UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

ASSESSING CAUSES AND EFFECTS OF DELAY IN COMPLETION OF SECOND CYCLE BUILDING PROJECTS IN SUNYANI MUNICIPALITY, BRONG-AHAFO REGION

CYNTHIA KALA-IRIBA SONG

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A Dissertation in the DEPARTMENT OF CONSTRUCTION AND WOOD TECHNOLOGY EDUCATION, FACULTY OF TECHNICAL EDUCATION submitted to the School of Graduate Studies, University of Education, Winneba, in partial fulfilment of the requirements for the award of Master of Technology Education (Construction) degree.

OCTOBER, 2018

DECLARATION

STUDENT'S DECLARATION

I, **CYNTHIA KALA-IRIBA SONG**, declare that this Dissertation with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: ……

DATE: ……

SUPERVISOR'S DECLARATION

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

NAME OF SUPERVISOR: **DR. PETER PAA-KOFI YALLEY**

SIGNATURE: ……

DATE: ……

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DEDICATION

I dedicate this project work to my family; Edmond Gyamfi, Queendle Afosaa Gyamfi and Elisha Ameyaw Gyamfi for the support they gave me throughout the programme.

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AGD Auditor General's Department

AIA American Institute of Architects

ABSTRACT

Construction suspension can be defined as execute later than intended planned, or later than specific time that all the concerned parties agreed for construction project. Relative studies have revealed that the causes of construction project suspensions vary from country to country. The research was conducted to assess into causes and effects of delayance in completion of second cycle building projects using Sunyani municipality, Brong-Ahafo Region as a case study area. The study was based on the core objectives; causes of delays in construction in project and effects of delay in building projects. The study adopted a descriptive study design with a stratified and simple random sampling technique in sampling a total sample size of 44 respondents. Quantitative data analysis methods was used with the aid of Statistical Product for Service Solution (SPSS) version 21.0. The following were the major findings of the study. Factors such as contractors improper planning during construction, underestimation of the project costs, poor supervision of works on site, poor communication between contracting parties and bureaucracy in decision making were found as the causes of delays in construction projects. The study also found that building constructors go through series of challenges during building constructions. The challenges identified were insufficient planning, integration or allocation of resources, inaction or wrong action due to incorrect information communication, unenforceable conditions, impacts of accidents, fire and theft, unpredictable price changes errors in calculation and among others. The results depict best strategies for minimizing delay in building projects. It was found that, to minimize delays, clients should have the finances in time to pay the contractors after completion of a work, clients must make quick decisions to solve any problem that arises during the execution, contractors should not take up the job, in which they do not have sufficient expertise, contractors should have able site-managers for the smooth execution of work, contractors must make sure they have a sound financial backing. The study therefore recommends that clients should not select contractors based only on the lowest price but rather on lowest evaluated bidder.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Construction suspension can be defined as execute later than intended planned, or later than specific time that all the concerned parties agreed for construction project (Chan & Kumaraswamy, 2007). According to Assaf and Al-Hejj (2006) construction suspension is a universal evident reality, however most countries faced this global fact. In the study conducted by Okumbe and Verste (2008) revealed that suspension in construction project delivery is a universal phenomenon, it is termed as one of the expensive and risky problem encountered in construction projects with its associated effects on contracting parties.

Moreover its impacts are not only confined to the construction industry but they influence the overall economy of a country. Keane and Caletka (2008) in their quest to analyzed suspension in contraction project in United Kingdom said, construction industry involves complex and dynamic processes, that consists of effective coordination of multiple discrete business units such as trade professionals, skilled labour, manufacturers, trade unions, financiers, local authorities, contractors and others. Sweis et al. (2008) believed successful completion of construction projects leads to wealth creation, socio-economic growth and improved standards of living. Nations are evaluated as “developed”, “developing” and “underdeveloped” based on the quantity and quality of completed construction projects in their domain (Abdullah et al., 2011).

According to American Institute of Architects (AIA) (2003), project financers inability to meet all their contractual payment obligations to contractors are a continuing reasons of litigation, arbitration, lies, and long suspensions in completion of construction, abandonment of contracts, and bankruptcy of contractors and subcontractors. According to Sambasivan and Soon (2007) suspensions are treacherous often resulting in time extension, cost overrun, abandonment of projects, disagreements and litigation.

Relative studies have revealed that the causes of construction project suspensions vary from country to country. According to Tucker et al. (2009), five (5) critical factors causing suspensions in the United State construction industry are; approval for building authorization, changes in order, changes in design, lack of complete documentations, and inspection pressures by statutory bodies. Fugar and Agyakwah-Baah (2010) study on causes of suspension in building construction projects came out with these factors as main causes of suspension in project execution in Ghana. The factors identified includes; suspensions in honoring payment certificates, underestimation of the project costs, underestimation of the projects complexity, difficulties in accessing bank credit and poor supervision of the works on site etc.

Enshassi et al., (2009) also said suspension is most recurring problems in the construction industry and a common global phenomenon. They see causes of suspension having undesirable consequences on projects success in terms of quality, cost, time and safety.

