Long et al., 2004). On the other hand, a contractor assumes greater responsibility for the product in a performance warranty and is responsible for the product meeting certain agreed upon performance thresholds. In either case, contractor liability should be properly balanced with the contractor's control of the

design, construction and long-term maintenance of the structure throughout the warranty period. The warranted work is measurable or quantifiable and is under control of the contractor.

Performance warranty specifications can be written that allow the contractor to provide design input and choose the optimal design. Failure threshold levels or material and workmanship performance measures for the warranted work should be able to be explicitly defined in the specification and measured in the field (Herbsman, and Ellis, 1992; Brown and Adams, 2002). Contractor is responsible for maintaining the end product for the warranty period, including any necessary routine or emergency maintenance, as well as any required remedial actions. The contractor is also required to perform any required remedial actions, preventive maintenance, and emergency maintenance necessary for the length of the warranty period. Contactors are bound to the projects within the warranty period. Early failure because of the contractors bad performance will be corrected at the contractor's cost during the warranty period. An increase in contract disputes and litigation can also be expected due to the difficulty in identifying the real reason for a failure during the warranty period. It has been observed by many researchers such as Alexanderson and Hultén (2006) that contractors who perform badly do a lot of remedial work during the warranty period. We can therefore infer that the amount of remedial work done by a contractor is an indication of the performance of the contractor during the execution or construction period. The number of calls made to the contractor during the warranty period is also an indication of the quality of work done by the contractor and subsequently performance of the contractor during the construction period. Within the warranty period, the contractor bears any cost of maintenance work due to failures resulting from improper materials, inferior workmanship or defective design for

which the contractor is responsible. Any maintenance work incurred within the warranty period would translate to savings to the state agency or the client if no defects are identified during the period. Within the warranty period, the maintenance work depends on the type of required remedial actions when a failure occurs. Most government agencies require contractors to follow a standard protocol of remedial actions whenever failures happen.

2.5 Cooperation and Business Relationship

Traditionally the construction industry characterized by adversarial relationships, the lack of cooperation among project participants and the fact that construction companies and clients focus mainly on the reduction of project cost and neglect the value, are some reasons for the poor performance of construction projects. Relationships between clients and contractors in construction projects are often adversarial. Traditional contracts, but also more integrated forms of project delivery as design-build, are characterized by low trust and poor communication (Cameron and Quinn, 2002; Anvuur et al., 2006). Aiming at increasing efficiency and quality in construction, many clients have taken initiatives to improve cooperation with contractor organizations by promoting partnering arrangements. Moreover, expectations between partners about future cooperation create higher levels of trust among partners. A contractor who performs satisfactorily is likely to receive better cooperation from the client. This means that existence of cooperation between the client and the contractor is an indication of good performance by the contractor.

2.6 Empirical Studies on Contractor Performance in Ghana

These areas would cover: Contractor performance studies in Ghana, monitoring contractor performance, clients' involvement in monitoring contractors performance, the capacity of the building contractor to technically manage change and procurement related issues.

2.6.1 Contractor Performance Studies in Ghana

The quality of performance and negative perceptions of Ghanaian Contractors has become a great concern to the Government and general public Taskforce Report (2007). In this regard, a five person taskforce was therefore set up by the Ministry of Finance and Economic Planning (MOFEP) on October 10, 2007 to study the situation, make recommendations and submit its findings. The Taskforce Report recommended a rating and ranking scheme to contractors to encourage them to strive for excellence. The Report also proposed an Award Scheme for contractors which they believe would immensely improve the construction industry in Ghana. This will subsequently remove the negative perception of local contractors and enable them to compete favourably with international contractors. Also, Owusu-Tawiah (2009) identified two main factors affecting contractor performance in Ghana. The two factors were Financial and Managerial Capacities of the firm. Under the financial factors Owusu-Tawiah (1999) mentioned that contractor's financial stability in terms of access to credit was questionable and that has gone a long way to affect their performance over the years. Again under the managerial capacities he identified site management practices, lack of technical expertise among others as factors influencing contractor performance in Ghana. Furthermore, (Boateng, Danso, Frimpong–Manso and Mensah, 2008; Danso, 2011) investigated into factors affecting the various classes of

contractors in Ghanaian construction industry. They identified qualified staff, employee development, organisational structure, equipment holding, labour relations, site management practice, communication, health and safety practices, client satisfaction, access to finance, risk management, among others as factors affecting contractor performance in Ghana.

2.6.2 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 requirements of the organization. The technical requirements should be narrowly 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 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. 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 agree and be held accountable to provide comprehensive documentation of the project that is found to be acceptable by both the managers as well as the users of the system. The amount of post-acceptance technical support that may be required should be agreed upon in advance and the contractor should provide evidence of capability to provide such support at reasonable cost. In tandem with a capable contractor, the skills of the project leader and his or her technical representative are critical to success. The contract officer and Contracting Officer's Technical Representative (COTR) should be

well trained to carry out their roles in monitoring contractor performance. Measurable performance objectives 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 measurable output objectives. The Contracting Officer should ensure that the contract provisions are clear and enforceable.

Frame (1994, pp. 237) suggests there are two principal aspects to contract monitoring. The first "entails regular reviews of progress" and the second "entails looking at whether the contractor is achieving predetermined milestones effectively." On their face, these appear to be opposite sides of the same coin, a difference without a distinction. Frame 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 deliverables be scheduled so infrequently as to result in lengthy periods between reviews of incremental components.

2.6.3 The Capacity of the Building Contractor to Technically Manage Change

However, beyond the deliverables specified in the PWS, the QAP should address and the project Leader should be held accountable for configuration and change-order management. The COTR should advise the Project Leader and be responsible for technical and cost consultations with the contractor. The Project Leader should be held accountable for clear and complete documentation of user needs, and the COTR should be accountable for clear, effective, and complete translation of those needs into technical specifications. Frame (1994) points out that pressure often arise to 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, changes generally do increase costs. Frame 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."

Indeed, change is inevitable and Clemmer (l995) suggests that "change management" is contradictory at times. He says: Change can't be managed. Change can be ignored, resisted, responded to, capitalized on, and created. But it can't 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 we are toward that end, it is important that the prospective users be represented in the contract monitoring process through a User Acceptance Team (UAT). 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 rollout of each component. Traditionally, user acceptance has been considered to follow completion of projects. As described by Frame (1994, p.238). 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. This determination frequently occurs in conjunction with tests of the deliverable to see whether it meets specifications.

Many structural failures have been the consequence of poor technical research and knowledge. As technical awareness gets better, errors are becoming by far the major cause of known structural collapses, mainly in technologically advanced countries. An error in this situation is a gross error or mistake, not a negligible computation error or construction divergence. Collapse of buildings is due to poor

conceptual and architectural layout. This is related to irregular and unsymmetrical layout of buildings in plan and in elevation. These situations result in buildings that have eccentric lateral force resisting systems, resulting in them experiencing significant tensional forces, for which they are not designed. A soft floor is one with considerable less lateral stiffness than the floor above it. Column failures due to excessive horizontal forces imposed on them by infill masonry walls. This is due to inadequate shear strength of columns to resist horizontal forces imposed on them as a result of column and infill wall moving separately under earthquake action.

- Column failures as a result of the captive column syndrome (also called the short column syndrome). This is due to an amplification of the shear force .imposed on a column as a result of it being attached to a partial storey height wall on its side. Such walls are normally masonry infill walls this is linked to the large spacing of ties (steel rings), and the wrong approach to anchorage and curtailment of steel bars. This is also due to the fact that column ties are not allowed to continue through the beam-column joint.
- Poor lateral bracing of buildings and structures. Lateral cross-bracing must be provided such that the combined moment capacity of these columns is enough to resist any imposed lateral loads.
- Bearing capacity failure! This is the result of the provision of inadequate foundation. This is normally the result of foundations being designed considering vertical loads only. No horizontal load, vertical load and moment interaction is taken into account in assessing the bearing capacity of the foundation.

  Furthermore, foundations are generally not tied together.

- Liquefaction failure. This is one failure that is easily noticed; entire buildings are precariously tilted to one side, or even flat on their backs. This is the result of buildings being built on saturated loose silty-to-sandy soils.

The frustration faced by such experts is summed up in a statement by a New Zealand Earthquake Engineer who was part of a reconnaissance trip to Indonesia after the 2009 Magnitude 7.6 Padang Earthquake. He gives a clarion call for professionals in the building industry, to in all humility, accept that there is a need to change the way we design and build.

