KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHIECTURE AND PLANNING

DEPARTMENT OF BUILDING TECHNOLOGY

FACTORS AFFECTING COMPLETION OF GETFUND CONSTRUCTION PROJECT: A CASE STUDY OF GA EAST MUNICIPAL ASSEMBLY - ACCRA

A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR A DEGREE OF MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT

BY

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B.Sc. (Hons)

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DECLARATION

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

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ABSTRACT

GETfund construction projects are saddled with numerous challenges with the palpable challenge of non-completion. Several factors influence this non-completion and the goal of the study was to explore the dynamics that account for the completion of GETfund projects. The objectives were: to identified factors that affect completion of GETfund building project, the effects of these factors on completion of GETfund construction project and establish effective criteria for curbing the causes and effects. The study utilised quantitative approach of enquiry through survey questionnaires. Subsequently, responses were elicited from the respondents – consultants and contractors in the Ga East Municipal Assembly. Descriptive and inference statistics were employed for the analysis. Based on the overall sample, the findings revealed factors that influence the noncompletion, the effects as a result of the non-completion and the criteria to enhance construction project completion. The factors for non-completion was analyzed using the Factor Analysis from the SPSS, and three causes were identified - *Work related factors*, *Accidents, materials and labour factors and Competency factors. Loss of Value for Money and Destruction of Contractor's capital* were identified as the palpable effect. *Alignment of common goals and objectives, Transparency in decision-making and documentation, Experience and past performance of the contractor* and *Capacity to perform the work* were the criteria identified to influence GETfund building project completion. The study adds on to the body knowledge on project management and demonstrates a novelty in the area of ensuring GETfund project success.

Keywords: GETfund, Completion, Construction Projects, Contractors, Consultants, Ga East Municipal Assembly

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May the Almighty God richly bless you all.

DEDICATION

Giving reverence to the Almighty God for his abundant grace and mercy, I dedicate this work to my mother, wife and my children Lawrencia, Elizabeth and Benedicta for their prayer, gallant and contributions, moral support and encouragement to the success of my education.

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TABLE OF CONTENTS

DECLARATION i

ABSTRACT ii

ACKNOWLEDGEMENT iii

DEDICATION iv

TABLE OF CONTENTS v

LIST OF FIGURES ix

CHAPTER ONE .....

1 GENERAL INTRODUCTION

..... 1

1.1 BACKGROUND OF THE STUDY 1

1.2 PROBLEM STATEMENT 2

1.4 RESEARCH QUESTIONS 4

1.3 AIM AND OBJECTIVE OF STUDY 4

1.3.1 Aim of study 4

1.3.2 Objectives of study 4

1.5 RELEVANCE OF THE STUDY..... 5

1.6 SCOPE OF STUDY 6

1.7 RESEARCH METHODOLOGY..... 6

1.8 ORGANIZATION OF THE STUDY 6

CHAPTER TWO .....

8 LITERATURE REVIEW .....

8

2.1 INTRODUCTION 8

2.2 OVERVIEW OF CONSTRUCTION PROJECTS 8

2.3 FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS

..... 11

2.3.1 Time and Cost Overrun 12
2.3.2 Inflation 13

2.3.3 Access to the Site and Site Ground Conditions..... 14

2.3.4 The Problem of Poor Project Performance 15

2.3.5. Physical Environmental Conditions 15

2.4 CLASSIFICATION OF FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS..... 16

2.5 CAUSES OF FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS 17

2.6 THE EFFECTS OF CONSTRUCTION PROJECTS COMPLETION 20

CHAPTER THREE 24

RESEARCH METHODOLOGY..... 24

3.1 INTRODUCTION 24

3.2 PHILOSOPHICAL POINT OF THE RESEARCH 24

3.3 RESEARCH STRATEGY 24

3.4 RESEARCH DESIGN 25

3.5 APPROACHES TO DATA COLLECTION 25

3.5.1 Field Survey: Primary Data Source 26

3.6 DATA COLLECTION INSTRUMENT..... 26

3.6.1 Questionnaire Development 26

3. 7 RESEARCH POPULATION AND SAMPLING TECHNIQUE 26

3.7.1 Research population 26

3.7.2 Sampling Technique and Sample size determination 27

3.8 DATA ANALYTICAL TOOL 28

CHAPTER FOUR ..... 29 DATA ANALYSIS AND DISCUSSIONS OF RESULTS 29

4.1 Introduction 29

4.2 Analysis of Demographic Characteristic of Respondents 30

4.3 ANALYSIS OF DATA..... 33

4.3.1 Validity and Reliability Test of the Instrument 34

4.3.2 Factor Analysis for factors that affect the completion time of GetFund Construction Projects in the Ga East Municipal Assembly 34

4.4 EFFECTS OF NON-COMPLETION OF GETFUND CONSTRUCTION PROJECTS 45

4.2.8 One-sample statistics of effects of non-completion 48

4.5 CRITERIA FOR COMPLETION OF GETfund CONSTRUCTION PROJECTS 51

4.5.1 Alignment of common goals and objectives 66

4.5.2 Transparency in decision-making and documentation 67

4.5.3 Increased cooperation, flexibility and service to owner/client 67

4.5.4 Experience and past performance of the contractor 67

4.5.5 Capacity to perform the work 68

4.6 CHAPTER SUMMARY 68

CHAPTER FIVE ..... 70 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS 70

5.1 INTRODUCTION 70

5.2 SUMMARY OF FINDINGS 70

5.2.1 Factors that affect the completion time of GETfund construction project in Ga East Municipal Assembly..... 70

5.2.2 Effects of non-completion of GETfund construction projects 71

5.2.3 Criteria for completion of GETfund construction projects 72

5.3 RECOMMENDATIONS 72

5.4 SUGGESTION FOR FURTHER RESEARCH..... 73

References 74

APPENDICES 82

LIST OF TABLES

Table 4.1: Respondents‟ demographic profile 31

Table 4.2: Reliability Statistics 34

Table 4.2.1 KMO and Bartlett's Test 35

Table 4.2.2: Communalities 38

Table 4.2.3: Total variance explained 40

Table 4.2.4: Rotated Component Matrix 42

Table 4.2.5: Component Extraction showing descriptive statistics 43

Table 4.2.6: Ranking of factors that affect the completion time of Getfund construction project in Ga East Municipal Assembly 45

Table 4.2.7 Results of t-test showing one-sample statistics of effects of non-completion 47

Table 4.2.9 Man ranking of Effects 49

Table 4.2.11 Independent Samples test for criteria for completion of GETfund projects 55

LIST OF FIGURES

Figure 1: Sequential relationship between the three classifications of factors affecting the completion of construction projects .....

17 Figure 4.1: Scree Plot for factors that can affect the completion time

..... 39

CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Built Environment is a significant element of the economies of all countries and supports other sectors (manufacturing, agricultural and service sectors) of the economy by providing infrastructural services necessary for the construction as well as distribution of goods plus services. The Built Environment records for around 10% of the world‟s GDP and provides 7% of global employment (Walker and Rowlinson, 2007). Chitkara (2004), opined that, building sector in countries contribute about six to nine percent to the Gross Domestic Product. In Ghana the public domain is the main employer of the Building Industry. The Construction Industry in Ghana contributed 8.6% of GDP in 2006, and 10.1% in 2008. Construction activities grew by 15% in 2007 and 14% in 2008. Building contributes to the National socio-economic development through the provision of employment opportunities at skilled and non-skilled levels (Ahadzie, 2009).

The Built Environment, however, has not been without challenges. The challenges faced by the Industry include: inadequate funding; over dominate by the public sector; maintenance problems; project abandonment; corruption and financial mismanagement; material cost variations that put borders at risk; change order management; and cost overruns. Generally, the basic objective of a buildings are constructed with the aim of achieving the required quality within the stipulated time and the cost as well (Yazici, 2009). The universal built environment is inundated with late delivery in project. According to Mbachu and Nkado (2004), these challenges have led to contractors losing their clients, increase in risk associated with investment and the inability to provide value for the client. Over the years, more and more projects continue to experience noncompletion on time.

The above challenges notwithstanding, the Industry has a major prospect since the Government of Ghana has been enjoying some support from donor agencies and Developed Nations. The oil find in the Western Region of Ghana is also expected to bring improvement in the economy and that is expected to boost construction activities. More roads need to be constructed or rehabilitated. Educational institutions at all levels require improvement in their infrastructural facilities in the form of new construction or maintenance to ensure quality education. It is therefore imperative that Government Funded Construction projects are managed efficiently and effectively in order to reap the desired national benefits. Project Managers and all stakeholders must work towards the minimization or avoidance of non-completion on time. This reading is therefore being commenced to ascertain the causes of non-completion of Government of Ghana funded construction projects, in order to make such recommendations that will help avoid them or minimize their occurrence.

1.2 PROBLEM STATEMENT

A project that is successful shows that the project has met its practical performance, sustained its plan then stayed in financial cost (Olawale and Sun, 2010). However, modern project managing is characterized by late delivery, over budgets, abridged functionality as well as quality (Williams, 2003). The Construction Client Forum in 1997, reported that 60% of clients advocated that cost targets were not being met (Jackson, 2002). A former study carried out by

Olawale and Sun, (2010) shows that 75% of water drilling projects in Ghana finished between 1970 and 1999 surpassed the unique project plan as well as cost while 25% were finished within the budget and on time.

An initial study into Ghana Education Trust Fund (GETFund) Projects for Junior High Schools and Primary schools in the Ga East Municipal Assembly shows that out of twelve (12) projects which was awarded between 2010 and 2012, only two (2) were finished within budget while the remaining ten (10) are not completed and likely to affect the cost budget with the cost overruns ranging between 1% to 65% (Amalgamated consultancy Limited (ACL) Progress Report on GETFund Projects – 2013). Project non-completion on time can affect the success of the project and its manifestations include the following: reduction in project scope; change in specifications and/or aesthetical features; delay in completion time; suspension or abandonment of project; and high fluctuation claims. Serious efforts have been made by the Government of Ghana and other clients, Consultants and Contractors towards addressing the problem of non-completion on time over the years. The procurement law was passed on 31st December, 2003 (Procurement Act 2003, 663) (Kotoka, 2012). This Act basically make available the framework for developing as well as supporting purchasing institutions and strengthening their working methods in the setting of poverty reduction, private sector expansion as well as good governance and anti-corruption (Adjei, 2006). The law was to guarantee that Public procurement is carried out in an unbiased, clear as well as non-discriminatory manner. Tender Committees for various Entities are to ensure that the cost of variations on Government Contracts do not exceed 15% of the Original Contract Sum. Monitoring Teams at the Regional, Metropolitan, Municipal and District levels have also been established to ensure that government projects are getting value for money.

Despite the serious efforts being made by the Government of Ghana and other bodies to minimize project non-completion, it still remains endemic. It is therefore imperative that an investigation is carried out into the causes of non-completion of construction projects in Ghana to support in well-

organized project management, to eliminate or decrease cost overruns and mitigate its effects on the economy as a whole.

1.4 RESEARCH QUESTIONS

In addressing these questions, the study will be able to achieve its purpose.

- What are the factors that influence the completion time of GETFund construction projects?
- What are the effects of these factors on completion of GETFund construction projects?
- What are the effective criteria for curbing the causes and effects?

1.3 AIM AND OBJECTIVE OF STUDY

1.3.1 Aim of study

The main aim of the study was to identify the factors affecting the completion of projects funded by the Ghana Education Trust Fund (GETFund).

1.3.2 Objectives of study

These objectives are formulated to assist in achieving the overall aim of the study;

- To identify factors affecting the completion of GETFund building project in Ga East Municipal Assembly;
- To identify the effects of these factors on completion of GETFund construction project in Ga East Municipal Assembly; and
- To establish effective criteria for curbing the causes and effects.

1.5 RELEVANCE OF THE STUDY

In the quest of the Government of Ghana to provide educational and other infrastructure across the country, GETFund was set up to support in the setting up of educational infrastructure and other services at all levels. According to the Performance Audit Report of the Auditor-General on GETFund Projects (2006), since its inception in August 2000, the education sector has enjoyed about ¢1.4 trillion (US$15,000,000) as at December 2005 for the purpose for its establishment. These amounts represent a portion of the 20% VAT collections (that is twelve and one half percent tax on goods and services) due the Fund over the period. In spite of this investment however, there are reports of uncompleted projects. Project non-completion which have become endemic in the Building Industry globally have impacted negatively on the success of Construction Projects. This study therefore aims to bring to bear the factors militating against the completion of these initiated projects.