1.2 Statement of the Problem

There are number of construction projects in this country that are suspended during their pre-contract and post contract stages. Suspensions in building projects in Ghana are not limited to only large-scale projects. In a number of districts in Brong Ahafo region, a lot second cycle institution buildings are suspended. In Asunafo North Municipal Assembly, six (6) out of twelve (12) construction projects that were awarded in 2008 and were expected to be completed in 2009 remains at various levels of completion with some abandoned by their respective contractors (Auditor General's Department, 2012).

When construction projects are suspended then, there is a likelihood of cost overruns. In another example in Asunafo North Municipal Assembly, construction of 6-unit classroom block with ancillary facilities that was awarded in 2008 at a contract sum of GH¢ 105,000.00 and expected to be completed 2009 was abandoned at roofing level and awarded to a new contractor at GH¢ 95,000.00, after the first contractor has been paid GH¢ 68,000.00.

According to Ahmed et al. (2000), construction projects suspensions present many adverse effects such as adversarial relationships, disbelief, lawsuit, cash-flow problems, project abandonment and many other issues which impact negatively on project costs. With regard to the above findings, it is therefore crucial to study into the causes and effects of suspension in completion of second cycle institutions building projects in Sunyani municipality, Brong-Ahafo Region.

1.3 Objectives of the Study

1.3.1 General Objective

To study into causes and effects of suspension in completion of second cycle institutions building projects in Sunyani municipality, Brong-Ahafo Region.

1.3.2 Specific Objectives

1. To identify factors affecting the completion of second cycle institutions building projects in the Sunyani municipality.
2. To identify the challenges building constructors go through during the construction of second cycle institutions building projects.
3. To identify the effects of suspensions of second cycle institutions building projects.
4. To find out the best strategies to identify suspension of second cycle institutions building projects in Sunyani Municipality.

1.4 Research Questions

1. What factors affect the completion of second cycle institutions building projects in the Sunyani municipality?
2. What challenges does building constructors go through during construction of second cycle institutions building projects?
3. What are the effects of suspensions of second cycle institutions building projects?
4. How do we minimize suspension of building projects second cycle institutions?

1.5 Significance of the Study

The findings of the study shall be significant in the following ways:-

The study will help identify factors responsible for construction suspensions in Ghanaian construction industry. It will help policy planners and policy makers, District assemblies and building constructors to find lasting solution to the menace. It will also benefit future researchers and students since the study will enlighten students on factors responsible to construction suspensions.

1.6 Delimitation/Scope of the Study

The study in investigating into causes and effects of suspension in completion of second cycle building projects is too broad a topic which could not be covered under the limits of this study. The study was conducted among building constructors in the Sunyani Municipality. The study focused specifically on the core objectives; factors affecting the completion of second cycle institutions building projects, challenges building constructors go through during of second cycle institutions building projects, the effects of suspensions of second cycle institutions building projects and best strategies for suspension of second cycle institutions building projects in Sunyani Municipality.

1.7 Limitation of the Study

Precisely because this study was limited to only building constructors in the Sunyani Municipality of the Bring Ahafo region, the findings are likely to be constrained and cannot be generalized. The following limitations were encountered;

1. Financial Constraint: Due to the long distance from the students place of residence and the study area, the researcher spent a lot of money on travelling, thus move from one place to another to gather more information.
2. Limited time frame: the time frame for the commencement and completion of this study is so limited and this did not allow the researcher to include large sample size and other organizations' to gather diverse views to arrive at a better conclusion.

These limitations were overcome by resorting to appropriate sample size, efficient sampling techniques, and proper ethical consideration.

1.8 Organization of the Study

The study was organized into six chapters. Chapter One discussed the background of the study, statement of problem, objectives of the study, research questions, significance of the study, scope of the study, and organization of chapters.

The Chapter Two, reviewed both theoretical and empirical literature found to be relevant to the investigation and understanding of issues under study. It was organized into themes based on the major variables of interest to be studied. The third chapter which describes the research methodology that was employed to gather the needed data. This includes the description of the research design, population, sample and sampling techniques and instruments among others.

Chapter Four covered presentations results or findings. Whilst chapter five dealt with discussions of the results/findings, chapter six summarized the work with conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This second chapter focused on literature reviewed on the relevant research work of other authors. Both theoretical and empirical literature was reviewed. It contains the themes used to conduct the study basing on the core objectives; causes of delays or suspensions in construction project, effects and best strategies for minimizing suspension/delays in building projects.

2.1 Concept of Construction Suspensions/Dalays

The term suspension and delays in projection completion was used interchangeably. One of the most important problems in the construction industry is delay or suspension. This can be occur in every construction project and the size of these delays differently from project to other project. Some projects are only a few days behind the schedule and some are delayed over a year. So it is important and necessary to define the actual causes of delay or suspension in order to minimize and avoid the delays in any construction project. There is a large range of views for the causes of time delays for construction projects. Some are attributable to a single party, others can be state to several quarters and many relate more to systemic faults or scarcity rather than to a group or groups. There are many articles and studies conducted on causes or factor of delay in construction projects (Odeh & Battaineh, 2001).

Assaf et al. (2002) studied the causes of delay in large building construction projects in Saudi Arabia. Based on the study, the most important delay factors are approval of shop drawings, delays in payments to contractors and the resulting cash-flow problems during construction, design changes, conflicts in work schedules of subcontractors, slow decision making and executive bureaucracy in the Owners' organizations, design errors, labor shortage and inadequate labor skills.