Many building owners and architects are of a mistaken opinion that it is sufficient to include engineers in the design process only after the architectural work is completed. This is a bad approach that has serious consequences, especially in seismic design. In many cases, even if the structure is designable, it results in significant additional costs. For example, many seismic codes penalize unsymmetrical buildings by increasing the forces they are to be designed for; this can lead to astronomical increases in cost. As one may put it, "even the cleverest calculations and detailed design (structural and geotechnical - emphasis mine) cannot compensate for errors and defects in the conceptual seismic design of structural and non-structural elements.

It is therefore important that close collaboration between the architect, engineer and the contractors start from the earliest possible stage. This ensures good building design, guarantees structural safety, reduces vulnerability, and limit costs. By doing so, all partners contribute with different, yet indispensable, expertise. The architect deals primarily with the aesthetic and functional design, the engineer produces a safe, efficient and economical structure and the contractor produce quality structure, in the interest of the building owner. British Codes like BS 8110 that are

used for design in Ghana do not include seismic provisions. Interestingly, these codes are being withdrawn to be replaced by the Euro code. The seismic provisions portion of the Euro-code, i.e., Euro-code 8, is considered to be one of the best modern day seismic codes. The author is of the view that the euro code is particularly relevant for Ghana, since it was developed taking into account different kinds of construction all over Europe, and would be a good starting point for developing a seismic code for the country. Its adoption, of course, with relevant changes as required by Ghana's unique situation, would also not be a bad alternative. The euro code unlike seismic codes for countries such as the US, Canada and New Zealand allows the use of masonry-in filled frames for the construction of new buildings in seismically active regions. This is a particularly important form of construction in many developing countries including Ghana, so adopting a code that bans this form of construction altogether would be a real problem. Other seismic codes that could be helpful to the code developers are the Indian Code, the Nepalese Code and the Australian Code. The international standards organization also has the ISO 3010 code, however, this code just lays down a procedure for seismic design; it does not give firm values for the different variables involved.

Moreover, in a developing country such as Ghana, the fight to create a society that is resilient to earthquakes is a tall order. It must be fought on all fronts: public policy, effective regulation and enforcement, mass public education, and the design and construction of earthquake-resistant structures. The latter has everything to do with professionals involved in the building and construction industry. These groups of people are respondents who are supposed to be on the frontline of the battle. They must therefore lead the charge in the fight against this canker by putting their own

house in order; this will put them in a good position to help other groups put their act together Allotey, as cited in Yasmis et al. (2001).

2.6.4 Clients' Involvement in Monitoring Contractors Performance

However, a client's involvement in monitoring contractors' performance has often led to many failures. , Problems often occur at the customer acceptance stage ... Customers may complain that the deliverable does not satisfy all of 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 burial. 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. After all, it is they who will be left to work the systems long after the contractors have departed. The simple fact is that no Project Leader or COTR can be as fully prepared as Clemmer suggests so as to deal with change as it affects the users themselves. Matsushita (1994) points out that

'The core of management is the art of mobilizing and pulling together the 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' Deller (1998) points out that some organizations use integrated project teams (IPTs) that are "charged with managing

application development while assuring the efficiency of existing ones." He notes that IPTs are a good approach to use in many instance, 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 judgment of its users.

To the degree that proven COTS components are used, user acceptance problems can be minimized. Special care should be taken to apply user scrutiny to customizations applied by the contractor. Each digression from COTS 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. Customizations 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 methods include:

- 100-Percent Inspection - As the most appropriate method for infrequent tasks or tasks with stringent performance requirements, e.g. where safety or health is a concern.
- Random Sampling - For recurring tasks that are too expensive to be monitored in every occurrence.
- Periodic Inspection - Sometimes called "planned sampling," this method relies upon a predetermined 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.

Notwithstanding OFPP's assertions, it might be argued, in effect, that hundred percent inspections is the only true alternative in the real world. The only real issue 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 hundred percent inspection and the customer- complaint method. Sooner or later, the cows will come home to roost, as Yogi (Berra) might say. As Deller explains and asserts: Too many agencies have units that provide program evaluation, but their tools are applied only after the program generates results. What is needed is a lifecycle activity that begins with defining the functional requirements and stays with the program through final deployment. 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. As Clemmer (1995) 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 inherent parts of the contractor monitoring process, rather than as a post project-acceptance activity. In that regard, Petrillo (1998) 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 Reichelt (1999) asserts, "Any contract performance is to one degree or another subjective." 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 issues 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 issues 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. For a generic discussion of E-forms, Ambur (1999) Opine that the performance objectives of each component of the project should be rendered in terms of user satisfaction measures in intelligent, electronic forms (E-forms). In addition to user satisfaction, as identified by DTIC, 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.

2.6.5 Procurement Related Issues

Procurement systems and related issues are important as they affect, among other, contractual relationships, the development of mutual goals, the allocation of risk, and ultimately, provide the framework within which projects are executed Dreger (1996). During research conducted by Smallwood and Rwelamila (2000) among general contractors (OCs) 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 is separated from construction;
- The incidence of lump sum contracting is increasing; and

- Contractors' expertise is not included in design.

2.8 The Clients' Perceptions Regarding the Performance of Building Contractors on Public Projects

The section would comprise of the following sub heading.

2.8.1 Customer Satisfaction

Research conducted in the USA by Cooke (2001) among a range of electrical contractor customers developed a customer satisfaction model. 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 workers 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. Staffs who are knowledgeable of 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 conducted during the research indicated safety to be the most important quality dimension, followed by project management and contractor/customer relationship. The prepared/skilled workforce and cost dimensions

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 place less importance on cost issues 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, Marsh (1999) adopts a different approach. He maintains customers have two requirements for any service or product namely needs and wants. The needs, referred to as the hard issues, are the items which the product must fulfill, 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 the degree of importance of project parameters according to architects (Smallwood and Rwelamila, 2000). Based upon an importance index, client satisfaction was ranked first, followed by project quality, project cost and project schedule.

According to Allen (2001), a Construction Clients Forum survey conducted in the UK in the first quarter of 2001 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 defects' was achieved on handover on 10% of projects

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. Rutland (1986) 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 image. Various authors maintain the construction industry does not have a good image (Chandler, 1992).

Bowen (1997)state that the construction industry potentially has a higher proportion of dissatisfied and critical clients than any other industry Kometa et al. (1996) 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. Mbachu and Nkado (2006) argue that the construction industry's 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. Tindiwensi (2006) 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 Hewitt (1987). 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 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 Fellows et al. (2002). At times, clients use nominated subcontractors to provide for specialized items. The advantages of subcontracting are that, due to limited specialization of labour and plant, 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 predictions 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 effect on suppliers and subcontractors who may not be paid until the main contractor has received the relevant interim payment from the client. Risks that cannot be controlled by contractors should ultimately be borne by the client, Fellows et al. (2002). Clients pay 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 works agreement and schedule of conditions of building contract (ASCBC, 1992). Lack of access to finance is arguably the most critical of

these constraints, Hewitt (1987) suggested that 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. Clients' needs and requirements in the development process can be categorized into design, management, and construction services Mbachu, Nkado (2006). In the UK, the client has a statutory duty to appoint a planning supervisor for the purposes of preparing safety plan and monitoring the implementation of the plan on site (Fellows et al., 2002). The client needs to provide the planning supervisor with details of the project to enable him perform the work properly.

A project manager co-ordinates the activities of every project team member in ensuring they realize their intended tasks within an appropriate time frame, which in turn will contribute towards a more efficacious project team, Gido and Clements (2003). This is important to the project manager or the contractor being a conductor of the project team. 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 and Clements (2003). According to Cooke-Davies (2001), the performance of the project manager hinges on his ability to control and monitor the processes and systems which make up the project. Low and Quek (2005) surmise based on their 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 others factors that can still be used to gauge the performance of a project manager within the context of today's construction industry.

Sinha (2004) explains 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. Howell (2004) 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 and Baron (2000) who point out a positive relationship between job performance and the status of the vocation 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 .

2.8.2 Effective Management of Public Project Performance

The success of a project is the ultimate 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. Baker 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. Baker et al. (1983) go on 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 the focus the aspects of technical achievement as well as customer satisfaction. Therefore, as Freeman and Beale (1992) conclude, the performance of a contractor on project will be based on different things for different individuals, usually dependent on their role and responsibilities within a certain project. Liu and Walker (1998) 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. Lim and Mohamed (1999) state, that the perceived success or failure of a project can be categorised into two sets of views. The first is the macro level perception which pertains to 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. Lim and Mohamed (1999) analogize 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 (Ralph1995) 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.