The Study can also help project stakeholders, especially Consultants, Clients and Contractors and all others who are involved in the implementation of Construction Projects to ascertain the roots of non-completion of building Projects and their effects. It will therefore help the Stakeholders to put in measures that will mitigate the causes and/or effects of non-completion of construction Projects. The Study will serve as reliable information to Government and the Academia. It will help Government in shaping procurement policies to aid smooth completion of projects. This study will also serve as an academic material to Students (Graduates and Undergraduates) and Institutions that study project/Construction management. Finally, the study will serve as a source of relevant information for further studies on related topics.

1.6 SCOPE OF STUDY

Geographically, Ga East Municipal Assembly will be the focus of the study. GETFund projects were in the Municipality were thus considered. The choice of the location was due to the fact that most of the projects at the Municipality were funded by GETFund; and also quite a large number of the projects have experienced non-completion. Thus, data on project non-completion is readily available.

Contextually, the extent of the study was also limited to Contractors and Consultants that have undertaken projects in the Municipality. The study considered that such sample are better positioned to provide relevant information on the project non-completion.

1.7 RESEARCH METHODOLOGY

The study was carried out in a three-stage approach. The first was to carry out a literature search to gather preliminary information. In the second stage a questionnaire survey was piloted. Case histories were examined in the Ga East Municipality to ascertain the probable sources of noncompletion in Government funded building projects. Finally, the responses were evaluated to form a basis for minimizing non-completion in Government funded construction projects in Ghana.

1.8 ORGANIZATION OF THE STUDY

The content of each of the chapters as followed: **Chapter I** described the research overview, problem of the study as well as the objectives. It also indicated the assumptions, limitation and the relevance of the study. **Chapter II** is the literature review section of the thesis tackled general information and ideas that are relevant to the research area from articles and journals. **Chapter III** outlined the research methodology which deals with the study design; data requirement and

sources; data collection tools and methods; .data analysis and reporting. **Chapter IV** covered the discussion and analysis part. It contained the analysis on causes of project non-completion and their effects; the significant factors causing project non-completion on Government funded projects in Ghana; the correlation between the responses of respondents on the rating of the factors affecting completion of GETFund construction projects, and their effects. **Chapter V** contained the conclusion of the study, findings and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Construction projects have very poor reputation in coping with its completion. According to Ogunsemi and Jagboro (2006), construction project has been viewed as one of the yardsticks for measuring the performance of projects and the effectiveness of the project organization. According to Chabota et al., (2008) construction projects not completed on time are universal phenomenon. Completion of a construction project on time is one goal of the employer as well as builder since each party tends to incur extra charges and lose potential profits when there is a delay in completion (Chan and Kumaraswamy, 1996). Further, they stated that construction project is viewed as positive if it is accomplished on time, within budget as well as to the level of excellence standard stated by the employer at the commencement of the project. Though, severe disapprovals are created when projects take far longer than scheduled. Thus, majority of construction projects fail to meet plan deadlines. This reading aims to study the factors affecting the completion of GETFund building project that is likely to confront the current and future projects in the Municipalities.

2.2 OVERVIEW OF CONSTRUCTION PROJECTS

There has been a profound change in the construction projects and its practice over the past years. The customer-focused marketplace and fierce competitive service positioning have demanded attention to performance improvement and value addition in delivery. One major methods in which contemporary societies produce new value is through project construction which creates bodily assets that can then be used to facilitate the achievement of social and economic ends, (Winch, 2002). The creation of such assets which include schools, hospitals, and roads is most of the time

undertaken by governments to be able to attain targets set towards the improvements of conditions in various sections of their countries, (Ampadu-Asiamah, 2013).

According to Armah, (1999), construction is considered unique in Ghana as it is in every country in the world, because it stimulates the development of other sectors of the economy and contributes greatly to the overall growth of gross domestic product. Ampadu-Asiamah, (2013), argues that construction has been a key part of administration‟s outlay since Ghana gained independence in 1957. The government‟s developments plan, vision 2020, spells out plans of making Ghana a middle income country by the year 2020. Provision of infrastructure in the public sectors is prominent in the government‟s plans towards achieving this aim. This is particularly manifested in the education sector where the government through the Ghana Education Trust Fund (GETFUND) provides funding to improve education. Getfund funded construction projects in Ghana are mostly beset with problems like delay, cost overruns, lack of funds in the middle of the project implementation and mismanagement of funds at various stages of the project‟s implementation. These according to Armah (1999), can be attributed to economic difficulties within Ghana, the nature of the construction industry in Ghana and the manner in which construction projects are managed. There is however the need to identify causes of these problems in order to reduce the reoccurrence.

A project is well-defined, **(**Elbeltagi, 2009), whether or not construction, by the succeeding features: A well-defined objective, definite tasks to be done, a well-defined commencement and completion, and resources being expended. Dikmen *et al.* (2004), in their view lined up the goals of a building project as follows:

- To accomplish the building within the stated time;
- To finished within the budget; and

- To complete in agreement with technical as well as administrative specifications.

The aim of every building project is to construct something. What distinguish the building industry from other industries is that its schemes are large, constructed on-site, and usually distinctive. Time, money, labor, equipment, as well as materials are all examples of resources that are expended by the project **(**Elbeltagi, 2009). Projects according to Elbeltagi (2009), begins with a specified objective recognized by the client and completed by the project team. As the team instigates to design, estimate, and plan out the project, the members study more about the project than was recognized when the objective was first recognized.

Client‟s budget in construction projects represents the maximum expenditure on the project he is prepared to spend, (Tech, 2010). Preliminary cost which is normally established before the commencement of the construction process is dependent on the amount of money the client has available for spending on the project and the agreed approximate estimate prepared by the design team. It has become a crucial issue which influences the client‟s choice to engage in the project because it establishes the probable financial commitment prior to final designs and documentation. It also provides the design team with early cost information which influences the design solutions in respect of construction, type of specification and finishes (*Ibid*). Unfortunately, this preliminary estimate is generally prepared on scanty cost information though its accuracy to a large extent depends on the availability of reliable historical cost data. Tech (2010) has also stated that the importance of preliminary estimate cannot be overemphasized as wrong estimates give the project a bad start which can lead to shoddy works and abandonment, hence loss of value for money by prospective clients. Most often than not any client who wants a building erected would want to know his financial commitments upon which the feasibility of the project depends. An initial price estimation which is too high may dismay the employer from continuing further with the project and so the possible interest is lost. The accuracy of this initial estimate is important because it

serves as the budget limit for the client base on which planning and probably fund sourcing are done.

Dikmen *et al.* (2004) give the meaning of planning as trying to expect what will occur in addition to developing means of attaining the set of goals and objectives and make clear that in scheduling thought there are goals to attain in future. The authors define planning as a practice through which exertions as well as decisions are made to attain the aims at the preferred time in the preferred means. Project preparation has been also well-defined as the procedure of choosing the one technique and order of work to be employ on a project from among all the numerous methods as well as orders in which it could be done, (Callahan et al, 1992). They also noted that this method supplies complete evidence adopted for time approximation as well as plan; also a standard for project control. Mubarak (2005) advocated that project planning works for numerous roles such as: cost estimating, planning, project control plus safety management.

2.3 FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS

Delay has been indicated to be a factor that impede the success of the construction project including buildings. Construction delay according to (Sweis, 2013) is considered to be one of the most recurring problems plus it has an adverse influence on project achievement in terms of time, cost, quality, and safety. Nega (2008) however stated that, some construction projects encounter delay on completion. Delay of construction projects according to Nega (2008) requires an in-depth exploration to advance the productivities of the building firm. Frimpong and

Oluwoye, (2003) has also indicated that construction projects worldwide are facing delays in completion of their projects due to dissimilar causes. Delays according to Ahmed et al, (2002), can be attached to all building works however, the extent of the delay differs because different

buildings have their own complexities. In addition, Sweis *et al*. (2008) alluded that, building projects have become victim of delays, no matter the caliber of the project whether simple or complex. Nevertheless, suggested that it is about time such challenges are fully combated because the demand for building is rising as a result of population growth.

Sanders and Eagles (2001) defined delay as "a happening that result to prolonged time to accomplish all or part of a project". Aibinu and Jagboro (2002), has suggested that delay is a condition when the builder as well as the client in cooperation or individually contribute to the unfinished of the project within the decided period of contract. Non-completion of project to the client means loss of income. In the situation of the builder, Non-completion of project denotes to the greater costs as a result of lengthier work time, labor cost increase as well as higher construction costs.

2.3.1 Time and Cost Overrun

It is not rare to see building projects failing to attain their operation of constructing facilities in the stated cost and time (Nega, 2008). Time overrun is an exact recurrent occurrence and is nearly related with projects in all the MMDA"s. Time overrun is well-defined as the extra time afar scheduled dates of completion observable to the builders (Kaming et al 1997). Barely do projects get over on time and within financial plan since building projects are open to indeterminate environs plus factors like the economic as well as political environs and legal rules, existence of several interest groups like the client, end users, advisors, builders, financiers, construction complexity, materials, project funding and climatic setting (Nega, 2008). Similarly, Alinaitwe *et al*. (2013) also noted that changes in the plan, the scope of work as well as project circumstances can influence the budget and the time of accomplishment. El-Razek et al., (2008) in the same way

ascertained the key factors thwarting cost as well as time overrun as insufficient tools and machinery; variable sources of materials on the native market as well as accidents on site.

When the final cost of the projects exceed the initially estimated cost, it is concluded that the project have outlived its budget which is termed as cost overrun (Azhar et al., 2008). Interchangeably, increase in cost, escalation in cost and overrun in budget can be used for cost overrun. Datta (2002) defined cost escalation as a universal difficult in government projects. LeHoai et al., (2008) made available the three top grounds of cost overruns as materials cost upsurges as a result of inflation, imprecise quantity takeoffs as well as increase in labour cost as a result of the restrictions of the environmental. Earlier, weather conditions, socio-cultural influences, the environment of the project, poor productivity, the level of participants, supplier manipulation, financial steadiness, insufficient production of raw materials have been identified to be contributing factors of cost overrun (Bubshait and Al-Juwait, 2002). In their research, Kaliba, et al., (2009) concluded that construction projects cost escalation is as a result of factors like extreme weather, scope variations, environmental protection as well as mitigation costs, plan delays, strikes, technical difficulties then inflation.

2.3.2 Inflation

Adamson (2006) has defined inflation as the frequency of increase in overall price level in a country. Thus, money loses its value. Inflation can upsurge the costs of construction. If the degree of inflation increases beyond the anticipated level throughout the period of construction, then the existing cost estimation will be surpassed (Nega, 2008). Clearly factors contributing to the delay of projects and contribute to the shooting-up of the cost anticipated earlier.

Construction projects estimation of cost are produced at an exact time and the prices employed within are pertinent only for that time as well as for short near future since they are subject to market forces. The influence of inflation can result to loss of profit to builder and higher cost overrun to the client.

2.3.3 Access to the Site and Site Ground Conditions

According to Griffith and Watson (2004) site condition is a contributing factor because it restrict the inflow of materials to site, equipment and laborers especially when the ground conditions are nothing to boost about. The inherent of these conditions thus affect the speed of delivery. This is often due to poor investigation on the features of what the site soil conditions are. This has to do with either there are standing buildings or not, what the state of the soil beneath is, the control of the soil below ground level and the travel length of the water table to the ground level. The study of Nega (2008) indicates that unforeseen sub surface situations can, at times, necessitate necessary restructure of projects at great cost. Variations in surface ground conditions can result to difficulties for moving machinery as well as materials around the site, and in undertaking excavations in addition to laying foundations. It can as well upsurge costs and add to the building time required. The research of Frimpong et al. (2003) also reveal that ground challenges and unforeseen geological conditions result to the non-completion of most construction projects. During periods where there are challenges in arriving at the work site, in the nature of faulty surfacing of roads and thinness of the road negatively affect construction completion. It is likely that these challenging conditions are disregarded by the preliminary assessment.