Mezher et al. (2003) conducted a survey of the causes of delays in the construction industry in Lebanon from the viewpoint of owners, contractors and architectural or engineering firms. They had concluded that owners had more concerns with regard to financial issues, contractors regarded contractual relationships the most important, while consultants considered project management issues to be the most important causes of delays. Kumaraswamy et al. (2007) also did a survey on finding the causes of construction delays but in Hong Kong. The survey exposed the differences in perceptions of the relative importance of factors between the three groups that is clients, contractors and consultants indicative of their experiences, possible prejudices and lack of effective communication.

Another study was by Aibinu et al. (2002) which state that delay is a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the agreed contract period. Normally, delays in construction projects are expensive since there are a lot of additional cost involve in a projects because of the project delay. And this cost will increasing if the project continuously delays by the time.

In another research, Odeh and Battaineh (2001) carried out a study to determine the most significant causes of construction completion with traditional type of contracts with regard to contractors and consultants.

According to the results showed that, the top ten most significant causes of delays are owner interference, inadequate contractor experience, financing and payments, labor productivity, slow decision making, improper planning, and subcontractors. On the other hand, Alaghbari et al. (2007) have the slightly different conclusion with regards to factors causing suspension in completion of projects in another research specific to building construction projects in Malaysia.

2.1.1 Type of Construction Suspensions/Dalays

Construction suspensions generally fall into four categories. Construction suspension is considered a major cause of construction claim. The four types of suspension namely: excusable suspension, non-excusable suspension, compensable suspension and concurrent suspension.

2.1.1 Excusable Suspensions/Dalays

Excusable suspensions are those not attributable to the contractor's actions or inactions, and typically include unforeseen events. It's allow the contractor to obtain a time extension to complete the contract without being penalized. However, this type of a suspension normally does not entitle the contractor to any damages caused by the delay. The examples of excusable delays to a contractor's action are differing site conditions,

design problems, changes to the work, inclement weather, and strikes. This type of clause sometimes called a “force majeure” clause, lists excusable delays. As this list implies, when unanticipated outside 'forces delay completion of the contractor's work, the delay is generally considered as excusable.

2.1.2 Non-Excusable Suspensions/Dalays

This type of delay presents no entitlement to a time extension or delay damages for the contractor if the delay can be proved to have affected the whole project. The owner however could be the liquidator to the da3mages. For instance, a non-excusable delay would be when a contractor fails to provide sufficient manpower to complete the job on time. Client can claim their loss if had in the contract agreement. The factor that contribute to the non-excusable delay: the usual weather and as expected whether, delay cause by subcontractor, the inefficiency of contractor to manage the construction site, the financial of contractor, the lack of labour, failure to manage their work according to the contract schedule and always make mistake or failure to fulfil of owner specification.

2.1.3 Compensable Suspensions/Dalays

Basically, compensable delay is when the contractor will be receives payment due to the additional cost of delay and as well as addition to a time extention for contract performance if there is any change in scope of work, late supply of owner materials or information, impeded site access, differing site conditions and failure to provide timely and review shop drawings. Furthermore, this type of delay is for which the innocent party is entitled to both a time extension and additional compensation for the resulting costs.

2.1.4 Concurrent Suspensions/Dalays

Alkass (2006) said that, concurrent delays refer to delay situations when two or more delays occur at the same time or overlap to some degree. For example, if an owner denies access to a project site for two weeks, and a severe storm prevents the contractor from working on the project for one of those two weeks as well, there will be a concurrent delay of one week. The contractor will be able to recover for delay damages for one week, as a severe storm is not a cause of delay that is compensable and would have prevented the contractor from performing even if the owner did not deny access to the site. However, if there two concurrent causes of delay, one of which is a relevant event, and the other is not, then the contractor is entitle to an extension of time for the period of delay caused by the relevant event notwithstanding the concurrent effect of the other event.

2.2 Cause of Construction Suspensions/Dalays

There are many factors that contributed to causes of delays in construction projects. These from factors inherent in the technology and its management, to those resulting from the physical, social, and financial environment.

2.2.1 Weak Organization by Contractors

According to Bramble and Callahan in 1987 contractor's responsibility is related to methods, technics, procedures, stages and coordination's are continuous challenges to management sources. Due to financial constraints, even though contractor managed to get new projects but them could not afford to bear the additional staffs. In this situation will

put contractor into condition that contractors could not implement the projects smoothly and will lead to problem in fixing sufficient staffs into new project site.

Arditi et al (2005) found that most of contractors quite slow in improving the good practices with relate to change of times and number of projects obtained. Most of contractors also 'did not interest to take the competent technical and management staffs. This was due to they were not aware of the potential benefits that they would be obtained. Also there are unable to analyse the job requirement, risk management, marketing, financial control, work organization, quality control and preparation of reasonable tender. Imbert (2000) studied issues related weak of organizational management found that the problems happened due to weak of plan, instable organization, bueracracy, not relevant regulations, slow in making decision and low productivity.

According to Kirmani (2008) turnover of staffs in company also gave an impact to the effectiveness of organizational management in project completion. This means that construction organization need mangers not only controller but also someone that can manage risks to the minimum.