2.8.3 Dealing with Work Environment Factors That Influence the Effectiveness of a Contractor

According to a research done by Mustapha and Noaum (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
- F actors pertaining to nature of the· project and its characteristics
- Factors concerning the environment
- Organisational factors

For the purpose of this study, focus will be given towards the factors of work conditions, nature of project and organisational 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. Omar (2006) 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, Shenhar et al. (l997) pointed 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.

Kometa et al., (1996) lists 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 Pinto and Slevin (1989) who state that the use of the 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. Freeman and Beale (1992) on the other hand propose five other criteria to gauge project success, namely technical performance, excellence of execution, management and organisational 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 measures 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.

- According to Bamisile (2004), Quality in construction is concerned with meeting the requirements defined by the owner, designer and regulatory agencies ASCE.
- . The responsibility of meeting these requirements lies squarely on the design consultants and contractors but these requirements are not always met.

2.9 Conceptual Framework of the Study

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 (Feigenbaumas cited in Yasamis et al. (2001) 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, (Evans and Lindsay, 1998). Yasamis et al. (2001) opined that: A 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 of the successful execution of public projects.

2.9.1 Project Level Quality Attributes in Construction

Project level quality can be examined in the following six areas: (i) briefing by the client (ii) the design process (iii) materials and component selection (iv)project

assembly on site (v) project management activities (vi) systems to promote project quality (Woodwardas cited in Yasamis et al. (2001).

2.9.2 Successful Execution of Public Building Projects

Project success and failure factors were initially introduced by Rubin and Seeling (1967) where they identified 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 projects will influence the performance of the project manager. In the study to identify sources of project failure, Avots (1969) 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. (Hayfiels as cited in De Wit, (1988) further expands the study on the success factors and lists 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 .

Might and Fischer (1985) conducted a research of the main factors that are considered to affect the success of a project. These factors included organisational structure, level of power designated to the project manager and project size. They discovered that there was a weak correlation between organisational 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. Pinto and Slevin (1989) 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

Anton as cited in Carr, (2005) goes on further and elaborates on the factors that may improve project success, which include planning efforts during design and construction phases, committed and objective project manager, motivation of the project team, the technical capabilities of the project manager, work and scope definition as well as control systems. Another view comes.

2.10 Chapter Summary

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 projects in the hopes to discover the factors that contribute towards achieving project success. Sayles and Chandler (1971) have 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 continuous project involvement. Martin (1976) on the other hand has identified eight success factors of a project, entailing comprehension of objective, the organisational 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.

Morris and Hough (1987) through their study have 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 mutually emphasized by various researches. These common factors are task and activity scheduling as well as the clear comprehension of a project's objectives. What this 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 contractor. This study

delves on the individual capacities of the project contractor and how work environment factors may influence his job performance.

Fryer (as cited in De Wit (1988).) has listed skills that a project manager 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 is 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 environment in this context refers to the perception of the environment and is continuously changing from one project to another (Low and Quek, 2005).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter explains the research methods employed, namely, the research design, the population and the study sample, the sampling method used, research instrument, data collection procedure and data analysis

3.2 Research Design

The research used descriptive survey design. This research design was needed because it would help the researcher to collect pertinent and precise data about the topic. Robson (1993) looks at descriptive survey design as the type that portrays accurate profiles of persons, events or situations, and considers this as an extension of exploratory work. Furthermore, Robson (1993) sees descriptive survey design as necessary to have a clear picture of the phenomena on which one is to collect data prior to the collection of data. He cautions however that project tutors are rather wary of work that is too descriptive.

The main reasons why the study adopted descriptive survey design is that it is versatile and practical, and is directed towards the determination of a situation, and also determines the incidence, distribution and interrelations among sociological and psychological variables and indicates how data are collected, organised and displayed in tables and graphs Gordon and Gordon, as cited in Bryman, (2004).Koul (2001) on the other hand, views descriptive study as involving measurement, classification, analysis, comparison and interpretation. Koul (2001) explains that in descriptive studies researchers, as in any study, identify and define the problem, select or

construct tools for collecting data, describe, analyze and interpret the data in clear and precise terms and draw definite and meaningful conclusions.

Descriptive surveys interpret, synthesize, integrate data, and point to complicated interrelationships (Osuala, as cited in Koul 2001). Thus, in spite of the advantages that descriptive design bring along, care needs to be taken to ensure that questions to be responded to are clear, and not misleading, because the result of the survey can vary depending on the wording used (Hays,1994).

3.3 Research Strategy /Approach

The study adopted a quantitative approach involving the development and administration of survey questionnaires. Surveys generally involve a systematic method of collecting data from a population of interest. According to the research conducted by Bryman (2004), quantitative research strategy places emphasis on measurement and the collection and analysis of data. He further postulates that there are four pre occupations of quantitative research; measurement, causality, generalization and replication.

3.4 Population

Census method was adopted for the study. The respondents comprised of all thirty-eight (38) building consultants in the study area which consists of Quantity surveyors, Architects, Mechanical Engineers, Geotechnical Engineers, Electrical Engineers, Structural Engineers, land Economy, Planning Engineers, Geometric Engineers and Water Engineers. These consultants are from Architectural and Engineering Services Limited (AESL) and Northern Consultants Ltd., KAT Consult Ltd Q&A Consults, Municipal Assembly and PWD all in the Bolgatanga Municipality. The choice of

these consultancy firms was made on the basis that they are well established firms with their offices located in the Bolgatanga Municipality and are exposed to the performance of building contractors on public projects by virtue of the wide range of projects they supervise.

3.5 Sample Size and Sampling Method

A sample is a representative subset of a population which has all the important characteristics of the population from which it is drawn. Sample size and the technique used are influenced by the availability of resources, particularly finances and time available to select the sample (Saunders et al., 2007). Sampling techniques provide a range of methods that enable the researcher to reduce the amount of data to be collected, by considering data from a sub-group only rather than all possible cases.

A census is a study of every unit, everyone or everything in a population. It is known as complete enumeration, which means a complete counting. Data collection through census method gives opportunity to the researcher to have an intensive study about a problem. The researcher gathers a lot of knowledge with high degree of accuracy in data. The method is also appropriate for units having heterogeneity or difference. In all, 38 respondents were used in the study by census approach. The respondents consist of 6 Architects, 7 Quantity surveyors, 4 Structural Engineers, 5 Electrical Engineers, 3 Geometric Engineers, 4 Land Economists, 3 Mechanical Engineers, 2 Geotechnical Engineers, 3 Planning Engineers from Architectural and Engineering Services Limited (AESL), Northern Consultants Ltd, KAT Consult Ltd. Q&A Consults, Municipal Assembly, PWD and other sources in the Bolgatanga Municipality.

3.6 Research Instrument

The instrument used for data collection was a questionnaire. The questionnaire consisted of items, which were focused on performance evaluation of building contractors on public projects. Kervin (1992) writes that the Likert scale is the most widely used scaling technique since it consists of several declarative items that express a viewpoint on a topic. The researcher chose the Likert scale because respondents were expected to indicate the degree to which they agreed or disagreed with the opinion expressed. Also, the Likert scale is an efficient approach compared with other scale types (such as the Thurston scale), and has an additional advantage over open-ended questionnaire. The questionnaire was designed and delivered to the respondents at their workplaces.

3.6.1 Data Collection Procedure

The data collection involved the administering of questionnaire to collect information on performance evaluation of building contactors on public projects. The researcher administered the questionnaires to the respondents' at their various offices. They were first given an orientation regarding the purpose and understanding of the items in the questionnaire. Important concerns and questions from respondents were cleared and explained before they started filling them. The respondents were given three weeks to respond to the questionnaires and the researcher retrieved them after the three weeks.

3.8 Data Processing and Analysis

The results of the data collected using the questionnaires were represented in pie-charts, bar graph and frequency tables (Koul, 2001). For clarity, easy understanding and interpretation of figures, excel and the Statistical Package for Social Sciences computer software version 18 (S.P.S.S.) were used. The data collected from the questionnaires were edited, coded, and keyed into the SPSS version 18) for processing. The data were then presented in the form of tables for easy interpretation using excel. The main statistical technique employed was percentages; tables were used to explain certain findings. Percentages of the participants and their respective views on some important issues on the questionnaires found were used to discuss the data collected.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

The chapter presented the findings of the study and analysed the results. Tables, frequencies, percentages, pie charts and bar charts were used to demonstrate the findings of the study.