2.3.4 The Problem of Poor Project Performance

Most construction projects in Ghana have had performance difficulties. Factors like uneven issue of funds by the owner, inadequate contract information and performance appraisal have

contributed to the flawed realization of the success of GETFund construction projects in GEMA. The World Bank according to Mensah (2007), in tracking the performance of the Ghana Education Trust Fund (GETFund) projects, identified that the Ministry of Finance has never released the full allocation to the Administrator of the GETFund. A key finding that stood out as major drawback on the success of the GETFund projects is the late release of funds for the projects. This finding indicates that construction projects in GEMA have experienced performance problems.

Best and Valence (1999) also contends that the difficult of building projects regularly taking longer as well as costing more than initially expected is frequently as a result of poor planning before the design stage of the construction procurement procedure.

2.3.5. Physical Environmental Conditions

Physical green settings are elements where no side to agreement has control off (Faridi and ElSayegh, 2006). Mbachu and Nkado (2006) advocated that environmental-cultural concerns as well as unpredicted contingences create such constituents and they restrain effectively GETFund building projects delivery in GA East Municipal Assembly. They include political and economic instability, projectile missile, the influence of natural hazards as well as adversarial native weather conditions i.e. fire, flood, rainfall, high temperature, and many others.

2.4 CLASSIFICATION OF FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS

There are three basic ways to classify factors affecting the completion of building projects according to Williams (2003). They are: Excusable non-completion with reparation**,** Excusable non-completion without reparation as well as Non-excusable non-completion.

- **Excusable Non-completion with Compensation**

Excusable non-completion with compensation is affected by the owner's activities or inactions. This occurs as a result of clients‟ breach of a duty specified in the agreement. When builders come across this situation, they are titled to time addition and financial compensation as a result of the delays. An example of an excusable non-completion of construction projects with compensation would be when a client repudiates access to the site once the notification to continue is given.

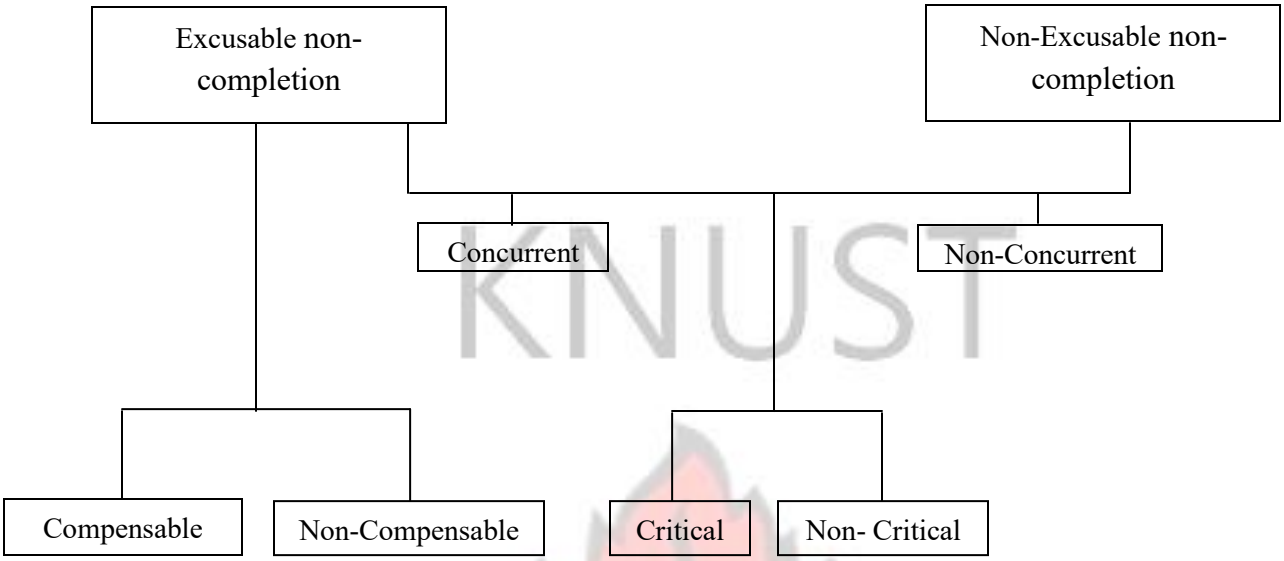
- **Excusable Non-completion without Compensation**

Excusable non-completion of construction projects without compensation is where neither the owner nor the builder is considered accountable. A time extension will be given as there are no roots for damages with this. The builder will not get compensation for the cost of not finishing the project on time, however be eligible for an extra period to finish the task and is released from any legal bond to carry out liquidated indemnities for the span of delay.

- **Non-excusable Non-completion**

Non-excusable non-completion is a situation in which the builder also causes or accepts the risk for. These non-completion of construction project might be the outcomes of scanty planning or mishandling, underestimates of productivity, building inaccuracies, weather, equipment failures, staffing difficulties, or mere bad luck. Such delays are fundamentally the builder‟s concern and no relief is permitted. These are in the control of the builders.

Figure 1: Sequential relationship between the three classifications of factors affecting the completion of construction projects



Source: Vidalis ***et al,*** 2002.

2.5 CAUSES OF FACTORS AFFECTING THE COMPLETION OF CONSTRUCTION PROJECTS

There is an extensive range of opinions concerning the factors affecting the completion of construction projects. An extensive literature conducted in the factors contributing to noncompletion of projects exist, whilst others are realized as a result of a single problem or party to the contract, the rest are attributable to an inter-connected array of problems or mistakes (Ahmed et al, 2002). As the route of building project is very complex with amalgamation of several parties" activities, many phases of work are carried out for a long period till the completion, (Aziz, 2013).

Preliminary research data conducted on delays in building projects collected through review of literature reveal that delay causative factors are common to almost all construction projects (Ampadu-Asiamah, 2013). The intensity or the gravity of the causes however differs with each project. Aibinu and Odeyinka, (2006) observed that delays in building projects are caused generally by actions and inactions of project participants, which cause ripple effects on the roles

played by others on the project team. Tumi et al (2009) studied the most important factors affecting the completion of building project in Nigeria. They stated the factors to be shortage of material, improper planning, financing, poor contract management, and changes in site conditions. Haseeb et al., (2011) reported from their investigations that, the most imperative and superior classed causative factors of delay are delay in payment to contractor, insufficient fund allocation, inflation and monthly payment complications.

Ahmed, et al., (2002) classified causing the non-completion of construction project into two groups such as internal causes (client, consultant, financial problems faced by public organizations as well as builders, poor contract management, design changes, inadequate materials, and inadequate resources) and outside factors which are outside the control of the organization. These include extreme weather and scarcity of resources.

- **Client Related Factors Affecting Construction Project Completion**

A client who is considered as either experienced or inexperienced and an originator of a study, is accountable for the creation of the project. The clients according to (Olatunji 2010) offer treasured info which could aid many partakers to advance their project effectiveness. The owner attribute as well as their project management method can have an important effect upon the fulfillment of project intents. Numerous readings by various researchers have recognized the causes of client related delays, Zaneldin, (2006) identified the variation orders, oral variation orders by client contribute to roots of delays. Rahsid et al (2013) asserted that, clients perceive cost overrun as an avenue of losing their hard earned income, productivity deficiencies and the inappropriate use of scarce resources available to them. Al-Hazmi (1987), identified in the rich city of Saudi Arabia that, a key contributing factor to delay in construction works is the inability for the client to fund

for the project and also delay in payment to the contractor. Moreover, variations to the scope of the contractor is also a contributing factor to construction project delay.

- **Consultant Related Factors Affecting Construction Project Completion**

Haq and Aslam, (2013) has stated in their study that builders and owners frequently assert that there are minimum figures of accountable for projects non-completion. Assaf and Al-Hejji (2006) stated that, the prime causative factors for construction projects not completed on time as viewed by consultant‟s inadequate planning of builders, client‟s payment of work done, contractor‟s poor site management and less availability of equipment in addition to materials. From Haseeb *et al.,* (2011), alterations in designs, low performance by consultants, readiness and endorsement of drawings, poor investigation of site, ineffective management of contract, and irresponsiveness and assessment are the chief barriers of the consultants. Dynamics contributed by advisors (Olatunji 2010), consist of late orders, delays in task endorsement, late arrangement of interim valuations plus certificates for the contractor, and late assessment and approval of work.

- **Contractor Related Factors Affecting Construction Project Completion**

Many researchers have recognized the causes of contractor related delays. With reference by Murali et al (2007), identified the unsuitable scheduling contractor, poor site management as well as the contractor inexperience difficulties with subcontractors result to causes of projects not completed on time. Sweis et al (2008) detect the inadequate of contractors administrative staffs, inadequate technical experts, failure in cooperation between the client and the contractor, delay in the mobilization stage, non-adherence to organizational health and safety policies, inadequate technical capabilities of staff, inaccurate interpretation of technical documents, scheduling and planning related challenges and other project management challenges are contributors to construction delays. While writing about builder associated delaying factors, Sambasivan and

Soon (2007) identified unsuitable scheduling by contractor, unproductive site managing, and lack of understanding of the contractor, and financial problems of contractors as the major issues of projects non-completion. Yang and Wei (2010) reported that the problems in funding, clashes in sub-contractor‟s plan during project implementation, rework as a result errors, poor communication as well as organization, ineffective scheduling and planning, inexperience of subcontractors and inadequate skilled personnel. Zaneldin (2006) similarly, proved that the subcontracting difficulties, contractor is not well systematized; conflicts between contractors and other parties, contractor monetary difficulties as well as bad excellence of builder‟s work result to the causes of construction projects not completed on time. In a perfect description of delays in construction, it could be realized that mistakes of contractors and consultants as well as the inability of the client significantly contribute to delay in construction projects

2.6 THE EFFECTS OF CONSTRUCTION PROJECTS COMPLETION

The effect on the completion of GETFUND construction projects can be direct or indirect. The direct impact according to Annan (2003) can be measured by calculating the exact time units of the project operation that has been directly affected and the indirect impact is the resulting ripple effect on the whole project. This is usually difficult to measure. It has been pointed out, however, that when the effects on the completion of GETFUND construction projects occur, the client stand to lose in terms of disruption of programmes and sometimes having to spend more on the project than budgeted for (Lock, 2003). Such situation affects the reputation of both the consultant in charge and the contractor as well. For the consultant and contractor, completing the current project and winning the next one is a very important priority (Winch, 2002) thus having construction projects not completed on time can cost them more than planned.

Delays also referred to as time overruns have been one of the major and most common factors affecting construction all over the world. These factors are frequently complemented by cost overruns thus, costly to all parties involved in building projects and often result in litigation, increase in cost of construction, settlement, cash flow difficulties, an overall feeling of concern concerning each other, abandonment of projects, disruption of development programmes, and destruction of contractors‟ and consultants‟ reputations among others (Annan, 2003). Other possible consequences of factors affecting the completion of GETRFUND construction project contribute to time overrun, abandonment of projects, cost overrun and even contractual disputes.

Clients and contractors always faces cost overrun during construction stages. Underestimation of construction might be the most significant factor in contributing to cost overrun because cost overrun has been described as when the final cost exceeds in the initial cost of the project. Cost overrun always happens due to client and contractor‟s own fault such as design change by client, payment delayed on agreements as well as faulty building work, imprecise of cost estimation, as well as the need to take accountability to pay client loss in addition to cost. Once a project cannot be completed in time, it will have an influence on the cost of project over budget. Koushki and Kartam (2004) suggested in their study that, material selection, its availability is always considered with the mindset of avoiding future cost and time overrun. Construction projects not completed on time in the Ga East Municipal Assembly has negative influence on the client and contractors‟ performance.

The in completion of some construction projects occurs as a result of argument among parties like client, consultants as well as the contractor. This dispute arises for the reason that client disappointment to make compensation to the builder. Poor communication may also result to

misinterpretations, fights as well as disagreements. Thus it obliges that the contractor and the consultants must have active communication abilities because it through it that information flows easily to the parties to the project. Mediation is done to solve most contractual issues, most contractual issues emanate from the disagreement between the parties to the project. the findings of the mediation process normally calms nerve down however, in case it fails the conventional settling of disputes is then comes into play. Litigation appealed by relevant parties is the dispute determination in the courts. In litigation, the parties involved have a trial either by a court alone or by jury. If those parties are also not satisfied with the judgment, then they can appeal again if they have any new indication to proof their right. Once the parties agree the judgment, the faulty party needs to take accountability to pay the penalty of the delayed construction project.