2.2.2 Poor of Site Management

Dlakwa and Culpin (2000) found that suspension or delay in project completion gave a big effect to construction industry and economy. According to Mansfield et al (2004) lack of contract and site management can contribute to contractors' work plan, cost control and overall project management. These were due to lack of experiences management

staffs and lack of technical staffs, low productivity, lack of short and long term financial funds and lack of experts. Simms (2004) found that most of construction staffs did not have sufficient knowledge in term of site management and quality control and also do not expert in modem management practice. Modem management techniques can improves the process and function of sources under his/her control by change the optimum usage of related components which involved in the process.

2.2.3 Lack in Planning Management

Oglesby et al (2009) found that lack of planning and lack of knowledge in project contra and also lack of record keeping contribute to delay of project completion. Most of contractor did not familiar with the modem practice to arrange works, plan, critical-path analysis and control technique. Contractors sometimes have resources, but due to lack of planning will cause them fail to achieve scheduled target. According to Oglesby et al (2009) again, construction was making the ideas in drawings and specifications into completed structure by installing their components.

To ensure that ideas being implemented effectively and satisfy the required time and quality, so it need a proper planning. Contractor seldom prepare detail plan for their work activities. Furthermore, they always carry out works as their previous works. They often rely on verbal communication and hand over the planning of activities to the foremen who will carry out the works. Although the works can be constructed but very much ineffective compared to if detail planning were being prepared. Most of construction managers ignored planning with reason that they do not have enough time.

Abdelhalim and Duff (2001) found that normally condition of contract require detail work planning before works can be carried out at site. However, seldom actual works being carried out as per detail work planning. This is due to incompetent contractor's technical and management.

According to Laufer and Tucker (2007) detail works programme only being prepared after they were delay and sometimes as evidence to obtain additional time to complete projects. Effective project management not only require project objective, but more than that such as planning and effective control to achieve target. In construction time and activity duration always relate to each other.

2.2.4 Lack in Construction Materials and Equipment Management

Category of material related to delays was identified as one of causes of delays in construction projects. Okpala and Aniekwu (1988) found that lack in construction materials in market always became an excuse for delay in project completion. The insufficient construction materials in the market were due to, not enough statistical data related to construction materials in current. Market, rise and fall price of construction materials in market, waiting period quite long and uncertain delivery of ordered construction materials, not enough financial sources to pay the order and not enough transportation for construction materials.

According to Fugar et al. (2010), material group delay factors were ranked the second most important factors responsible for construction delay in Ghana. The shortage of material problem was related to the ability of client to honour certificate. This caused of unavailability of materials on site at right time was due to the suppliers were reluctant to supply materials on credit because contractors could only pay them once the contractor had received the payment from the client.

Related to Manavazhia and Adhikarib (2006) survey, they found that material and equipment procurement delays in highway projects in Nepal. Delay in the delivery of materials and equipment to construction sites is often become a contributor to the cause of delay and make the cost overruns in construction projects. The main causes of material and equipment procurement delays were found to be organizational weaknesses, suppliers' defaults, governmental regulations and transportation delays.

2.3 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.

2.3.1 Excusable Non-Completion with Compensation

Excusable non-completion with compensation is affected by the owners' 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 completion would be when a client repudiates access to the site once the notification to continue is given.

2.3.2 Excusable Non-Completion without Completion

Excusable non-completion of construction projects without compensation is where neither the owner nor for 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.

2.3.3 Non- excusable Non-completion

Non-excusable Non-completion is a situation in which the builder also causes or accepts the risk for. These non-completions 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 builders concern and no relief is permitted. These are in the control of the builders.