4.2 Response Rates

A total of thirty-eight questionnaires were administered and all were completed and retrieved by the researcher. The response rate achieved was 100%. Constant reminders and follow ups accounted for the high response rate.

4.3 Demographic Information of the Respondents

This section presents personal information on the respondents which included; gender, age, work experience, position of the respondents and educational qualification, which are illustrated in Table 4.1.

Table 4.1: Demographic Information of the Respondents

Demographic Information	Frequency	Percentage%
Gender		
Male	33	87.0
Female	5	13..0
Total	**38**	**100**
Age		
25-30yrs	3	8.0
31-35yrs	4	11.0
36-40yrs	6	15.5
41-46yrs	9	23.5
46yrs and above	16	42.0
Total	**38**	**100**
Educational Level		
HND	7	18.4
1st Degree	21	55.2
Masters	4	10.5

PHD	1	2.7
Others	5	13.2
Total	**38**	**100**
Position		
Architect	6	15.8
Quantity Surveyors	7	18.4
Structural Engineers	4	10.5
Electrical Engineers	5	13.2
Geometric Engineers	3	.7.9
Mechanical Engineers	3	7.9
Land Economy Engineers	4	10.5
Geotechnical Engineers	2	5.3
Planning Engineers	4	10.5
Total	**38**	**100**
Work experience		
6-10 years	5	13.2
11-15 years	11	28.9
16-20 years	16	42.1
More than 20 years	6	15.8
Total	**38**	**100**

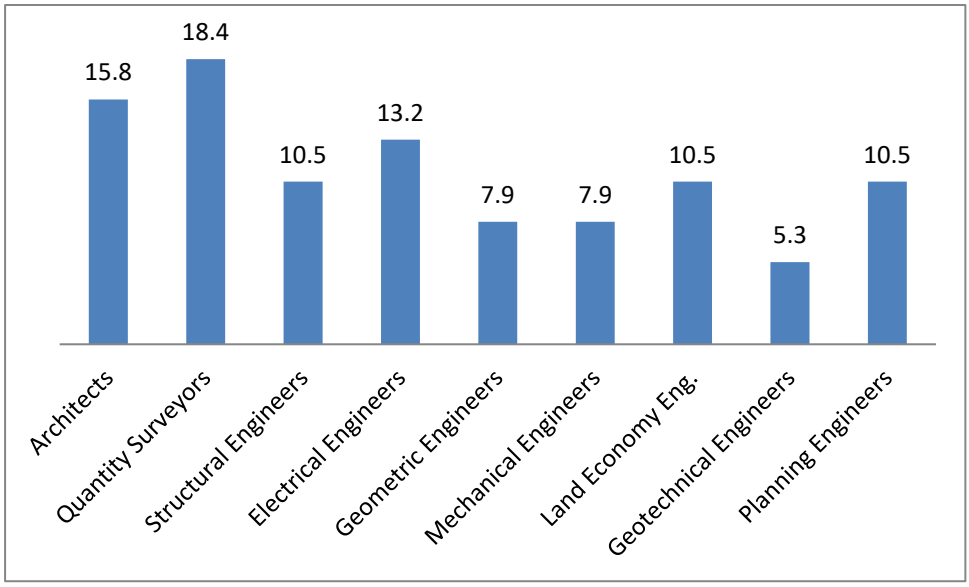
Source: field study, (2015)

Table 4.1 demonstrated that majority 33(87%) of the respondents were males against 5(13%) females. This shows that more males are engaged in building construction works as compared to females. This may be due to the perception that building construction works are mostly for males. Therefore, there is the need to encourage more females in building construction works. Moreover, the ages of the respondents which ranges from 41-46 years scored 16 (42%), 9(23.5%) were between 36-40 years, 6(15.5%) were between 31-35 years and 25-30 years were 4(11%).

In other to find out the educational qualifications of respondents, the study revealed that 21(55.2%) majority were 1st degree holders, 7(18.4%) had HND and other qualifications such as CTC II, III and FCT respectively, 4(10.5%) had Masters Degrees and 1(2.7%) had PhD as their qualifications.

With regards to working experience, 5(13.2%) of the respondents have 6-10 years, 11(28.9%) have 11-15 years, 16(42.1%) have 16-20 years and 6(15.8%) have

more than 20 years work experience. The results confirmed that the respondents have enough working experience in the building construction industry.



Source: field study, (2015)

Figure 4.1: Job Title of the Respondents

Figure 4.1 shows job title of the respondents, it can be seen that 18.4% majority were quantity surveyors, followed by 15.8% architects, 10.5% were structural engineers, land economist and planning engineers, 13.2% were electrical engineers, 7.9% were geomatic engineers and mechanical engineers and 5.3% were geotechnical engineers.

The Performance Evaluation Criteria of Building Contractors

Table 4.2, Presents the level of disagreement and agreement to the performance evaluation criteria relating to cost used in evaluating contractors' performance by the respondents.

The results of the Table indicated that execution of work within approved budget recorded 10(26.4%) agreed and 21(55.2%) strongly agreed as the criterion relating to cost used in evaluating contractors' performance. This is in line with

Okuwoga (1998) who identified that the performance problem is related to poor budgetary and time control.

The study revealed that 8 (21.1%) and 25(65.8%) of the participants agreed and strongly agreed that execution of projects conserves organisational resources.

It was confirmed that accurate cost estimates of projects recorded 9(23.7%) disagreed, 16(42.1%) agreed and 7(18.4%) strongly agreed that accurate cost estimates relate to cost used in evaluating contractors' performance.

Through Table 4.2, it is seen that 9(23.7%) and 23(60.6%) respondents agreed and strongly agreed to the statement that develops and implements cost-saving measures are some of the criterion relating to cost used in evaluating contractors' performance.

Furthermore, the respondents, majority 1(2.6) disagreed and 18(47.3) strongly disagreed that contractors' performance largely does not depend on contract sum. Moreover 3(7.9%) of the respondents agreed and 7(18.4%) strongly agreed to the statement. It was evident that 19(50%) agreed and 15(39.4 %) strongly agreed to the fact that, fluctuations and variations in project execution can be used for evaluating contractors' performance relating to cost of projects. This is in agreement with Dowle and DeStephanis (1990) who opined that project final cost can therefore be used to assess the performance of contractors when other factors that can lead to cost increase such as fluctuation, variations by client or consultant, etc remain the same.

With reference to Table 4.2, the use of cash flow plan, there was majority response rate of 20(52.6%) agreed and 5(13.1%) strongly agreed, as means of evaluating contractors' performance.

To ascertain whether Change in project design increase cost of project the following responses were given 9(23.7%) agreed and 29(76.3%) strongly agreed to

the statement that change in project design increase cost of project. In conclusion, Frame (1994) points out that pressure often arises to 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, changes generally do increase costs and loss of confidence.

It was evident that 6(15.7%) of the participants agreed and 29(76.3%) strongly agreed that delay in project execution increase cost of project. With respect to work within project time schedule %) agreed and %) strongly agreed to the statement that they work within time schedule.

It was observed that almost all the respondents 9(31%) and 17(59%) agreed and strongly agreed to the question, assessment of project cost could be used as one of the criterion relating to cost used in evaluating contractors' performance by the respondents. This is supported by Kometa et al., (1996) lists 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 Pinto and Slevin (1989) stated that the use of the 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.

Also 6 (21%) agreed and 22(76%) strongly agreed that financial standing is one of the criterion relating to cost used in evaluating contractors' performance. The study results coincide with Ghanaian Public Procurement Act 663 of 2003 suggests that, the financial standing of a contractor is an indication of good performance in terms of project delivery. Writing in similar vein, Costa and Formoso (2004) suggested that the submission of bank statement from reputable financial institution serves as a guide for contractors to work promptly and satisfactorily.

The study further revealed that good business relationship as a means of evaluating contractors' performance by the respondents was rated 9(23.7%) agreed and 28(73.6%) strongly agreed. This means contractors who do not have good business relationship may not get contracts. Value of previous works executed as a factor was rated 10(34%) agreed and 15(52%) strongly agreed.