The most acute adversarial influence of in-completion in building projects is rejection that could be provisional or in worse situation for permanent period. Total abandonment means putting an immediate stop to the on-going construction project owing to the fact that, the client is facing financial difficulties. Some current in-completion on construction project‟s is totally abandoned because of clients or builder challenge which includes client‟s bankruptcy, contractor run away, poor marketing and sales strategies. The influence of this turns to affects parties such as the contractor, sub-contractor, client, consultant, supplier and the purchasers who will also suffer in cost damages as a result project abandoned. Timely delay however, regularly happens in all stages of a building project then subsequently increases project total period (Yang and Ou, 2008).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This section presents the general approach employed in divulging information for the answering of the study problem. It shows the research design of the study, the research philosophical underpinning the study, sampling and sampling procedures, instrumentation and data gathering techniques. The chapter also delves into the data analysis plan and the ethical considerations of the study.

3.2 PHILOSOPHICAL POINT OF THE RESEARCH

From literature point of view, the philosophical questions of actuality, understanding, as well as value, have major effects on the research design (Christou, *et al.,* 2008). Thus, philosophical matters of epistemology, ontology, axiology as well as methodology rules necessitates to be advocated openly as they form the prime of study instruments (Christou, et al., 2008). Epistemology is the division of philosophy on how individuals control what is right; positivism and interpretivism (Streubert & Carpenter, 1999). This study trails the positivists method to understanding. At the ontological level, the location accepted for this study is objectivism.

3.3 RESEARCH STRATEGY

This section explains the direction the researcher takes conducting the research. Naoum (1998) outlines research strategy as the query of study goals. Therefore, Baiden (2006) declared that, the three key types of study approaches are quantitative, qualitative, as well as triangulation. Though, the best to acclimate any specific approach be dependent on the initiative of the study, the type, and availability of info for the study (Naoum, 1998; Baiden, 2006). Therefore, this study adapts a

quantitative approach, as the key information gathering techniques employed in this study was questionnaires. This technique will allow the researcher to ask all respondent the same question with planned answers, which permit impartial facts to be gathered through the reading thus being in cycle with the positivist practice with survey as the core data gathering approach.

3.4 RESEARCH DESIGN

A study design is a gathering of guides or instructions or data gathering (Adams &Schvaneveldt, 1985; Ogoe, 1993). The study employed a questionnaire survey in the search ascertain in addition assessing the factors thwarting and the influence of the non-completion of Getfund building projects. The requires for simplification in the conclusions through the Getfund projects prejudiced the prime of questionnaire survey. Questionnaire survey improves constancy of explanations as well as advances duplication as a result of its specific reliable measurement as well as sampling techniques (Oppenheim, 2003).

3.5 APPROACHES TO DATA COLLECTION

According to (Bernard, 2002), an important part of a research is the data collection approach adopted for the study but should conform to the aim and objectives of the study. . It is therefore important that in choosing the way in which the data will be obtained and from whom the data will be attained be done with sound judgment, particularly as no amount of study can make up for unsuitably gathered data (Tongco, 2007). According to Naoum (1998) there are two methods to data gathering namely, primary and secondary data collection. Patton (2002) noted that using more than one data collection instrument strengthens and gives credibility to the study. The researcher will adopt the used of multiple sources of data as of the additional benefits associated with multiple

sources (Owusu, et al., 2007). Hence, this method for collecting data in this study will be divided into two key parts desk survey and field survey.

3.5.1 Field Survey: Primary Data Source

The field survey is involved with the gathering of observed data. A survey is employed to gather original data for describing a population too large to discern openly (Mouton 2001). The researcher used surveys because according to Robson (2002), surveys are used for comparatively large number of participants in an inadequate time frame. Robson (2002) added that there are two types of surveys existing: the descriptive survey as well as the analytical survey (Robson, 2002).

3.6 DATA COLLECTION INSTRUMENT

3.6.1 Questionnaire Development

Inspections of demand to respondent‟s comfort of understanding as well as providing the essential information directed the set-up of the questionnaires. The questionnaire designed comprises; close-ended questions, open-ended questions as well as scaled response questions. The likert response scale engaged, measures the strength of respondent‟s view. The questionnaires were organized to bring into line with the key purposes of this study.

3. 7 RESEARCH POPULATION AND SAMPLING TECHNIQUE

3.7.1 Research population

A research population can be well-defined as the totality of a well-defined gathering of individuals or entities that have a shared, required features or characters (Polit and Hungler, 1985). The research covered a population of Two hundred and fifteen (215) construction professionals involving Consultants and Contractors who have undertaken projects in the Municipality. The

chief goal for the usage of this class of people is that their doings directly or indirectly have a bearing on GETFund project in definite areas.

3.7.2 Sampling Technique and Sample size determination

In order to obtain a sample, the Kish Formula was used to determine the sample size. From the Statistics gained from the Municipality, there were Two hundred and fifteen (215) construction professionals consisting of (65) Consultants and (150) Contractors. To determine the sample size, the Kish Formula was used.

Kish Formula states that:

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

$$n' = \frac{s^2}{v^2}$$

Where

v = the standard error of sampling distribution = 0.05 s^2

= the maximum standard deviation of the population

Total error = 0.10 at a confidence interval of 95%

$$s^2 = p(1-p) \; where \; p = 0.50$$

$$= 0.50(1-0.50)$$

$$= 0.25$$

p = the proportion of the population elements that belong to the defined region.

$$n' = \frac{s^2}{v^2}$$

$$= \frac{0.25}{0.05^2} = 100$$

N = 215

Therefore

$$n = \frac{100}{\left(1 + \frac{100}{215}\right)} = \frac{100}{(1 + 0.465)} = 68.25 \approx 68$$

This sample size formula provided the minimum number of questionnaires that were to be administered. The sample size was found to be sixty-eight (68) professionals out of the two hundred and fifteen (215). From these sample twenty (20) consultants and forty-eight (48) were contractors.

3.8 DATA ANALYTICAL TOOL

The demographic data was analysed by means of descriptive statistics (precisely percentages, frequencies and cross-tabulation) while the dependent variables was analysed using Factor Analysis and Relative Importance Index.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS OF RESULTS

4.1 Introduction

This section presents the data analysis and discussions of the findings of the study. The prime goal of the research is to ascertain the causes affecting the completion of projects funded by the Ghana Education Trust Fund (GETFund) using the Ga East Municipal Assembly as a case study. A quantitative, descriptive survey design was used to collect data from respondents. To collect the primary data, the researcher personally distributed survey queries to respondents. In all, a total of 68 respondents consisting of consultants/professionals, contractors and clients were purposively selected for the study and questionnaires administered to them. Out of the 68 survey queries administered to the respondents, 53 were collected and regarded eligible for the aim of the analysis. Representing a response rate of 77.94%. The high response rate of 77.94% percent was achieved because of personal distribution and the persistent follow-ups to retrieve the questionnaires. These 53 questionnaires were used for the analysis.

Data was evaluated using the computer programs, Statistical Package for Social Sciences (SPSS) and Microsoft excel. The analysis consists of descriptive statistics in terms of percentages, frequencies, mean scores and standard deviations. Factor analysis and ranking of various variables were also done. The analysis is pivoted around the objectives of the study, that is, to identify the factors that affect the completion of Getfund building project in Ga East Municipal Assembly, to identify the effects of factors that affect completion of Getfund construction project in Ga East Municipal Assembly and to establish effective criteria for curbing the causes and effects. The research findings for the study are presented in tables.

4.2 Analysis of Demographic Characteristic of Respondents

A total of 53 respondents contributed to the study. Though it was not part of the intent of the study, this set of data was planned to describe demographic variables of the sample as well as to evaluate for any effect on the study findings. The demographic data involved profession of respondent, length of time of employment with the organization, position of respondent in the organization, highest educational qualification and length of time in professional practice. Thus questions were asked regarding the background information of the respondents. Their responses are given in table 4.1 below.

Table 4.1: Respondents' demographic profile

1. Profession of respondents	***Frequency***	***Percentage (%)***
Quantity Surveyor	*24*	*45.3*
Architect	*13*	*24.5*
Structural Engineer	*10*	*18.9*
Mechanical Engineer	*3*	*5.7*
Works Supervisor	*3*	*5.7*
Total	***53***	***100.0***
2. Length of time of employment		
Less than 5 years	*17*	*32.1*
6-10 years	*14*	*26.4*
11-15 years	*14*	*26.4*
More than 15 years	*8*	*15.1*
Total	***53***	***100.0***
3. Position in the organization		
Works Engineer	*13*	*24.5*
Architect	*12*	*22.6*
Director	*11*	*20.8*
Works Superintendent	*9*	*17.0*
Quantity Surveyor	*8*	*15.1*
Total	***53***	***100.0***
4. Highest educational qualification		
1st Degree	*20*	*37.7*
Masters	*19*	*35.8*
Diploma/HND	*13*	*24.5*
Technician (CTC I, II, III)	*1*	*1.9*
Doctorate	*0*	*0.0*
Total	***53***	***100***
5. Length of time of professional practice		
16 and above years	*17*	*32.1*
11-15 years	*14*	*26.4*
Less than 5 years	*11*	*20.8*
6-10 years	*11*	*20.8*
Total	***53***	***100***

Source: Field survey, 2014

It is clearly seen from table 4.1 that in terms of respondents‟ profession, 24 (45.3%) of the respondents were Quantity Surveyors, 13 (24.5%) were architects, 10 (18.9%) were structural

engineers and 3 (5.7%) each were mechanical engineers and works supervisors. This is a clear vindication that respondents participating in the study were dominated by quantity surveyors and architects with a few practicing as mechanical engineers and works supervisors.

As can be seen from the table above, majority of the respondents have been employed in their organizations for less than 5 years (32.1%) followed by those who have been employed for 6 to 10 years as well as those who have been employed for 11 to 15 years (26.4%). The remaining 15.1% of the respondents have been employed for more than 15 years by their organizations. This is an indication that majority of the respondents have been with their current organization for less than 5 years. This findings created some doubt in the minds of the researcher regarding the credibility and the reliability of data provided by the respondents because, the researcher initially thought respondents have had little experience in the construction industry since they reported that they have been in their organizations for less than 5 years, which could be that they have been employed for as low as just a year or two. However, this doubt was relinquished when it was revealed that majority of the respondents have been in professional practice for as long as 16 years and above (table 4.1). This means that respondents have spent a lot of years with other firms practicing as professionals but less than 5 years in their current firm and therefore can provide credible and reliable information reflecting the prevailing situation.

In terms of respondents‟ positions in the organization, majority of the respondents (13, 24.5%) indicated that they are works engineers whiles the minority indicated that they are quantity surveyors (8, 15.1%).

When we see the educational qualifications of the respondents, it is clearly seen from table 4.1 that most of the respondents are first degree holders (20, 37.7%). This is followed by masters degree holders (19, 35.8%), diploma/HND (13, 24.5%) and those who are technician (CTC I, II,

III) (1, 1.9%). This is an indication that officers at the education office are highly educated and can read and write. However, none of the respondents (0%) had a doctorate degree and this could mean that most of the respondents concentrate on having long service rank and experience rather than a higher academic qualification.

Finally, from table 4.1 above, looking that the length of time of professional practice by respondents, 17 (32.1%) reported that they have been in professional practice for 16 years and above, followed by those with 11 to 15 years professional practice experience (14, 26.4%), those with less than 5 years as well as 6 to 10 years professional practice experience (11, 20.8%). This is a clear indication that majority of the respondents have had significant professional practice experience of more than 5 years. 79.2% of the respondents fall under this category and this is vital to the reliability and credibility of data generated from the respondents.

4.3 ANALYSIS OF DATA

Analysis of respondents‟ answers to each key question in the questionnaire was carried out and the result shown in tables. A total of 53 copies of questionnaire were responded to as shown below in the following tables below.

The respondents were asked their opinions on factors that can affect the completion time of Getfund construction projects, factors that consultants can attach to the effects of the noncompletion of Getfund construction projects and criteria which will influence the completion of Getfund construction projects on a five point Liker scale. Response data generated are subjected to analysis using descriptive statistics and inferential analysis and presented and discussed in this section accordingly.