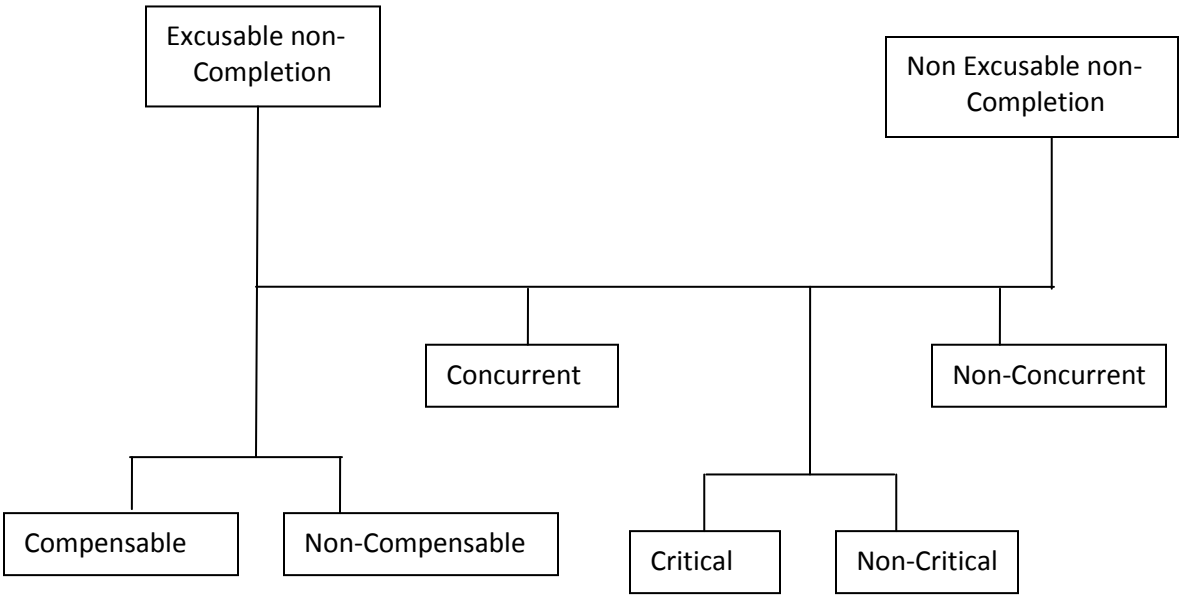

Figure 2.1: Sequential relationship between the three classifications of factors affecting the completion of construction projects

2.4 Effects of Suspensions/Dalays in Construction Project

When construction projects are delayed, the effects are often injurious to the stakeholders. A study by Aibinu and Jaboro (2002) on the effects of the delay in the construction industry of Nigeria. They discovered six possible common effects which arising in most countries as a result of delay. These effects were; cost overrun, time overrun, disputes, arbitration and litigation and total abandonment of project.

2.4.1 Cost Overrun

This refers to the excess of the actual cost that was planned or budgeted for the project from the conception phase to the construction and finishing phase. It can be referred to sometimes as cost escalation, cost increase or budget overrun (Singh, 2009). It can also

be explained as the difference between the actual cost of the project and the initial cost budgeted researchers such as Flyvberg et al. (2002) have shown that infrastructure projects often suffer from cost overruns.

Politicians lie by either underestimating or exaggerating the benefits of projects to make it saleable and for their own interests. When construction projects are delayed, the specific and overall cost of the project will certainly increase. This is due to the fact that prices of materials in the market fluctuate over time. Thus the amount that was budgeted for materials may increase when delay occurs. In addition exchange rates will affect the prices of materials purchased from other countries, increase in price of labor.

Moreover if the delay is as a result of changes in the design, the cost of the project will increase because the new design will be more expensive than the initial. And finally the change of government policies over time will also lead to cost increase of the projects particularly due to increase in tax rates. However the above mention points will be true and feasible if the project is delayed for a period of one year and above (Holm & Bubl, 2002).

The following cases of cost overruns projects expresses as a percentage to the overall cost was pointed out by (Singh, 2009). These include; the Suez Canal (1900%), Sydney Opera House (1400%), the Concorde Supersonic Aero plane (1100%), Bolton Big Dig (2750%) and the channel tunnel between UK and France (220%). Another common example or case of cost overruns caused by delay is the construction of the Kuala Lumpur

International Airport Terminal 2. The initial estimated or budgeted cost was RM1.7 billion. But due to delay of the project, the final cost of the project escalated to RM4 billion (Kini-Biz, 2004).

2.4.2 Time Overrun

This is one of the most common issues in the construction industry. It can be defined as the failure to complete a project within the estimate time (Ahmed et al, 2000). It can be used as a tool for qualifying a project as failure. In Indonesia, Kaming et al. (1997) carried out a survey to find out the main causes of time overruns in the construction industry. The most significant factors he mentioned were design changes, poor labor productivity, inadequate planning and resource shortages.

When the issue of time overrun occurs, the project completion time will be further extended beyond that which was estimated. The tendency is that it will lead to dissatisfaction by the owner or the clients. Sometime the contractor may lose the project as he will be seen as incompetent. A study by Aftab et al. (2011) in Malaysia on time overrun construction projects. They found out that a total of 30 construction projects were facing time overruns.

2.4.3 Arbitration and Litigation

Litigation is a court case that occurs amongst project stakeholders or participants in an attempt to settle an existing dispute. On the other hand, Arbitration occurs when in an attempt to settle a dispute amongst project participants, a third party known as an

arbitrator is involved without going to the court. According to Eipstein (2005) these two phenomenon are inevitable and seem to be part of construction projects. These phenomena often come into play when there is delay in the project and there is dispute as to the cause of the delay and who to assume the responsibility and claim charges. If anyone of the stakeholders is not satisfied, then he will be forced to file a suit against others. The overall effect is that it will further delay the project more and increase the cost including the cost of hiring an arbitrator or an Attorney.

2.4.4 Project Abandonment

Project abandonment can be referred to as putting a stop or an end to an ongoing project due to many difficulties and constraints or problems faced during the phases of the project life cycle such that it becomes impossible to continue at that time Alusegun (2011). Many construction and non-construction projects have been abandoned at various stages of their life cycle thus causing significant amount of loses to the stakeholders. To the owner or client loses in terms of capital and other resources including time. To the contractors and consultants loses in terms of time and wastage of expertise.

Usually most projects abandoned as a result of too much prolonged delay. The contractors, consultants or owner can abandon the projects. In Nigeria Kotangora (2003) reported that there were about 4000 uncompleted or abandoned projects belonging to the Nigerian government with an estimated value of 300billion Naira. In addition Yap (2013) stated that in 2000, there were about 54 abandoned housing projects in the country with an estimated value of RM7.5billion. Project abandonment often results from inadequate

planning, inadequate finance, inflation, delayed payments political factors, incompetent management, wrong estimates, design and inadequate cost control.