Table 4.2: Cost as a Criterion used in Measuring/Evaluating Contractors' Performance

No	Using Cost as a criterion in Evaluating Contractors' Performance	Responses				
		Strongly Disagree (n)%	Disagree(n)%	Not Sure (n)%	Agree (n)%	Strongly Agree(n)%
7.1	Executes work within approved budget	-	3(7.9)	4(10.5)	10(26.4)	21(55.2)
7.2	Execution of projects conserves organisational resources	1(2.6)	1(2.6)	1(2.6)	8 (21.1)	25(65.8)
7.3	Accurate cost estimates	6(15.7)	9(23.7)	-	16(42.1)	7(18.4)
7.4	Develops and implements cost-saving measures	-	-	6(15.7)	9(23.7)	23(60.6)
7.5	Performance largely depends on contract sum	1(2.6)	18(47.3)	9(23.7)	7(18.4)	3(7.9)
7.6	Fluctuations and Variations	2 (5.3)	2(5.3)	-	19(50)	15(39.4)
7.7	Use cash flow plan	9(23.7)	2(5.3)	2(5.3)	20(52.6)	5(13.1)
7.8	Change in project design increase cost	-	-	-	9(23.7)	29(76.3)
7.9	Delay in project execution increase cost	-	-	3(7.9)	6(15.7)	29(76.3)
7.10	Financial Standing	-	1(2.6)		9(23.7)	28(73.6)
7.11	Good Business relationship	1(2.6)	3(7.9)	-	12(31.6)	22(57.9)

Source: Field Data, 2015

Cost as a criterion used in measuring the performance of contractors

The following criterion relating to time use in measuring the performance of contractors would be discussed in this section. They consist of accurate time estimates, type of projects design, competent project teams, work of subcontractors, project planning and scheduling, complete projects within time schedule and finally timely completion of building projects

Table 4.3 Criterion Relating to Time in Evaluating Contractors' Performance

No	Time as Criterion used in Evaluating Contractors' Performance	Responses				
		Strongly Disagree(n)%	Disagree (n)%	Not Sure(n)%	Agree(n)%	Strongly Agree(n)%
.	Accurate time estimates	-	6(15.7)	2(5.3)	13(34.2)	17(44.7)
8.2	Type of project design	-	3(7.9)	-	10(26.3)	25(65.8)
8.3	Competent project teams	-	-	-	7(18.4)	31(81.6)
8.4	Works of subcontractors	5(13.1)	8(21)	5(13.1)	8(21.0)	12(31.6)
8.5	Project planning and scheduling	-	2(5.3)	-	6(15.7)	30(78.9)
8.6	Complete projects within time schedule	7(18.4)	15(39.5)	1(2.6)	9(23.7)	6(15.7)

Source: Field Data, 2015

The ability of the building contractor to always ensure accurate time estimates that would lead to timely completion of project. The results in Figure 4.3, indicated that 3(10%) and 6(15.7%) of the respondents respectively disagreed and were not sure whiles 13(34.2%) agreed and 17(44.7%) strongly agreed that accurate time estimates leads to timely completion of project.

With regards to type of projects design serving as one of the criterion for evaluating contractors' performance of projects relating to time recorded 7(24%) and 20(69%) agreed and strongly agreed respectively by the respondents.

As shown in Table 4.3, the respondents were requested to indicate whether competent project team's helps in timely evaluating contractors' performance 31(81.6%) majority strongly agreed and 7(18.4%) also agreed.

Concerning works of subcontractors 5(13.1%) disagreed that the works of subcontractors are not criterion for evaluating contractors' Performance of projects. However 8(21.0%) agreed and 12(31.6%) strongly agreed to the statement. This is in line with Adams (2002) assertion that to meet the requirements of technical capability, contractor(s) must provide information on areas of work that includes: expertise or specialisation, past experience, staffing levels, and management and administration capabilities including the use of sub-contractors and consultants and plant and equipment resources, evidence of appropriate qualifications including current licenses to practice in a particular field.

For project planning and scheduling 6(15.7%) agreed and 30(78.9%) strongly agreed to the statement. As illustrated in Table 4.3, timely completion of building projects is one of the criterion used in evaluating contractors' performance of projects. The following response rate were received 7(24%) disagreed, as against agreed and strongly agreed 9(23.7%) and 6(15.7%) respectively in support of the statement that time is one of the criterion used in evaluating contractors' performance of projects. Gido and Clements (2003) work on timely completion of building contracts, project manager co-ordinates the activities of every project team member in ensuring they realize their intended tasks within an appropriate time frame, which in turn will contribute towards a more efficacious team corroborated with the study results. This is important to the project manager or the contractor being a conductor of the project team. 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 and Clements, (2003).

Quality as a Criterion used in Evaluating Contractors' Performance

Table 4.4: Quality as a Criterion used in Evaluating Contractors' Performance

No	Quality as a Criterion used in Evaluating Contractors' Performance	Responses				
		Strongly Disagree(n) %	Disagree (n)%	Not Sure (n)%	Agree(n) %	Strongly Agree (n)%
9.1	Site management and supervision	2 (5.3)	5(13.2)	1(2.6)	10(26.3)	20(52.6)
9.2	Obsolete technology	-	12(31.6)	7(24)	9(23.7)	10(26.4)
9.3	Competent project teams	-	-	-	4(10.5)	34(89.5)
9.4	Adequate contractor experience	1(2.6)	3(7.9)	-	14(36.8)	20(52.6)
9.5	Appropriate construction methods	-	-	-	4(10.5)	34(89.5)
9.6	Displays commitment to excellence	2 (5.3)	6(15.7)	-	20(52.6)	10(26.4)
9.7	Looks for ways to improve and promote quality	10(26.3)	13(34.2)	-	7(18.4)	8(21.1)
9.8	Applies feedback to improve performance	11(29)	12(31.6)	-	7(18.4)	8(24)
9.9	Contractors performance on progress of work	1(2.6)	4(10.5)	3(7.9)	6(15.7)	24(63.2)
9.10	Capacity to technically manage change	24(63.2)	6(15.7)	-	3(7.9)	5(13.2)
9.11	Quality Service	-	2 (5.3)	-	12(31.6	24(63.2)
9.12	Technical personnel	-	-	-	4(10.5)	34(89.5)
9.13	Equipment Holding	-	-	-	14(36.8)	24(63.2)
9.14	Class of License	-	6(15.7)	1(2.6)	7(18.4)	24(63.2)
9.16	Adequacy of contraction's quality assurance	1(2.6)	2 (5.3)	3(7.9)	12(31.6	20(52.6)
9.17	Establishment of effective quality audit	-	5(13.2)	-	11(28.9)	22(57.9.)

9.18	Effective training of employees				30(78.9%)	8(21.1%)
9.19	Employing skilled personnel	-		8 (21.1)	14(36.8)	16(42.1)
9.20	Material managerial techniques	16(42.1)	13(34.2)	-	6(15.7)	3(7.9)
9.21	Availability of personnel's with high experience and qualification	2 (5.3)	5(13.2)	4(10.5)	6(15.7)	21(55.3)
9.22	PMC personnel are available within reasonable time whenever needed for advice and approval	-	=	-	17(44.7)	21(55.3)

Source: Field Data, 2015

The results of the study in Table 4.4, conducted revealed that site management and supervision is one of the criterion in evaluating contractors' performance of projects based on quality of work. The following evidence are the outcome of the study 12(31.6%) agreed and 20(52.6%) strongly agreed to the statement.

It was disagreed by 12(31.6%) of the respondents on the grounds that Obsolete technology is not a key factor in evaluating contractors' performance of projects based on quality of work, however 7(24%) respondents were not sure, whiles both agreed and strongly agreed recorded 9(23/7%) and 10(26.4%) respectively.

With reference to Table 4.4, the study shows that in all the respondents 4(10.5%) agreed and 34(89.5)% strongly agreed that competent project teams are criterion relating to quality of work in evaluating contractors' performance.

In addition, adequate contractor experience was also confirmed by the respondents with the following 14(36.8%) agreed 20(52.6)%) strongly agreed as a factor of ensuring quality of work.In conclusion, technical capacity is broadly defined as having recent previous experience and demonstrated capability relevant to a

monetary threshold in one or more of the prescribed field of work types (Brown and Adams 2002).

On the other hand, 4(10.5%) and 34(89.5%) agreed and strongly agreed respectively that the use of appropriate construction methods relates to quality of work in evaluating contractors' performance.

Concerning demonstrating accuracy and thoroughness as a factor of ensuring quality of work, the responses in the Table illustrates that 2 (5.3%) of the respondents strongly disagreed 6(15.7%) disagreed to the statement, while 20(52.6%) and 10(26.4%) agreed and strongly agreed respectively. This finding supports what Bamisile (2004) made that Quality in construction is concerned with meeting the requirements defined by the owner, designer and regulatory agencies ASCE, (1990).