4.3.1 Validity and Reliability Test of the Instrument

Validity test indicates whether the study or the study instrument employed in conducting the test of the study task is employed in a different place has the same or similar variables with the previous information employed, the outcome of the test will be very alike. Thus, reliability of a measurement can be believed to be the extent to which a measurement is free from viable mistakes. This shows that a research methodology can be said to be consistent only when it produces the same outcome after recurrent usage. Thus, the goal for testing reliability of research doing is to ensure that variability of the generality of the deduction (Bayode and Adebola, 2012) ***Table 4.2: Reliability Statistics***

Cronbach's Alpha	*N of Items*
.883	*46*

Source: Field Survey, 2014

Cronbach's alpha is a measure of internal steadiness, that is, how closely associated a set of items are as a group. It is considered to be a measure of scale reliability. The Cronbach‟s alpha coefficient, in this case is .883 (see table 4.2). This value is above .7, so the scale can be considered reliable with our sample.

4.3.2 Factor Analysis for factors that affect the completion time of GetFund Construction Projects in the Ga East Municipal Assembly

The number of dependent variables is extensive and so there is a possibility that some of the variables will result in effects which are directly related. A reduction technique is needed to ascertain which of the specific variables could be evaluating aspects of the similar core facet. According to Ahadzie (2007), factor analysis is convenient for finding clusters of related variables and thus ideal for many variables into fewer ones that can be more easily understood.

Throughout factor extraction, the shared variance of a variable is divided from its sole variance as well as error variance to disclose the fundamental factor structure and hence only shared variance appears in the solution.

4.3.2.1 Initial Considerations

Factor analysis relies on the correlation matrix of the variables involved and the correlations generally requires a large sample size before they are stabilized. The reliability of factor analysis is reliant on the size of the sample. A minimum of ten observations per variable is essential to evade computational complications (Decoster, 1998 as cited from Field, 2005). A suitable choice is offered by SPSS to check whether the sample is big enough: The Kaiser-Meyer Olkin measure of sampling adequacy (KMO test). From to existing literature, the value of the KMO must be greater than 0.5. In reference to the data presented in table 4.2.1, the data from the survey for the innovative capabilities factors is adequate by these tests. The value of KMO test is greater than 0.5.

Table 4.2.1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	675.824
	Df	231
	Sig.	.000

Source: Field survey, 2014

4.3.2.2 Data Screening/Preliminary Analysis

In factor analysis, it is customary to firstly look at the inter-correlation among variables. As regards the correlation matrix, two things are significant: the variables have to be inter correlated but they should not correlate too highly (extreme multicollinearity and singularity) as this can cause problems when defining the sole influence of the variables to a factor (Field, 2005).

Intercorrelation is checked in SPSS by using the KMO test and Bartlett‟s test of sphericity while multicollinearity is checked by using the determinant of the correlation matrix. KMO statistic varies from 0 and 1. A value of 0 shows that the sum of partial correlations is large comparative to the sum of correlations, showing diffusion in the pattern of correlations and therefore factor analysis is most likely inappropriate. When a value is close to 1, it indicates that patterns of correlations are relatively compact and so factor analysis should give reliable factors. Values between 0.8 and 0.9 are great according to Hutcheson and Sofronica (1999) as cited by Field (2005.) Table 4.2.1 shows that factor analysis is appropriate. Bartlett‟s measure tests the null hypothesis that the original correlation matrix is an identity matrix. For factor analysis to be applied some relations between variables are needed and if the R- matrix were an identifying matrix, then all correlation coefficients would be zero. The yearning therefore is for this test to be significant (i.e. must have a significance value of less than 0.05). A significant test indicates that R-matrix is not an identity matrix and therefore there are some relationships between variables that should be included in the analysis. From Table 4.2.1, Bartlett‟s test is highly significant and hence recommended for factor analysis. This determinant of the matrix is used in testing for multicollinearity or singularity. The determinant or the R-matrix should be greater than 0.00001. Field (2005) opines that if it is less than the value, the variables that correlate very highly should not be included in the analysis. However no two variables correlate very highly. Mild collinearity according to Field (2005) is not a problem for factor analysis and hence the data is appropriate for factor analysis.

After all necessary tests of reliability and survey instrument, survey size competence as well as population matrix were satisfied, the data set was subjected to factor analysis employing principal component analysis (PCA) with varimax rotation. Preceding the principal component analysis, the

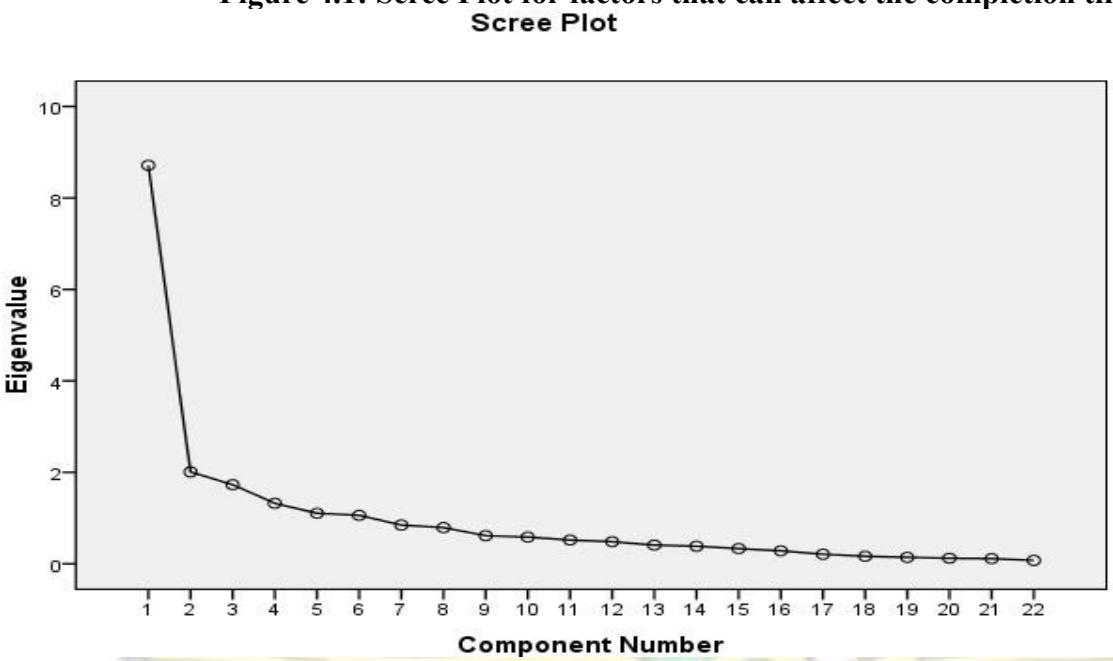
communalities intricate were first documented. Communalities show how much of the variance in the variables has been accounted for by the extracted factors and it is extremely useful in deciding which factors to finally extract. From Table 4.2.2, the average of the extractions is 0.724.

Table 4.2.2: Communalities

Factor	***Initial***	***Extraction***
Design errors and omissions	*1.000*	*.687*
Unnecessary variations	*1.000*	*.728*
When the specification of work is not well defined	*1.000*	*.806*
Site accidents	*1.000*	*.573*
Contractor's financial difficulties	*1.000*	*.783*
Unavailability of the required labour	*1.000*	*.640*
Government interference	*1.000*	*.813*
Work load on contractors	*1.000*	*.711*
Delays in payment of work done	*1.000*	*.852*
Inadequate control procedures	*1.000*	*.808*
Weather conditions	*1.000*	*.682*
Safety considerations/emergency field condition	*1.000*	*.611*
Demolition and re-work	*1.000*	*.703*
Lack of coordination between consultants and contractors or sub- contractors	*1.000*	*.704*
Delay of materials delivery on site	*1.000*	*.790*
Lack of communication	*1.000*	*.701*
Poor monitory and inspection	*1.000*	*.661*
Design complexity of project	*1.000*	*.776*
Conflicts on the project site	*1.000*	*.675*
Poor management of consultants and clients resources of the project	*1.000*	*.660*
Change of design or scope	*1.000*	*.823*
Unreliable sources of materials on the local market	*1.000*	*.749*

Extraction Method: Principal Component Analysis.
Source: Field Survey, 2014

Figure 4.1: Scree Plot for factors that can affect the completion time



Source: Field Survey, 2014

Table 4.2.3: Total variance explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	8.713	39.603	39.603	4.691	21.324	21.324
2	2.008	9.129	48.732	4.032	18.327	39.651
3	1.728	7.856	56.588	2.846	12.935	52.585
4	1.323	6.013	62.601	1.559	7.086	59.671
5	1.104	5.019	67.620	1.556	7.072	66.743
6	1.059	4.814	72.434	1.252	5.691	72.434
7	.846	3.847	76.281			
8	.791	3.595	79.876			
9	.614	2.791	82.667			
10	.584	2.654	85.321			
11	.520	2.362	87.682			
12	.483	2.197	89.879			
13	.408	1.856	91.735			
14	.383	1.742	93.477			
15	.331	1.506	94.983			
16	.283	1.286	96.268			
17	.208	.945	97.213			
18	.164	.747	97.960			
19	.140	.638	98.598			
20	.122	.552	99.151			
21	.113	.512	99.662			
22	.074	.338	100.000			

Extraction Method: Principal Component Analysis.

Source: Field Survey, 2014

The Guttmann-Kaiser rule and the Cattel scree test were used in showing the number of factors to be extracted. Guttmann-Kaiser rule suggests that only factors with an eigen value greater than 1 should be retained whilst the Cattel scree test proposes that all additional components after the one beginning the elbow should not be involved. Applying these criteria on the number of principal components to be extracted suggests that **six (6)** components should be extracted. As demonstrated in Table 4.2.3, and Figure 4.1, six (6) components with eigenvalues more than 1.0 were extracted.

4.3.2.2 Number of Factors Extracted

The total variance clarified by each component extracted is as follows: The first principal component (component 1) accounted for 39.603% of the total variance whilst the second principal component (component 2) explained 9.129% of the total variance. The third component accounted for 7.856%, the fourth component accounting for 6.013% and the fifth components accounting for 5.019%. Finally, the sixth component (component 6) accounted for 4.814%. Together, the 6 extracted components cumulatively explained 72.434% of the variation in the data set, and this meets the cumulative proportion of variance criterion, which says that the extracted components should together elucidate at least 50% of the variation.

4.3.2.3 Discussion

The 22 factors in this study were designed to find those among them that correlate highly with each other. A factor analysis (principal component analysis) with varimax rotation was used to

investigate how these variables correlate with each other and for that matter see how the variables can be abridged to a smaller number of factors that can represent the variables. The eigenvalues produced in the extraction were studied on both the total variance explained table 4.2.3 and the scree plot (Figure 1) with the following results;6 factors, representing about 72% of the variables „variance, were extracted to represent 22 out of the 22 factors. The 6 factors with eigenvalues more than two are reported here. Factor loadings, after varimax rotation is shown in Table 4.2.4 below as the rotated component matrix table. Names were assigned to all the grouped factors and descriptive statistics was used to find means and standard deviations to determine the significance of all the various factors within each group as the factors that affect the completion time of Getfund construction projects in Ga East Municipal Assembly.

Table 4.2.4: Rotated Component Matrix

Factor	***Component***		
	1	***2***	***3***
Unnecessary variations	***.799***		
When the specification of work is not well defined	***.791***		
Design complexity of project	***.723***		
Demolition and re-work	***.661***		
Conflicts on the project site	***.643***		
Site accidents		***.691***	
Unreliable sources of materials on the local market		***.705***	
Unavailability of the required labour		***.616***	
Poor monitory and inspection			***.794***
Poor management of consultants and clients resources of the project			***.787***
Lack of communication			***.595***

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. a.
Rotation converged in 11 iterations.

After vivid examination of the rotated component matrix illustrated in table 4.2.4 to exclude factors that loaded well on more than one of the 6 extracted components, the 6 extracted components were reduced to 3. These 3 extracted components were then subjected to further analysis using descriptive statistics as presented in table 4.2.5 below and then discussed accordingly.