In Asunafo North Municipal Assembly, six (6) out of twelve (12) construction projects that were awarded in 2008 and were expected to be completed in 2009 remains at various levels of completion with some abandoned by their respective contractors (Auditor General's Department, 2012). When construction projects are delayed then, there is a likelihood of cost overruns.

In another example in Asunafo North Municipal Assembly, construction of 6-unit classroom block with ancillary facilities that was awarded in 2008 at a contract sum of GH¢ 105,000.00 and expected to be completed 2009 was abandoned at roofing level and awarded to a new contractor at GH¢ 95,000.00, after the first contractor has been paid GH¢ 68,000.00. According to Ahmed et al. (2000), construction projects delays present many adverse effects such as adversarial relationships, disbelief, lawsuit, cash-flow problems, project abandonment and many other issues which impact negatively on project costs. With regard to the above findings, it is therefore crucial to investigate into factors responsible for delayance in completion of building projects in Ghanaian industry

2.5 Minimization of Construction Suspensions/Dalays

When a construction delay occurs, there is no question that the Owner suffers financially, but the extent to which an Owner can recover its loss of income from the Contractor, and more importantly minimize the risk that such delays will occur, depends largely on how

the construction contract was drawn up. Based on several studies of project success factors and rectification of delays in construction project, a total of 15 methods have been identified as follows: Assaf, et al (2002) recommended following points in order to minimize and control delays in construction projects. Owners should give special attention to the following factors:

Pay progress payment to the contractor on time because it impairs the contractors' ability to finance the work. Minimize change orders during construction to avoid delays. Avoid delay in reviewing and approving of design documents than the anticipated. Check for resources and capabilities, before awarding the contract to the lowest bidder. Contractors should consider the following factors: Enough number of labors should be assigned and be motivated to improve productivity.

Contractor should manage his financial resources and plan cash flow by utilizing progress payment. Administrative and technical staff should be assigned as soon as project is awarded to make arrangements to achieve completion within specified time with the required quality, and estimated cost. Consultants should look to the following points: Reviewing and approving design documents. Consultants should be flexible in evaluating contractor's works.

Finally architects/design engineers should focus on the following points: Producing design documents on time Mistakes and discrepancies in design documents have to be taken care off.

Mitigation or elimination of construction projects delays implies minimizing or eradicating those unfavorable or negative factors that can hinder or pose as threats which will interfere with the project completion within the allocated time and budget and quality as well.

Researchers such as Abdelnaser (2005) cited that implementation of adequate planning during the inception and design phases of the project can be a strong measure of avoiding delay during the construction phase. In another survey was conducted by Nguyen (2004) in an attempt to establish measures to minimize delay in large construction project in Vietnam. He recommended five important measures were; availability of sufficient resources, multidisciplinary or competent project team, competent project managers, accurate first cost estimates and accurate initial time estimates.

In addition, Aibinu and Jagboro (2002), found out two major ways of avoiding construction delays (time overrun) to be acceleration of site activities and contingency allowances. The enforcement of liquidated damages and offering of incentives for early completion were also strong measures to improve construction project situations. Koushki et al (2005) also carried out a study for the time delay and cost overrun minimization. They pointed out the following measures, sufficient and readily available financial resources until completion of the project, selecting highly skilled consultant and reliable and competent contractors to carry out the project.

2.5.1 Plan/Analyze the Requirements in Detail

The construction industry has to implement new ways of working to be competitive to meet the demands of the clients. Working in collaboration is essential for the design and construction teams during the complete lifecycle of the project. In construction "it is now recognized that good collaboration does not result from the implementation of information technology solutions alone, the organizational and people issues, which are not readily solved by pure technical systems, need also to be resolved. The collaboration between individuals related to different fields is a more difficult task and it does not happen by implementing techno solutions. The requirements of the construction sector are gathered through literatures, interviews and questionnaires to develop a methodology for the working in collaboration effectively for the construction sector. The main issue emerging from these analysis is the softer issues need more attention than the issues related to technology to ensure that the plan and implementation of collaborative working is more effective in projects (Shelbourn et al., 2007).

2.5.2 Map Available Resources

The key to successful completion of any project is the optimum utilization of the resources and by achieving the productivities as planned in the schedule. Also, the deployment of the required resources at the appropriate time is absolutely essential in the success of any project. This mapping of resources for a project is the key to any projects success. In every project, there are key determinants for the performance of the construction program of works and these ranges from the project manager, project team, planning and monitoring team and cost control team. The study evaluated the objective

data on completed projects using neural network method an arrived at five key determinants namely (1) time devoted by the project manager to a specific project; (2) frequency of 60046 50 meetings between the project manager and other project personnel; (3) monetary incentives provided to the designer; (4) implementation of constructability program; and (5) project manager experience on projects with a similar scope (Kog et al., 2009).

These key determinants and their effective utilization will determine the success of the construction program. The most important issue in the key determinants is the time dedicated by the project manager to the project as his presence will help in taking decisive action to ensure that the project is performing within the parameters of time and cost. The frequent meeting between the project manager and the project team will ensure that the focus is maintained and monetary incentives to the designer will ensure the smooth flow of information. The program will be monitored for any issues that may affect the performance and cause delays and the project manager's experience on a similar project will come handy in such situations (Odeh & Battaineh, 2001).