Displays commitment for excellence 6(15.7%) disagreed, however 20(52.6%) agreed and 10(26.4%) strongly agreed to that as a criteria for quality of work. Freeman and Beale (1992) on the other hand propose five other criteria to gauge project success, namely technical performance, excellence of execution, management and organisational elements, self-development and finally business and productivity capacity.

Looking for ways to improve and promote quality of work. 13(34.2%) disagreed and strongly disagreed 10(26.3%), meanwhile 7(18.4%) agreed and 8(21.1%) strongly agreed to that as a measurement criteria/ factor.

Respondents were to respond to the statement whether applies feedback to improve performance as a factor relating to quality of work 11(29)%) strongly disagreed, whiles 12(31.6%) disagreed. meanwhile 7(18.4%) agreed 8(21.1%) strongly agreed, refer to Table 4.4.

Contractors performance on progress of work 6(15.7%) agreed and 24(63.2%) strongly agreed. The study revealed that 3(7.9%) agreed and 5(13.2%) strongly agreed that participants Capacity to technically manage change as a criterion/factor relating to quality of work.

With respect to quality service, 12(31.6%) and 24(63.2%) agreed and strongly agreed respectively that quality service is a measurement criterion/factor relating to quality of work. Feigenbaumin cited in Yasamis et al. (2001) define 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

All the respondents were of the view that equipment holding ensure good quality of work 14(36.8%) agreed and 24(63.2%) strongly agreed

The research has revealed that the class of license is a factor that ensure quality work done which received 7(18.4%) agreed and 24(63.2%) strongly agreed in favour.

Adequacy of construction's quality assurance 12(31.6%) agreed, 20(52.6%) strongly agreed. This was affirmed by Kagan (1989), who said a quality assurance programme entails taking a decision on what has to be measured and who measures it. 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 of all activities required to ensure that the project will satisfy the quality requirements (PMI, 2004).

The views of respondents were sort whether establishment of effective quality audit help in relating to quality of a project. 12(31.6%) agreed and 24(63.2%)

strongly agreed to the statement. The findings in this study corroborate (Evans and Lindsay, 2008) who opined that a 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 of the successful execution of public projects.

All the respondents 8(21.1%) agreed and 30(78.9%) strongly agreed to the view that effective training of employees enhance quality. The respondents were of the view that employing skilled personnel is a factor relating to quality in evaluating contractors' performance of projects is base on. Table 4.4, indicated that 14(36.8%) and 16(42.1%) of the respondents agreed and strongly agreed that employing skilled personnel ensure quality of work.

Respondents were to indicate whether contractors adopt good material managerial techniques to assist in quality delivery of a project. The views of the respondents were that 16(42.1%) strongly disagreed and 13(34.2%) disagreed. 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. This coincides with what (Evans and Lindsay, 2008) said.

More than half of the respondents 6(15.7%) agreed, 21(51.3%) strongly agreed that availability of personnel's with high experience and qualification is one of the criteria in evaluating contractors' performance of projects on quality delivery of work, whilst 2 (5.3%), 5(13.2)%) strongly disagreed and disagreed respectively.

Project management consultant (PMC) personnel are available within reasonable time whenever needed for advice and approval this achieved a response rate of 17(44.7%) and 21(55.3%) agreed and strongly agreed respectively. This means

that there is good rapport among the contractors and consultants in the building industry.

Extent to which Consultants Evaluates the Performance of Building Contractors on Public Projects.

The extent to which consultants evaluates the performance of building contractors on public projects is looked at in this section.

Table 4.5: What extent do you agree with the following statement?

S/N	**To what extent do you agree with the following statement?**	**Responses**			
		Strongly agree (n)%	Agree(n)%	Neither disagree nor agree (n)%	Disagree (n)%
10	Consultants evaluate contractors' performance on public projects.'	8(21.1%)	12(31.6	14(36.8)	4(15.5%)

Source: Field Data, 2015

Consultants Evaluate Contractors' Performance on Public Projects.

It can be inferred from Table 4.5 and Figure 4.2 that 8(21.1%) and 12(31.6%) respondents strongly agreed and agreed that consultants evaluate contractors' performance on public projects, as against 14(36.8%) neither disagreed nor agreed.

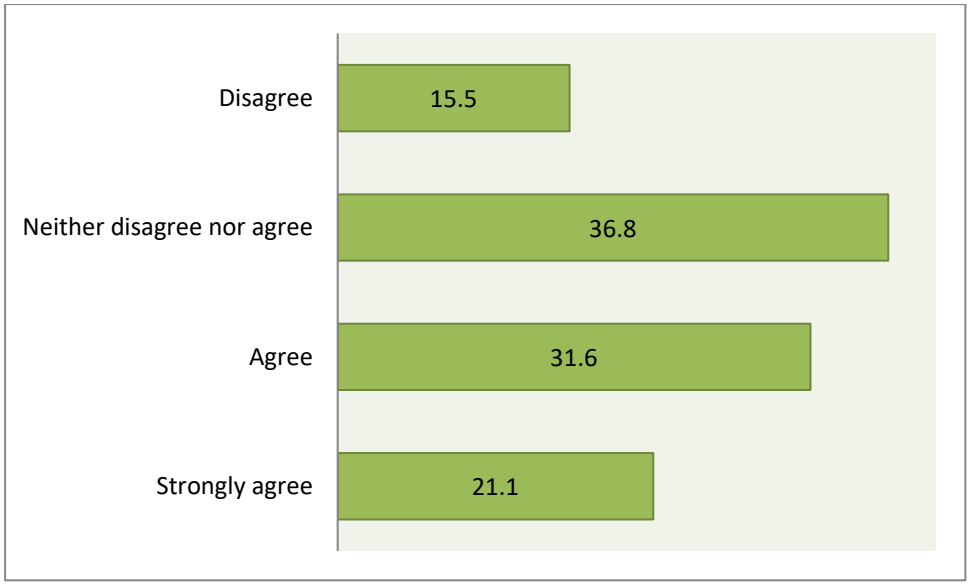


Figure 4.2 Consultants evaluate contractors' performance on public projects.

How often do you evaluate the performance of contractors on public projects?

Table 4.6: As a consultant, how often do you evaluate the performance of contractors on public projects?

S/N 13	Responses	Frequency (N)	Percentage%
	Very often	12	31.6
	Often	17	44.7
	Sometimes	9	23.7

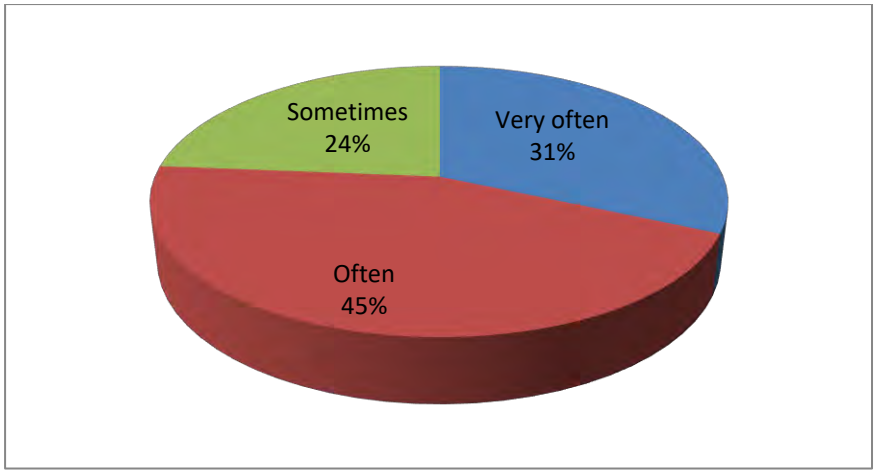


Figure 4.3: How often do you evaluate the performance of contractors on public projects

To find out how often contractors' performance are evaluated on public projects. With reference to Table 4.6 and Figure 4.3, the study result shows that 17 (44.7%) majority said often, while sometimes and very often recorded 12(31.6%) and 9(23.7%) respectively. This means that consultants do their work as expected.

For the whole period of a project, how many times have you visited the project?

With reference to the Figure 4.6, 25 (65.8%) the consultants accounted that they visit the project site about 5- 7 times, to evaluate the work of contractors, as against 13(34.2%) who said about 4 times or less. In effect the consultants visit the project site as work progresses.