Table 4.2.5: Component Extraction showing descriptive statistics

DESCRIPTION OF COMPONENT	***Mean***	***Std. Dev.***	***Rank***	***Factor loading***
Component 1: Work related factors				
Unnecessary variations	*2.755*	*.959*	*1st*	*.799*
When the specification of work is not well defined	*2.396*	*1.025*	*2nd*	*.791*
Design complexity of project	*2.038*	*.784*	*4th*	*.723*
Demolition and re-work	*2.057*	*1.064*	*3rd*	*.661*
Conflicts on the project site	*2.019*	*.990*	*5th*	*.643*
Component 2: Accidents, materials and labour factors				
Site accidents	*1.925*	*1.016*	*3rd*	*.691*
Unreliable sources of materials on the local market	*2.453*	*.889*	*2nd*	*.705*
Unavailability of the required labour	*2.585*	*.929*	*1st*	*.616*
Component 3: Competency factors				
Poor monitory and inspection	*3.094*	*1.229*	*2nd*	*.794*
Poor management of consultants and clients resources of the project	*3.151*	*1.027*	*1st*	*.787*
Lack of communication	*2.925*	*.895*	*3rd*	*.595*

Source: Field Survey, 2014

4.3.2.3.1 Component 1: Work related factors

Component 1 comprised of 5 of the factors with 3 of them loading excellently well with above 0.7. The remaining 2 factors loading well with above 0.57. The variables loaded onto this component with their respective eigenvalues of .799, .791, .723, .661 and .643 are: unnecessary variations, when the specification of work is not well defined, design complexity of project, demolition and

re-work and conflicts on the project site respectively. The component accounted for 39.603% of the total variance and has been termed *work related factors*. However among all the factors under this components, unnecessary variations (ranked 1st) is revealed as the factor with the highest effect on the completion time of Getfund construction projects in the Ga East Municipal Assembly in Ghana, followed by when the specification of work is not well defined, demolition and re-work, design complexity of project and conflicts on the project site (table 4.2.5).

4.3.2.3.2 Component 2: Accidents, materials and labour factors

This extracted component accounted for 9.129% of the total variance with 3 variable loaded unto it. The component has been termed *accidents, materials and labour factors*. One of the 3 factors loaded excellently well with above 0.70 and the remaining two loading well above 0.57. The component comprises the following factors with their respective eigenvalues: site accidents (.691), unreliable sources of materials on the local market (.705) and unavailability of the required labour (.616). Unavailability of the required labour was ranked first by the respondents as the factor with the highest effect, followed by unreliable sources of materials on the local market and site accidents (table 4.2.5).

4.3.2.3.3 Component 3: Competency factors

Finally, the third component extracted accounted for 7.856% of the total variance, loading unto it three of the factors with two of the three factors loading excellently well above 0.7 and one loading well above .57. This component has been termed *competency factors.* Poor monitory and inspection (.794), poor management of consultants and clients resources of the project (.787) and lack of communication (.595) are the factors loaded unto this component with their corresponding

eigenvalues. Among these factors, respondents ranked poor management of consultants and clients resources of the project first followed by poor monitory and inspection and lack of communication (table 4.2.5).

Table 4.2.6: Ranking of factors that affect the completion time of Getfund construction project in Ga East Municipal Assembly

Factors	***Mean***	***Rank***
Work related factors	*2.253*	*3rd*
Accidents, materials and labour factors	*2.321*	*2nd*
Competency factors	*3.057*	*1st*

Source: Field Survey, 2014

It is clearly seen form table 4.2.6 above that competency factors which include poor monitory and inspection, poor management of consultants and clients resources of the project and lack of communication among the factors that affect the completion time of Getfund construction project in Ga East Municipal Assembly has the highest effect as this was ranked first by the respondents with an average mean score of 3.057. This was followed by accidents, materials and labour factors and work related factors.

4.4 EFFECTS OF NON-COMPLETION OF GETFUND CONSTRUCTION PROJECTS

In an attempt to mapping out the factors influencing the completion of GETfund construction projects, it is crucial to know the effects of non-completion of GETFund. Eleven effects of noncompletion of projects within time was identified through and extensive literature review and ranked on a Likert scale. In analysing the results of the effects of non-completion GETfund construction projects, this research was interested in finding the effects in order of significance. The one sample t-test was used to establish the significance of the effects identified from literature.

According to Ahadzie (2007), the one sample t-test normally is employed to create whether a sample mean is pointedly deviant from a hypothesized mean. The hypothesis for a single sample –test is usually set thus:

Ho: U=Uo

Ha: U<, >Uo

Where, Ho signifies the null hypothesis, Ha signifies the alternative hypothesis and Uo signifies the hypothesized or population mean. According to Field (2005), normal distribution is achieved when the sample size is more than or equal to fifty (50). Ahadzie, 2007) added that, central limit theorem is supported with a sample size of fifty (50).

As shown in Table 4.6 – 5.4, the summary of the results of the one sample t test indicating the significant variables. Ahadzie (2007), Field (2005) and Shen and Liu (2003) alluded that, whenever the mean scores of the variables are the same, the standard deviation becomes the next point of call in determining the significant of the variables.

According to Ahadzie (2007), the standard error is the standard deviation of sample means as well as a measure of how likely a sample represents the population. Hence, a large standard error advocates that there is a lot of inconsistency between means of dissimilar samples (ibid). A small standard error shows that most sample means are comparable to the population mean, therefore the sample is likely to be a correct image of the population (Ahadzie, 2007; Field, 2000; 2005). The standard error associated with all the means is comparatively near to zero signifying that the sample selected is a precise reflection of the population (Table 4.2.7).

Table 4.2.7 Results of t-test showing one-sample statistics of effects of non-completion

Effects	N	Mean	Std. Deviation	Std. Error Mean
Cost Overruns on construction projects	53	4.1321	.80950	.11119
To reap the desired national benefits	53	3.9057	86077	.11824
Specified quality not achieved due to delay in completion	53	3.6038	1.09789	.15081
Lead to un-achievement of national progress	53	3.7925	90636	.12450
Dispute Involvement	53	2.3962	1.11527	.15319
Litigation/Arbitration	53	2.2830	1.32109	.18147
Loss in Potential revenues	53	4.0189	.95052	.13056
Government does not attain target set towards the improvements of infrastructures in the educational sector	53	4.1509	.79412	.10908
Loss of value for money by government when the construction is not able to come to completion due to excessive cost overrun	53	4.2830	.86330	.11858
Abandonment of projects/Termination of Projects	53	3.9434	.88611	.12172
Destruction of contractor‟s capital	53	4.2830	.86330	.11858

The fact that the standard deviations are all less than 1.0 shows that there is little inconsistency in the data. Otherwise, standard deviation values of less than 1.0 showed reliability in contract between the respondents of the described level of outcomes (see for instance, Field, 2005; Weinberg, 1996). But, variables such as *Specified quality not achieved due to delay in completion, Dispute Involvement* and *Litigation/Arbitration* had a standard deviation greater than 1.0. (See table 4.2.7) suggesting variability in the response of the respondents. Additional analysis on the t-test below offers explanations to this.

The significance (i.e. p-value) of each characteristic is presented in Table 4.5. The p-value is for a two-tailed test, though as shown per the test hypothesis, what is of interest here is one-tailed test (i.e. U > Uo). Consequently, the "sig." value in Table 4.2.8 has been divided by two and the summary listed in Table 4.2.9.

4.2.8 One-sample statistics of effects of non-completion

	Test Value = 3.5						
						95% Confidence Interval of the Difference	
EFFECTS	t	df	Sig. (2-tailed)	Mean Difference	Lower		Upper
Cost Overruns on construction projects	5.684	52	.000	.63208			
To reap the desired national benefits	3.431	52	.001	.40566			.8552
Specified quality not achieved due to delay in completion	.688	52	.494	.10377	-.1988		.6429 .4064
Lead to un-achievement of national progress	2.349	52	.023		.0426	.5423	
Dispute Involvement	-7.205	52	.000		-1.4112	-.7964	
Litigation/Arbitration	-6.706	52	.000		-1.5811	-.8528	
Loss in Potential revenues	3.974	52	.000	.51887	.2569		.7809
Government does not attain target set towards the improvements of infrastructures in the educational sector	5.968	52	.000	.65094	.4321		.8698
Loss of value for money by government when the construction is not able to come to completion due to excessive cost overrun	6.603	52	.000	.78302	.5451		1.0210
Abandonment of projects/Termination of Projects	3.643		.001	.44340			

Destruction of contractor‟s capital	52	.000	.78302		.6876
	52				1.0210
	6.603				

Table 4.2.9 Man ranking of Effects

Effects	Mean	Std. Deviation	Sig. (1-tailed)	Ranking
Cost Overruns on construction projects	4.1321	.80950	0.000	4
To reap the desired national benefits	3.9057	36077	0.001	7
Specified quality not achieved due to delay in completion	3.6038	1.0979*	0.247	9
Lead to un-achievement of national progress	3.7925	.90636	0.012	8
Dispute Involvement	2.3962	1.1153*	0.000	10
Litigation/Arbitration	2.2830	1.3210*	0.000	11
Loss in Potential revenues	4.0189	.95052	0.000	5
Government does not attain target set towards the improvements of infrastructures in the educational sector	4.1509	.79412	0.000	3
Loss of value for money by government when the construction is not able to come to completion due to excessive cost overrun	4.2830	.86330	0.000	1

Abandonment of projects/Termination of Projects	3.9434	.88611	0.001	6
Destruction of contractor‟s capital	4.2830	.86330	0.000	1

Note: *shows high inconsistency in its agreement

The findings as presented in the summary table suggest that Value for money is lost and contractor‟s capital ruined when projects are uncompleted. Consequently the variables **"Loss of value for money by government when the construction is not able to come to completion due to excessive cost overrun"** and **"Destruction of contractor's capital"** were considered significant by the respondents. The variables attained 4.2830 mean value significantly greater than the hypothesized mean of 3.50 and standard deviation of 0.86330. Winch (2002) noted that the successful early completion of projects is imperative and indispensable in the cashflow of contractors, as they are able to secure new projects to improve their cashflow. On the part of Client, Lock (2003) also observed that huge sums of money are loss when projects delayed – increase in prices of materials, the purpose of the project and the possible returns are also lost, among others. Simply put, the client, in this case the government for GETfund projects, does not receive value for money. Because the cost

Subsequently, **"Government does not attain target set towards the improvements of infrastructures in the educational sector"** was ranked next after the aforementioned variables. It had a mean value of 4.151 and a standard deviation of 0.7941 greater than the hypothesized mean and less than the standard deviation of 3.50 and 1.00 respectively. Any attempt to improve education without the underlying infrastructure is utterly futile. Thus, if GETfund projects are delayed education sector improvement is accordingly delayed and the target set by the government is also not materialized. Important as the other sectors are, very little attention is paid to the provision of educational infrastructure.

"Cost Overruns on construction projects" was ranked fourth (4^{th}) by the respondents altogether. They considered the variable significant and an effect of non-completion of GETfund projects. It attained a mean value of 4.1321 and a standard deviation lower than 1.00. Noncompletion

of projects invariably results in cost overruns on construction projects, because One cedi today is not the same One cedi tomorrow. Prices of construction resources continually are on the increase, and have been compounded by the consistent unfavourable macro-economic environment. The effect of cost overruns on construction projects has long been understood and as a result authors have looked into it (see for instance Koushki and Kartam, 2004; Annan, 2003; Al-Momani, 1996). As usual, the findings also revealed that uncompleted projects result in cost overruns as already explored by the aforementioned authors.

Any construction project is a potential revenue generating project. These revenues are lost when projects are delayed. For a typical GETfund project, it is used for classes. Student are thus charged for it, people also hire it for other uses which all bring revenue to the state. These potential revenues are lost when GETfund projects are uncompleted. Accordingly, the respondents considered **"Loss in Potential revenues**" as a significant effect of non-completion of GETfund construction projects. Surprisingly, "**Dispute Involvement**" and "**Litigation/Arbitration"** were considered not significant by the respondents. The variables attained mean values of 2.3962 and 2.2830 respectively, lower than the hypothesized. The obvious effects of cost overruns somewhat, are the above factors – Dispute Involvement and Litigation/Arbitration. A major reason for the numerous judgment debts in the country.

4.5 CRITERIA FOR COMPLETION OF GETfund CONSTRUCTION PROJECTS

As part of its exact goals, this study measured it overbearing to launch from the professionals the criteria the influence the successful completion of GETfund projects. It considered also that knowledge of this kind would provide somewhat, insight into the success of the completion of construction projects. Respondents were requested to rank the level of significance, from 1 to 5,

where 1 represents not important, 2 represents less important, 3 represents moderately important, 4 represents important and 5 represents most important.