2.5.3 Perform Training and Knowledge Transfer

The projects completed on time or otherwise are a source of valuable information for the people who would undertake a similar project. The information would be transfer of knowledge for the benefit of those who otherwise would encounter problems similar to those encountered by the earlier counterparts. Also, people who have encountered situations which needs to be known, so that others can take benefit from it can be done by performing training in such specific issues and matters.

In projects the decisions made by the site personnel are important to the success and failure of the project. The decisions made on the field by the team dictates, whether the profit margins are gained or lost hence the knowledge of planning and scheduling should be integrated at the field level. Profit margins are gained or lost by the field decisions, so the knowledge of planning, scheduling and managing project cost should be integrated into the field at all levels of supervision (Koch, 2008).

It is important to note that training alone cannot guarantee the transfer of information to the site personnel but by demonstrating the practices of the company and giving examples where the employees can relate to their own experiences can raise confidence levels. Research has indicated that a person who is confident is to participate and excel in his field. This paper offers a representation for the employers to evaluate the requirements of the firm and the employee's benefits of training and knowledge accrued that can be implemented in managing the project programs and cost (Odeh & Battaineh, 2001).

2.5.4 Identify Risks

For every project whether it is a mega project or a small sized project the identification of all the risks for that project is essential in initial stages. This will help in developing action plans to meet those risks and the make all the stakeholders aware of their effects if not attended to at the initial stages itself. A realistic procedure is recommended to work out the size of the program for a project or a budget for an unforeseen risk at any stage of the project. The size of the budget is a function of the number of risks expected at the

specified confidence level. The number of risks used for developing the contingency budget depends on the total number of risks to be considered and the estimated probabilities of occurrence of the risks (Khamooshi et al. 2009).

The risks that are determined will also indicate whether impact may be major or marginal and the budget to be allocated accordingly. When the risks for a specific project are more than 20 or the exact number of risk that are calculated by a binomial distribution will be tabulated to indicate the exact number of risks. The findings indicate that a certain amount of budget should be allocated for small risks in a project which in any case would materialize. The exact number of risks would depend on the risks acceptance by the company. The risks that have to be identified and analyzed for any project from the list of probable risks is a problem where the decision lies with a multi group regarding where to attribute the risk which is a problem. "Conventional approaches to risk identification and risk analysis separately tend to be less effective in dealing with the imprecise of the risk analysis individually (Mojtahedi et al. 2008).

2.5.5 Estimate and Allocate

The estimation for any project is the key to profitability and the growth of the company. Accurate estimates will help in realizing the outputs with the proper allocation of resources that are required for the project. Thus the estimate for any project has to be accurate to the last detail to ensure competitiveness in the market. The ability of accurately forecasting the cost of delivering a project is the key to a cost based competition. The literature on cost estimation has focused on specific estimation methods

as broad techniques and not much consideration has been given to the distinct requirement of each project.

The author attempts to highlight the important factors for an effective estimation at different stages of the project. Drawing from organization control theory and cost estimating literature, this note develops a theoretical framework that identifies the critical factors for effective cost estimation during each project phase of a conventional construction project. The main logic is that with the progress of a cost estimate, the programming of the activities and the output measurement can be done in a better manner and the result will be that input oriented control will shift to output control (Liu et al. 2007).

2.6 Research Gaps

The study reviewed literature on the various studies in different parts of the world that have largely touched on factors relating to project delivery in terms of quality, the most important factors determining project performance in (Sudan, 2012). The impact of project delivery systems, cost minimization and project control on construction project success (Ghana, 2013), project cost prediction model (Nigeria, 2010), and determinant of successful completion of rural electrification projects in Kenya (Kenya, 2013) and influences on construction delivery time (South Africa, 2010).

Furthermore, managing the project environment (Canada, 2005), critical factors affecting quality products in construction projects (India, 2006), construction contracts duration (USA, 2008). These studies have been carried out and published. However there is no literature available on the causes and effects of suspension in completion of second cycle institutions building projects in Sunyani municipality, Brong-Ahafo Region. This study therefore aimed to establish factors affecting the completion of second cycle institutions building, challenges building constructors go through during the construction, effects of suspensions of second cycle institutions building projects and the best strategies to identify suspension of second cycle institutions building projects in Sunyani Municipality.

2.7 Summary

This second chapter focused on literature reviewed on the relevant research work of other authors. Both theoretical and empirical literature was reviewed. It contains the themes used to conduct the study basing on the core objectives; causes of delays in construction of suspension or delays in construction project and best strategies for minimizing suspension/delays in building projects.

The above variables are discussed in detail and how they influence suspension or delay of project completion which is the dependent variable. The study captured in the conceptual framework which is a tabulated relationship between the independent variables and dependent variable. The research gaps were also identified in this chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

A well-organized methodology is a prerequisite for the success and effectiveness of every research study. This Chapter presents the research methodology that was employed for the study. Chapter three therefore outlines and provides detailed description and rational of the key components of the manner in which the study was conducted which include research design, qualitative and quantitative research, study population, sample size and sampling technique, data collection procedures, research instruments development, validity and reliability and data analysis.