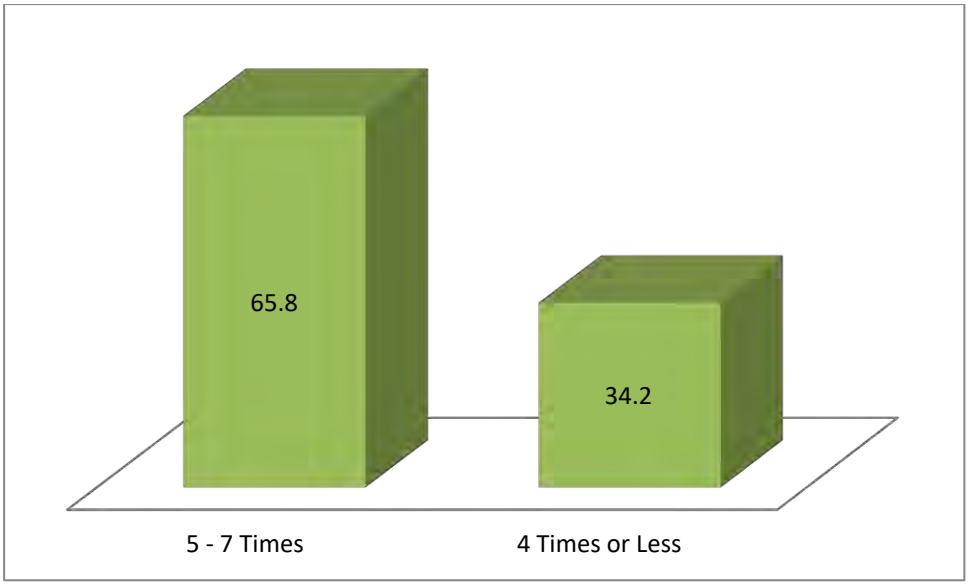


Figure 4.4: How many times have you visited the project

Table 4.6b **How are the contractors' performance levels on the public projects you have evaluated**

S/N. 14	Responses	Frequency (N)	Percentage%
	Very satisfactory	14	36.8
	Somehow Satisfactory	10	26.3
	Satisfactory	14	36.8
	Below satisfactory	-	-

Result in Table 4.6b, indicated that, the contractors' performance levels on the public projects evaluated by consultant were very satisfactory 14(36.8%), Somehow Satisfactory 10 (26.3%), Satisfactory 14(36.8%) respectively. None was below satisfactory.

15. **Economic related factors (e.g. exchange rate, commodity price etc) affect projects**

S/N. 16	Responses	Frequency (N)	Percentage%
	Strongly agree	15	39.5
	agree	10	26.3
	neither agree nor disagree	7	18.4
	disagree	6	15.7

Table 4.7 elicits information on the distribution of economic related factors (e.g. exchange rate, commodity price etc) affect projects. The response was that strongly agreed 15(38.5%), agreed 10(26.3%), whilst neither agreed nor disagreed scored 7(18.4%) and 6(15.7%) respectively.

Table 4. 8 Contractors try to give some "gift" in order to get approval or particular arrangement

S/N. 17	Responses	Frequency (N)	Percentage%
	Strongly agree	8	21.1
	agree	4	10.5
	neither agree nor disagree	6	15.8
	disagree	20	52.6

Table 4.8 presents the results on whether contractors try to give some "gift" in order to get approval or particular arrangement strongly agreed and agreed sum up to 12(31.6%), neither agreed nor disagreed 6(15.8%) as against 20(52.6%) majority disagreed.

Suggested recommendations for improving performance of building contractors on public projects

The following suggestions were the views of the building consultants who responded to the questions. According to them building contractors:

i. should consistently organise intensive and effective in service education and training programmes and workshops to upgrade their technical knowledge and professional expertise to suit modern architectural specifications to match international standards of building constructions.

ii. must consistently come out with alternative methods or value engineering measures to solve complex issues on site.

iii. there should be a cost engineer to cost projects

iv. materials should always be available to complete work in time

v. workers should be motivated to bring out their very best.

Table 4.9 Suggested reasons why performance of contractors should be evaluated on public projects by building consultants

S/N. 20	Responses	Frequency (N)	Percentage (%)
	For quality assurance, Safety assurance, Work satisfaction.	16	42.1
	For ensuring contractors meeting project specifications, To avoid errors.	9	23.7
	To ensure design compliance, Ensure value for money, and Good workman ship scored	13	34.2

Source Field work

Based on the results given by all the building consultants who responded to the questionnaire in Table 4.9, the study gave the following suggestions16(42.1%) majority of the respondents suggested for quality assurance, safety assurance, work satisfaction, 9(23..7%) of the building consultants said, to ensure contractors meet project specifications and also to avoid errors. While 13(34.2%) also went for ensuring design compliance, ensure value for money and good workmanship scored second majority responses. See Table 4.9.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter of the study summarizes the findings made and draws conclusions from the findings. It also presents recommendations that would help to address some of the problems of evaluating performance of building contractors on public projects.

5.1 Summary of major findings of the Study

The key findings of the study highlighted the criteria by which contractors performances are evaluated as follows: cost, time and quality.

It was evident that 19(50%) agreed and 15(39.4%) strongly agreed to the fact that, fluctuations and variations in project execution can be used for evaluating contractors' performance relating to cost of projects. In addition, majority 9(23.7%) and 29(76.3%) respectively agreed and strongly agreed that change in project design increase cost of project. Also, the study results holds that 6(15.7%) of the participants agreed and 29(76.3%) strongly agreed that delay in project execution increase cost of project.

Is was discovered that majority 1(2.6%) and 18(47.3%) strongly disagreed and disagreed that Performance largely depends on contract sum Financial Standing as a factor used in evaluating contractors performance recorded 9(23.7%) and 28(73.6%) strongly agreed and agreed.

Moreover, significant number of the respondents 10(26.3%) and 25(65.8%) agreed and strongly agreed respectively that the type of projects design serves as one of the criteria use to evaluating contractors' performance of projects relating to time.

Competent project teams helps in ensuring timely evaluation of contractors' performance 7(18.4%) majority strongly agreed and 31(81.6%) also agreed.

Furthermore, all the respondents were of the view that equipment holding ensure good quality of work 14(36.8%) agreed and 24(63.2%) strongly agreed. The research has revealed that the class of license is a factor that ensure quality of work done by contractors' which recorded 7(18.4%) agreed and 24(63.2%) strongly agreed in favour of the statement. The study shows that in all the respondents 4(10.5%) agreed and 34(89.5%) strongly agreed that competent project teams is a criterion relating to quality of work in evaluating contractors' performance. In addition, adequate contractor experience was also confirmed by the respondents with the following percentages 14(36.8%) agreed 20(52.6%) strongly agreed as a factor of ensuring quality of work.

Moreover, the study results hold that 14(36.8%) and 16(42.1%) of the respondents agreed and strongly agreed that employing skilled personnel ensure quality of work. It was found out that 11(28.9%) of the respondents agreed and 22(57.9%) strongly agreed that establishment of effective quality audit helps in ensuring quality of project delivery. It was revealed that 14(36.8%) and 16(42.1%) agreed and strongly agreed respectively that employing skilled personnel is a factor relating to quality in evaluating contractors' performance of projects.

It was discovered that contractors lack the capacity to technically manage change as results revealed 24(63.2%) strongly disagreed and 6(15.7%) disagreed. It was also evident that majority 10(26.3%) strongly disagreed and 13(34.2%) disagreed that contractors lack looks for ways to improve and promote quality

It was indicated that 8(21.1%) and 12(31.6 %) respondents strongly agreed and agreed that consultants evaluate contractors' performance on public projects,' whiles 14(36.8%) neither agreed nor disagreed.

5.2 Conclusions

Based on the major findings of the study, the following conclusion remarks were made, the criteria used by the consultants for performance evaluation of the building contractors were on quality, time and cost Moreover, some of the criteria/factors used to evaluate building contractors' performance based on cost were; good financial standing, fluctuations and variations in project execution, change in project design, and delay in project execution all leads to increase in cost of a project, with the exception of contract sum.

Time as one of the criteria used in evaluating contractors performance were; competent project teams and the type of project design.

Furthermore, some of the criteria used to evaluate building contractors' performance based on quality of work are out lined as follows:

Equipment holding,the financial standing of the building contractor, the quality of service, good business relationships, class of license, adequate contractor experience, employing skilled personnel and establishment of effective quality audit are among the criteria used which were ranked according to their relevance.

In conclusion, it was seen that building contractors do not have the capacity to technically manage change and look for ways to improve and promote quality.

5.3 Recommendations

Based on the major findings and conclusion remarks, the study made the following recommendations and when successfully implemented would improve the performance evaluation of building contractors on public projects at the Bolgatanga Municipality.