In assessing the result for the in Ghana, this study was concerned in how the being a contractor or consultant shape the criteria for completion of GETfund construction projects. The demographic data were considered into two chief distinct groups namely consultant as well as contractor.

An independent group‟s t-test is most fitting when diverse respondents from similar population have employed in each of the diverse situations (Steed et al., 2001). Thus, this review desires to achieve whether the variance among the criteria for completion of GETfund construction projects is significant.

Assumptions:

Test: The hypotheses for the comparison of two independent groups are:

H_o: $u_1 = u_2$ (means of the two groups are equal)

The null hypothesis for the independent t-test is that the population means from the two unrelated groups are equal and,

H_a: $u_1 \neq u_2$ (means of the two group are not equal)

The alternate hypothesis for the independent t-test is that the population shows that from the two distinct sets are uneven. When the p-value is less than 0.05 ($p<0.05$) then the variance among the two means is statistically important as well as that there is indication to castoff the null hypothesis in support of the alternative (Field, 2005a). Similarly, when the p-value is more than 0.05 ($p>0.05$) then the dissimilarity among the two means is not statistically imperative then the null hypothesis is accepted.

In the Group Statistics Table (see Table 4.2.10) the mean and standard deviations for each of the two groups are presented. Likewise, the table also presents the number of respondents in each

group. Cursory look at the Table 4.2.10 reveals that contractors and consultants are 27 and 26 respectively. Also, in almost all the cases standard deviations were less than one (1.00) indicating invariability in the level of agreement of respondents. However, table 4.5 suggests smaller standard errors attributed to the adequate sample size and therefore reflect a degree of consistency between means of different samples and more likely to have a high level of accuracy

(see for instance Field, 2005).

Table 4.2.10 Group Statistics

Criteria	Category of respondents	N	Mean	Std. Deviation	Std. Error Mean
Alignment of common goals and objectives	Contractor			1.05544	.20312
	Consultant			.89443	.17541
Transparency in decision-making and documentation	Contractor			1.15470	.22222
	Consultant			.81618	.16007
Increased cooperation, flexibility and service to owner/client	Contractor			1.05003	.20208
	Consultant			.95111	.18653
Experience and past performance of the Contractor	27	4.1111	.84732	.16307	contractor Consultant
	26	4.2308	.65163	.12779	
Capacity to perform the work	Contractor	27	4.1481	.81824	.15747
	Consultant		4.1538	.67482	.13234
Financial strength and bonding capacity	Contractor	27	4.6296	.74152	.14271
	Consultant		4.8077	.40192	.07882
Management plan capabilities	Contractor	27	4.4074	.79707	.15340
	Consultant		4.1154	.76561	.15015
Quality assurance plan	Contractor	27	3.7778	.89156	.17158
	Consultant	26	3.6538	.93562	.18349
Period of construction (delivery on schedule)	Contractor	27	4.4444	.64051	.12327
	Consultant	26	4.0769	.68836	.13500
Standard of workmanship	Contractor	27	4.0000	.83205	.16013
	Consultant	26	4.0000	.69282	.13587
Site management practice (effective quality control on site)	Contractor	27	3.8889	.89156	.17158
	Consultant	26	3.9231	.79614	.15614
Attention to site welfare and safety	Contractor	27	3.1852	.83376	.16046
	Consultant		3.3462	.74524	.14615
			3.4444	1.01274	.19490

Employee development (i.e. qualified staff, motivation and training)	Contractor				
	Consultant	26	3.5000	.81240	.15933

Table 4.2.11 Independent Samples test for criteria for completion of GETfund projects

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
Criteria		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Alignment of common goals and objectives	Equal variances assumed	2.022	.161	.138	51	.891	.03704	.26923	-.50346	.57753
	Equal variances not assumed			.138	50.203	.891	.03704	.26838	-.50196	.57604
Transparency in decision-making and documentation	Equal variances assumed	3.326	.074	.822	51	.415	.22650	.27563	-.32686	.77985
	Equal variances not assumed			.827	46.860	.412	.22650	.27387	-.32450	.77749
Increased cooperation, flexibility and service to owner/client	Equal variances assumed	.004	.949	.031	51	.975	.00855	.27553	-.54460	.56169

	Equal variances not assumed			.031	50.815	.975	.00855	.27501	-.54360	.56069
Experience and past performance of the contractor	Equal variances assumed	1.049	.310	-.575	51	.568	-.11966	.20820	-.53764	.29832
	Equal variances not assumed			-.578	48.657	.566	-.11966	.20718	-.53607	.29675
Capacity to perform the work	Equal variances assumed	.748	.391	-.028	51	.978	-.00570	.20645	-.42017	.40877
	Equal variances not assumed			-.028	49.840	.978	-.00570	.20570	-.41889	.40749
Financial strength and bonding capacity	Equal variances assumed	4.973	.030	-1.081	51	.285	-.17806	.16475	-.50881	.15268
	Equal variances not assumed			-1.092	40.376	.281	-.17806	.16303	-.50746	.15133
Management plan capabilities	Equal variances assumed	.674	.416	1.359	51	.180	.29202	.21482	-.13924	.72329
	Equal variances not assumed			1.360	51.000	.180	.29202	.21465	-.13891	.72295

Quality assurance plan	Equal variances assumed	.022	.883	.494	51	.624	.12393	.25098	-.37993	.62780
	Equal variances not assumed			.493	50.620	.624	.12393	.25121	-.38049	.62836
Period of construction (delivery on	Equal variances assumed	.593	.445	2.013	51	.049	.36752		.00101	.73402
	Equal variances not assumed			2.010	50.387	.050	.36752	.18281	.00001	.73464
Standard of workmanship	Equal variances assumed	.774	.383	.000	51	1.000	.00000	.21074	-.42308	.42308
	Equal variances not assumed			.000	49.975	1.000	.00000	.21001	-.42181	.42181
Site management practice (effective quality control on site)	Equal variances assumed	.440	.510	-.147	51	.884	-.03419	.23249	-.50093	.43256
	Equal variances not assumed			-.147	50.719	.883	-.03419	.23199	-.49999	.43161
Attention to site welfare and safety	Equal variances assumed	.035	.853	-.740	51	.463	-.16097	.21751	-.59764	.27570

	Equal variances not assumed			-.742	50.726	.462	-.16097	.21704	-.59676	.27482
Employee development (i.e. qualified staff, motivation and training)	Equal variances assumed	1.894	.175	-.220	51	.827	-.05556	.25279	-.56305	.45194
	Equal variances not assumed			-.221	49.412	.826	-.05556	.25174	-.56133	.45022
schedule)									.0004	

Table 4.2.11 provides results for the independent sample tests for the criteria for the completion of GETfund projects. The first section of the Table 4.2.11 gives the results for the Levene's Test for Equality of Variances. This tests whether the variation in the scores of the two groups is the same. The significance level of the test is larger than .05 indicating that the variances for the two groups (contractor and consultants) are the same. However, it is worthy of note that the variable, *Financial strength and bonding capacity* had a significant value less than 0.05. For this variable, the explanation is that the variances for the two are not the same. Hence, the information on the second line is used – Equal variances not assumed. Further analysis provides explanation for this:

4.5.1 Alignment of common goals and objectives

From the Table 4.2.11 the Levene‟s test for equality of variance, the sig. value for contractual complexity is larger than 0.05 and that is 0.161. As already noted, this implies that the scores for the two groups are the same. Hence the variability in the project finance involvement is the same. It is apparent from Table 4.2.10 that the difference in mean values between the two groups is not significant. Contractors had a mean value of 4.0370 whereas the Consultants had a mean value of 4.000. Surprisingly, the standard deviations for the two groups were not found to be the sane. Contractors obtained standard deviations exceeding 1.00 whereas Consultants standard deviation was less than 1.00. This implies less variability in the agreement of the responses of the consultants, whilst the responses from the contractors were inconsistent. However, the criteria was considered significant by both the two groups. Conventionally, goals and objectives are indispensable in the success of any venture. Much as goals and objectives are imperative, if they are not aligned with the parties involved there is always the possibility of conflicts which has the

tendency of disrupting the progress of the works. It was therefore not surprising that the variable was considered significant by the two groups.

4.5.2 Transparency in decision-making and documentation

Likewise, *Transparency in decision-making and documentation* had a significant value exceeding 0.05. Hence, equal variances assumed are used as already noted. The explanation is that the variability in the two groups is about the same. A critical look at the table 4.2.10 suggests the groups considered it significant obtaining mean values 4.1111 and 3.8846 for the contractors and consultants respectively. Similarly, the contractors obtained a standard deviation greater than 1.00 whereas the consultants had a standard deviation less than 1.00.

4.5.3 Increased cooperation, flexibility and service to owner/client

From the table 4.2.11, the Levene‟s test for equality of variance, the sig. value for contractual complexity is larger than 0.05 and that is 0.949. As already established this implies that the scores for the two groups are the same. Hence the variability in the criteria for completion is the same. The findings suggest that increased cooperation, flexibility and service to owner/client is key to ensuring project completion.

4.5.4 Experience and past performance of the contractor

Experience and past performance of the contractor has long been established to have a resultant effect on the delivery of projects. Accordingly it has become an integral criterion in the selection of contractors for award of contracts. The findings confirm this earlier position as the variable was considered significant obtaining mean values greater than 3.50 and standard deviations less than

1.00 for all the two groups. The Levene‟s test for equality of variance, the sig. value for *Experience and past performance of the contractor* is larger than 0.05 and that is 0.310. Hence the variability in the criteria for completion is the same.

4.5.5 Capacity to perform the work

The capacity to perform has always been the bottom line of any award. In the award of contracts, the consultants are on the lookout for the contractor who they can repose the confidence of client to. Construction involves huge financial commitments, especially with government funded projects, like the GETfund construction projects. The capacity to perform transcends the human resource capacity and plant and equipment holding capacity. It covers, amongst other the things, the financial capabilities of the contractor. This is the ultimate aim of any tender evaluation process – to establish the contractor or consultant with the capacity to deliver. Therefore, not surprising, the variable obtained high mean values from the two groups. The Levene‟s test for equality of variance was also 0.391 greater than the sig. value of 0.05. As already noted, this implies that the scores for the two groups are the same. Hence the variability in the project finance involvement is the same. It is apparent from Table 4.2.10 that the difference in mean values between the two groups is not significant.

4.6 CHAPTER SUMMARY

Data analysis and discussions of the outcomes have been illustrated in this chapter methodically and chronologically conferring to the matters in the surveys. The purpose of the study was laid out together with the research objectives. Data was analyzed using computer programmes called SPSS and Microsoft excel. Descriptive statistics in terms of percentages, frequencies, standard deviations, mean scores and inferential analysis involving factor analysis were used and

tabulations were added to summarize the results. The results were supported by references to the literature where applicable. The next chapter is devoted for presenting a summary of the findings, conclusions and recommendations drawn based on the findings of the study.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This study has touched on the factors affecting the completion of construction projects funded by the Ghana Education Trust Fund (GETFund). After the main introduction to the study was covered in the chapter one, chapter two presented a thorough review of extant literature on the topic whiles the third chapter captured the methodologies adopted for conducting the study. Chapter four presented the data analysis and discussions of results on the data collected from field survey. In this last chapter, the major findings of the study are summarized; conclusions are drawn based on the findings and recommendations are forwarded for the concerned bodies.

5.2 SUMMARY OF FINDINGS

This study was designed to address three (3) specific objectives, these are:

1. To identify the factors that affect the completion time of GETfund construction project in Ga East Municipal Assembly;
2. To identify the effects of factors that affect completion of GETfund construction project in Ga East Municipal Assembly; and
3. To establish effective criteria for curbing the causes and effects.

In respect of these objectives, the study findings are summarized as follows:

5.2.1 Factors that affect the completion time of GETfund construction project in Ga East Municipal Assembly

This objective was achieved when the identified factors that affect the completion time of

Getfund construction project in Ga East Municipal Assembly were captured on the survey questionnaire were given to respondents to rate their level of effect using a five point Likert scale. The data collected from the respondents were then subjected to analysis using factor analysis to reduce the factors into small related groups. The analysis extracted three major components which were named as work related factors, accidents, materials and labour factors and competency factors. However, the competency factors were revealed by the findings of the study as the factors with the highest effect on the completion time of Getfund construction project in Ga East Municipal Assembly. The competency factors consist of poor monitory and inspection, poor management of consultants and clients resources of the project and lack of communication.