The building contractors should consistently organise intensive and effective education and training programmes to upgrade their technical knowledge and professional expertise of their workers

There is the need to ensure sound financial standing of contractors. There is the need to establish good team work and participation in construction. This can improve performance and ensure efficiency and productivity.

The building contractors must consistently come out with alternative methods or value engineering measures to solve complex issues on site.

5.4 Suggestions for Further Research

Based on the key findings, conclusions and recommendations made, the researcher suggested that a similar research must be undertaken to assess the impact of construction materials management on the cost reduction of public building projects, using about five selected districts in Ghana as a case study.

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APPENDIX A

UNIVERSITY OF EDUCATION, WINNEBA – KUMASI CAMPUS

COLLEGE OF GRADUATE STUDIES

SURVEY QUESTIONNAIRE FOR BUILDING CONSULTANTS

RESEARCH TOPIC

PERFORMANCE EVALUATION OF BUILDING CONTRACTORS ON PUBLIC PROJECTS. A CASE STUDY OF BOLGATANGA MUNICIPALITY

INTRODUCTION

There is a need to identify and develop appropriate strategies to improve the performance of contractors on public projects in Ghana. This research is therefore being undertaken to find out from the primary stakeholders of construction project consultants opinions that can be put in place to improve the performance of contractors in Ghana, and in attempt to achieve this goal, what actually causes poor performance of contractors will be outlined.

This study is conducted as part of a graduate study at UEW-K. It is my belief that the stakeholders will provide practical and convincing answers to the questions below to enable me present a good report on strategies that will be appropriate to improve the performance of contractors on public projects.

All information provided would be treated with utmost confidentiality by the researcher. Hence, please endeavor to ensure that any information provided is accurate and reflect the reality of occurrences in your establishment. Thank you in advance for your contribution to this research study. Please respond to the following by either writing in the blank space provided or ticking the appropriate box.

Section A: Demographic Information of the Respondents

Please tick the appropriate box*[√]*

1. What is your gender?

Male [ ] Female [ ]

2. **What age category do you belong to?**

25-30yrs [ ] 31-35yrs [ ] 36-40yrs [ ]41-46yrs [ ]46yrs and above [ ]

3. What is your highest Educational level?

HND [ ] 1st Degree [ ] Masters [ ] PHD [ ] Others [ ]

4. What Position do you occupy?

Architect [ ] Quantity Surveyors [ ] Structural Engineers [ ]

Electrical Engineers [ ] Geometrics Engineers [ ] Mechanical Engineers [ ]

Land Economy [ ] Geotechnical Engineers [ ] Planning Engineers [ ]

5. How long have you been working in the construction industry?

(a) Less than 5 [ ] (b) Six to10 years [ ] (c) Eleven to 15 years [ ]

(d) Sixteen to 20 years [ ] (e) More than 20 years [ ]

6. What type of organization do you work with?

(a) Private consulting firm [ ] (b) District/ municipal assembly [ ]

(c) Other [ ] Please state …….

Section B: The Criterion/Factors Considered in Performance Evaluation of Building Contractors

This section of the questionnaire solicits your expert opinion on factors to be considered in measuring performance of contractors' on cost, time and quality.

7. To what extent do you agree on the following factors relating to cost which measure the performance of contractors? Please rate using a scale of 1-5 where 5 represents strongly agree; 4 represents agree; 3 represents not sure 2 represents disagree and 1 represents strongly disagree. *Please tick [√]in appropriate box below.*

No	Criterion Relating to Cost used in Evaluating Contractors' Performance	Rating				
		1	2	3	4	5
7.1	Executes work within approved budget					
7.2	Execution of projects conserves organisational resources					
7.3	Accurate cost estimates					
7.4	Develops and implements cost-saving measures					
7.5	Performance largely depends on contract sum					
7.6	Fluctuations and Variations in project execution					
7.7	Use cash flow plan					
7.8	Change in project design increase cost					
7.9	Delay in project execution increase cost					
7.10	Works within time schedule					
7.11	Assessment of Project Cost					
7.13	Financial Standing					
7.14	Good Business Relationship					
7.15	Value of Previous Work Executed					
7.16	Procurement Related Issues					
7.17	Economic related factors (e.g. exchange rate, commodity price etc)					

8. To what extent do you agree on the following factors relating to time which measure the performance of contractors? **Please rate using a scale of 1-5 where 5 represents strongly agree 4 represents agree, 3 represents not sure 2 represents disagree and 1 represents strongly disagree.** *Please tick [√]in appropriate box below.*

No	Criterion Relating to Time in Evaluating Contractors' Performance	Rating				
		1	2	3	4	5
8.1	Accurate time estimates					
8.2	Type of projects design					
8.3	Competent project teams					
8.4	Works of subcontractors					
8.5	Project planning and scheduling					
8.6	Complete projects within time schedule					
8.7	Timely completion of building projects					
8.8	PMC personnel are available within reasonable time whenever needed for advice and approval					

9. To what extent do you agree on the following factors relating to quality which measure the performance of contractors? **Please rate using a scale of 1-5** where 5 represents strongly agree, 4 represents agree, 3 represents not sure, 2 represents disagree, and 1 represents strongly disagree. *Please tick [√]in appropriate box below.*

No	Criterion Relating to Quality in Evaluating Contractors' Performance	Rating				
		1	2	3	4	5
9.1	Site management and supervision					
9.2	Obsolete technology					
9.3	Competent project teams					
9.4	Adequate contractor experience					
9.5	Appropriate construction methods					
9.6	Demonstrate accuracy and thoroughness					
9.7	Displays commitment to excellence					
9.8	Looks for ways to improve and promote quality					
9.9	Applies feedback to improve performance					
9.10	Contractors performance on progress of work					
9.11	Capacity to technically manage change					
9.12	Quality Service					
9.13	Technical personnel					
9.14	Equipment Holding					
9.15	Class of License					
9.16	Adequacy of contraction's quality assurance					
9.17	Establishment of effective quality audit					
9.18	Effective training of employees					
9.19	Employing skilled personnel					
9.20	Material managerial techniques					
9.21	Availability of personnel's with high experience and qualification					
9.22	PMC personnel are available within reasonable time whenever needed for advice and approval					

Section C: Extent to which Consultants Evaluates the Performance of Building Contractors on Public Projects. (Please tick [√] the appropriate box/ response or answers below to indicate your reactions to the following statements.)

10.**To what extent do you agree with the following statement?**

Consultants evaluate contractors' performance on public projects.'

Strongly agree [ ] Agree [ ] Neither agree nor disagree [ ] Disagree [ ]

If your answer is yes, please proceed to question 12

11. **As the project management consultant (PMC) are you always available within reasonable time whenever they needed advice and approval**

(a) Yes [ ] (b) Sometimes [ ] (c) No [ ]

12. **How often do you evaluate the performance of contractors on public projects?**

(a) Very often [ ] (b) Often [ ] (c) Sometimes [ ] (d) Only rarely [ ]

13. For the whole period of project, how many times have you visited the project?

11 times or more[ ] 8-10 times [ ] 5- 7times [ ] 4 times or less [ ]

14. **How are the contractors' performance levels on the public projects you have evaluated?**

(a) Very satisfactory [ ] (b) Satisfactory [ ] (c) Somehow Satisfactory [ ] (d) Below satisfactory [ ]

15. **The contractor and his personnel have sufficient knowledge and skill to execute this project**

Strongly agree [ ] Agree [ ] Neither agree nor disagree [ ] Disagree [ ]

16. **Relationship and communication between all parties in the project were good**

Strongly agree [ ] Agree [ ] Neither agree nor disagree [ ] Disagree [ ]

17. **There were appropriate meetings between authorities and the contractors in solving the problems**

Strongly agree [ ] Agree [ ] Neither agree nor disagree[ ] Disagree [ ]

18. **Economic related factors (e.g. exchange rate, commodity price etc) affects projects**

Strongly agree [ ] Agree [ ] Neither agree nor disagree[ ] Disagree [ ]

19. **Factor related to authorities' approval delays and affects project**

Strongly agree [ ] Agree [ ] Neither agree nor disagree[ ] Disagree [ ]

20. **Contractors try to give some "gift" in order to get approval or particular arrangement**

Strongly agree [ ] Agree [ ] Neither agree nor disagree[ ] Disagree [ ]

21. Please suggest recommendations (if any) how the performance of contractors should be evaluated on public projects……..

……

……

22. Please suggest reasons (if any) why the performance of contractors should be evaluated on public projects? *Please write in the box below.*

Many thanks for your co-operation