5.2.2 Effects of non-completion of GETfund construction projects

Subsequently, the respondents were asked to rate the significance of the effects of noncompletion of GETfund projects. Eleven effects were identified in all from the literature. Overall, nine effects were considered significant whereas the remaining two considered insignificant. Cost Overruns on construction projects, to reap the desired national benefits, specified quality not achieved due to delay in completion, Lead to un-achievement of national progress, Loss in Potential revenues, Government does not attain target set towards the improvements of infrastructures in the educational sector, loss of value for money by government when the construction is not able to come to completion due to excessive cost overrun, abandonment of projects/Termination of Projects and Destruction of contractor‟s capital were considered significant. However, Dispute Involvement and Litigation/Arbitration were considered insignificant.

5.2.3 Criteria for completion of GETfund construction projects

Following the objectives one and two, the third objective was set to establish effective criteria for completion of GETfund construction projects. A number of criteria was identified from the literature. It considered that such criteria be looked at from the perspective of the two major parties involved in the projects – contractors and consultants. Thus, independent test was used in the analysis. Almost all the criterion had the same variance suggesting the criteria are perceived to be the same amongst the two groups. Moreover, the criteria were found to be significant and inextricably linked to project success.

5.3 RECOMMENDATIONS

In view of the findings of this research, the following recommendations are therefore prescribed for concerned bodies:

- Little or no variation

Variation in construction projects cannot be entirely prevented. In as much as it cannot be wholly avoided, attempts must be made to minimise it, especially unnecessary variation as it has been proven to be a major cause of project non-completion. Drawings must be finalised before the commencement of work

- Stringent adherence to conditions of contract

Competency factors were ranked the highest amongst the three classes of project noncompletion; and this is hinged on the conditions by which the contract is governed. Competent contractors must be selected as this has been found to ensure project completion.

5.4 SUGGESTION FOR FURTHER RESEARCH

There are numerous research avenues in the future as a result of this study. The following are therefore recommended for future research:

- The study was only limited to the Ga East Municipal Assembly. A study must be conducted to cover extensively all the regions in the countries.
- There must also be a study that will result in a much broader consultation to include the ministries in charge of GETfund projects. This study must be qualitative in nature.

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APPENDICES

APPENDIX I

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
COLLEGE OF ARCHITECTURE AND PLANNING
DEPARTMENT OF BUILDING TECHNOLOGY, KUMASI

My name is Lawrence Banaman Msc. Construction Management Student from Department of Building Technology at Kwame Nkrumah University of Science and Technology, Kumasi researching on the topic" ***Factors Affecting Completion of Ghana Education Trust Fund***

(Getfund) Construction Project: A Case Study of Ga East Municipal Assembly". This research questionnaire has been designed to solicit views from ***Professionals/Contractors***, based on their experience on works undertaken within MMDA level. It is aimed at:

- ***Identifying the factors that affect the completion of Getfund construction project in Ga East Municipal Assembly;***
- ***Identifying the effects of factors that affect completion of Getfund construction project in Ga East Municipal Assembly; and***
- ***Establishing the criteria that will influence the effective completion of Getfund construction project in Ga East Municipal Assembly.***

I would like to convey my appreciation for your cooperation in completing these questions. If you have any questions and contributions about this research, please mail at banamanlawrence@yahoo.com or call on (0248905311/0200197921). The questionnaires are in three sections namely: background, factors that affect, factors effect and the parameters for effective completion of project.

Please tick [√] where appropriate

Thank you in advance for your participation and assistance with this study.

SECTION I: BACKGROUND INFORMATION

1. Which of these professions do you belong to?
    a. Architect
    b. Quantity Surveyor
    c. Structure Engineer
    d. Mechanical Engineer
    e. Works Supervisor

2. How long have you worked in your organization?
    a. Less than 5 years

b. 6-10 years
c. 11-15 years
d. More than 15 years

3. Please indicate your position in your organization.

a. Director
b. Architect
c. Quantity Surveyor
d. Works Engineer
e. Works Superintendent

4. What is your highest education qualification?

a. Technician (CTC I, II, III)
b. Diploma / HND
c. 1st Degree
d. Masters
e. Doctorate

5. For how long have you been in professional practice?

a. Less than 5 years
b. 6-10
c. 11-15
d. 16 and above

SECTION II: MAIN

In your experience which of the following factors can affect the completion time of Getfund construction projects in GA EAST MUNICIPAL ASSEMBLY. ***Please tick [√] where appropriate by indicating the level of impact of each factor.***

Please tick [√] where appropriate

1= Least, 2= Lower, 3= High, 4= Higher, 5=Highest

No	*Factors*	*Degree of Impact*				
		1	*2*	*3*	*4*	*5*
1	Design errors and omissions					
2	Unnecessary variations					
3	When the specification of work is not well defined					
4	Site accidents					
5	Contractor‟s financial difficulties					

6	Unavailability of the required labour					
7	Government interference					
8	Work load on contractor					
9	Delays in payment of work done					
10	Inadequate control procedures					
11	Weather conditions					
12	Safety consideration/ emergency field condition					
13	Demolition and re-work					
14	Lack of coordinating between consultants and contractors or subcontractors					
15	Delay of materials delivery on site					
16	Lack of communications					
17	Poor monitory and inspection					
18	Design complexity of project					
19	Conflict on the project site					
20	Poor management of consultants and clients resources of the projects					
21	Change of design or scope					
22	Unreliable sources of materials on the local market					
	If Others Please Specify					

In your experience which of the following can the consultants attach to the effect of the noncompletion of Getfund construction projects? ***Please tick [√] where appropriate by indicating the level of Occurrence of each factor.***

1=Not At All, 2- Occasionally, 3= Normal, 4= Often, 5= Very often

No	***Factors***	***Level of Occurrence***				
		1	***2***	***3***	***4***	***5***
1	Cost overrun on construction projects					
2	To reap the desired national benefits. (Project not delivered not time)					
3	Specified quality not achieved due to delay in completion					
4	Lead to un-achievement of national progress					
5	Dispute involvement					
6	Litigation / Arbitration					
7	Loss in potential revenues (when completion delayed)					

8	Government does not attain target set towards the improvements of infrastructures in educational sector					
9	Loss of value for money by government when the construction project is not able to come to completion due to excessive cost overrun					
10	Abandonment of projects/ Termination of projects					
11	Destruction of contractor‟s capital					
	If Others Please Specify					
12						
13						
14						
15						

In your experience which of the following criteria will influence the completion of Getfund construction projects. ? ***Please tick [√] where appropriate by indicating the level of Measurement of each factor.***

1= not important, 2 = less important 3 = moderately important, 4 = important, 5 = most important.

No	***Factors***	***Level of Measurement***				
		1	***2***	***3***	***4***	***5***
1	Alignment of common goals and objectives					
2	Transparency in decision-making and documentation					
3	Increased cooperation, flexibility and service to owner/clients					
4	Experience and past performance of the consultants					
5	Capacity to perform the work					
6	Financial strength and bonding capacity					
7	Management plan capabilities					
8	Quality assurance plan					
9	Period of construction (delivery on schedule)					
10	Standard of workmanship					
11	Site management practice (effective quality control on site)					
12	Attention to site welfare and safety					
13	Employee development(i.e. qualified staff, motivation and training)					
	If Others Please Specify					
14						
15						
16						

17						

Thank you

APPENDIX II

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
COLLEGE OF ARCHITECTURE AND PLANNING
DEPARTMENT OF BUILDING TECHNOLOGY, KUMASI

My name is Lawrence Banaman Msc. Construction Management Student from Department of Building Technology at Kwame Nkrumah University of Science and Technology, Kumasi researching on the topic" ***Factors Affecting Completion of Ghana Education Trust Fund (Getfund) Construction Project: A Case Study of Ga East Municipal Assembly"***. This research questionnaire has been designed to solicit views from ***Professionals/Contractors***, based on their experience on works undertaken within MMDA level. It is aimed at:

- ***Identifying the factors that affect the completion of Getfund construction project in Ga East Municipal Assembly;***
- ***Identifying the effects of factors that affect completion of Getfund construction project in Ga East Municipal Assembly; and***
- ***Establishing the criteria that will influence the effective completion of Getfund construction project in Ga East Municipal Assembly.***

I would like to convey my appreciation for your cooperation in completing these questions. If you have any questions and contributions about this research, please mail at banamanlawrence @yahoo.com or call on (0248905311/0200197921). The questionnaires are in three sections namely: background, factors that affect, factors effect and the parameters for effective completion of project.

Please tick [√] where appropriate

Thank you in advance for your participation and assistance with this study.

SECTION I: BACKGROUND INFORMATION

6. Which of these classifications do your company or organization belongs to?

    f. Class D1KI
    g. Class D2K2
    h. Class D3K3
    i. Class D4K4

7. How long have you worked with G.E.M.A?

    e. Less than 5 years
    f. 6-10 years
    g. 11-15 years
    h. More than 15 years

8. Please indicate your position in your organization.

    f. Director
    g. Works Engineer
    h. Works Superintendent
    i. Quantity Surveyor
    j. Architect

9. What is your highest education qualification?

    f. Technician (CTC I, II, III)
    g. Diploma or HND
    h. 1st Degree
    i. Masters
    j. Doctorate

10. For how long have you been in professional practice?

    e. Less than 5 years
    f. 6-10
    g. 11-15
    h. 16 and above

SECTION II: MAIN

In your experience which of the following factors affect the completion time of Getfund construction projects in GA EAST MUNICIPAL ASSEMBLY. ***Please tick [√] where appropriate by indicating the level of impact of each factor.***

1= Least, 2= Lower, 3= High, 4= Higher, 5=Highest

No	*Factors*	*Degree of Impact*				
		1	*2*	*3*	*4*	*5*
1	Design errors and omissions					
2	Unnecessary variations					
3	Inappropriate defined scope					
4	Site accidents					
5	Constructor‟s financial difficulties					
6	Unavailability of the required labour					
7	Government interference					
8	Work load on contractor					
9	Delays in payment of work done					
10	Inadequate control procedures					
11	Weather conditions					
12	Safety consideration/ emergency field condition					
13	Demolition and re-work					
14	Lack of coordination between consultants and contractors or subcontractors					
15	Delay of materials delivery on site					
16	Lack of communications					
17	Design complexity of project					
18	Conflict on the project site					
19	Changes in material specification					
20	Change of design or scope					
21	Poor contract management					
22	Inefficient equipment, tools and plants					
23	Unreliable sources of materials in the local market					
	If Others Please Specify					
24						
25						
26						
27						

In your experience which of the following can the contractors attach to the effect of the noncompletion of Getfund construction projects? ***Please tick [√] where appropriate by indicating the Level of Occurrence of each factor.***

1=Not At All, 2- Occasionally, 3= Normal, 4= Often, 5= Very often

No	***Factors***	***Level of Occurrence***				
		1	***2***	***3***	***4***	***5***
1	Cost overrun on construction projects					
2	To reap the desired national benefits. (Project not delivered on time)					
3	Specified quality not achieved due to delay in completion					
4	Lead to un-achievement of national progress					
5	Dispute involvement					
6	Litigation / Arbitration					
7	Loss in potential revenues (when completion delayed)					
8	Government does not attain target set towards the improvements of infrastructures in educational sector					
9	Loss of value for money by government when the construction project is not able to come to completion due to excessive cost overrun					
10	Abandonment of projects/ Termination of projects					
11	Destruction of contractor‟s capital					
	If Others Please Specify					
12						
13						
14						
15						

In your experience which of the following criteria will influence the completion of Getfund construction projects. Please tick [√] where appropriate by indicating the Level of importance of each factor.

1= not important, 2 = less important 3 = moderately important, 4 = important, 5 = most important.

No	*Factors*	*Level of importance*				
		1	*2*	*3*	*4*	*5*
1	Alignment of common goals and objectives					
2	Transparency in decision-making and documentation					
3	Increased cooperation, flexibility and service to owner/client					
4	Experience and past performance of the contractor					
5	Capacity to perform the work					
6	Financial strength and bonding capacity					
7	Management plan capabilities					
8	Quality assurance plan					
9	Period of construction (delivery on schedule)					
10	Standard of workmanship					
11	Site management practice (effective quality control on site)					
12	Attention to site welfare and safety					
13	Employee development(i.e. qualified staff, motivation and training)					
	If Others Please Specify					
14						
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17						
18						

Thank you