3.1 Research Design

This study employed both descriptive and explorative research design. Olatunji (2010) indicated for the intent of seeking new knowledge explorative design is best and appropriate. A descriptive design also sought to give a causal relationship between construction project completion which was the dependent variable and the independent variables being the causes of delays in construction in construction project, effects and best strategies for minimizing suspension/delays in building projects.

The research employed quantitative method of data collection.

3.2 Population of the Study

A population is a complete set of persons or objects, characterized by designated criteria, which the researcher intends studying (De Vos et al, 2002). Chava (2006) also describes population as the entire group or set of cases that a researcher is interested in generalizing. For the purpose of this research, the population consists of all construction firms who are undertaking construction projects among second cycle institutions in Sunyani Municipality. The construction firms were grouped according their ranks in classes. These were D1K1, D2K2 and D3K3.

Table 3.1: Target Population

Class of Contractors	Number/population
D1K1	8
D2K2	7
D3K3	24
Total	**39**

Source: Sunyani Municipal Assembly, 2018

3.3 Sampling Technique and Sample Size Determination

Sampling is the process of selecting units (people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Trochim, 2006). Since the issue of delay in construction is a multifaceted issues involving all the stakeholders involved in the planning, design, finance and implementation of the projects.

It is expedient that this study gives adequate representation to all the stakeholders. Two sampling techniques was used to select the study respondents. Firstly, a purposive sampling technique of non-probability sampling was used to select the construction firms and respondents at the works department. Secondly, a stratified random sampling technique was used to select individual member in construction firms study.

3.3.1 Sample Size Estimation

Sampling is the process of selecting units from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Trochim, 2006). Since the issue of risk in construction is a multifaceted issues involving all the stakeholders involved in the planning, design, finance and implementation of the projects. It is expedient that this study gives adequate representation to all the stakeholders. The use of sampling to collect data is necessary because it is difficult and costly to collect data from the entire population. The formula that was developed by Yamane (1973) for calculating sample size was used. The formula is produced below.

$$n = \frac{N}{1 + N(\alpha)^2}$$ Where

n = is the required sample size.

N = the population size (Population of 39)

α = Tolerable error/margin of error (which in this study was pegged at 0.05).

n = $39 \div 1 + 39(0.05)^2$

n = $39 \div 1 + 39\ (0.0025)$

n = 39÷ 1+ 0.0975

39 ÷ 1.0975

35.6

Approximately n= 36

From the above the ideal sample size to be taken is thirty-six (36) from the construction firms. Considering the fact that the total population was made up of the sum from three different populations there is therefore the need that the sample taken from each group is taken with respect to the real size of the classes involved. The construction firms were group into three strata per their level of class. Thus D1K1, D2K2 and D3K3 construction firms. Proportional allocation was used calculating the size that is supposed to be taken from each stratum. The formula adopted by Kathuri and Pals (1993) was used in calculating the sample to be taken from each stratum is presented below:

$n^h = N^h/N x n$ where

n^h = sample size of stratum h (that is the sample size for each class of contractors)

N = Total size of population

n = Total sample size

N^h= Population size of stratum h (population size of each department)

The sample to be taken from each class is calculated as follows:

D1K1 8/39x36 = 7

D2K2 7/39x36 = 6

D3K3 24/39x36 = 23

Stratified sampling method was used to select the respondents from the selected categories based on Kathuri and Pals (1993) formular. Purposive sampling method was used in reaching the targeted respondents.

3.4 Data Collection

An introductory letter from University of Education, Winneba was given to the people in charge of the sites. The researcher personally administered the questionnaire. Respondents were allowed sufficient days at least on week to complete the questionnaires. The questionnaires were series of structured questions which were related to the research work and directed to respondents with the aim of gaining firsthand information.

The questionnaire consisted of both open ended and close ended questions. Data was collected from the sites between the hours of 11am to 4pm. Establishing of rapport of each selected respondent was briefed on the study and its importance to the construction profession. Some of them were willing to fill the questionnaires themselves and they were given a copy of the questionnaires to fill but those who were not ready to fill were questioned by reading the questions from the questionnaires. English was the main language used because it was the preferred medium of communication for the respondents.

3.4.1 Development of Questionnaire

In this study the self-administered questionnaire were used for the respondents. A questionnaire is a research instrument that gathers data over a large sample. Questionnaires were used to gather information and data from the respondents. Questionnaires are ideal for survey study and are widely used in education to obtain information about current conditions and practices and to make enquiries about attitudes and opinions quickly and in precise form.

The questionnaire had two sections. Section A giving the background information of the respondent. This includes their gender, construction profession they are in and the experience they have in the construction industry. Section B on the other hand focused on the core objectives; causes of delays or suspensions in construction project, effects and best strategies for minimizing suspension/delays in building projects.

The questionnaire consisted of both closed-ended questions and open-ended questions. The closed-ended items were mainly be made up of Likert scale questions. Bryman (2004) posit that the Likert scale normally has five or seven categories to show strengths of agreement or disagreement, and it is further asserted that the multiple-item scales such as the Likert scale are popular for three reasons.

Firstly, a number of items are more likely to capture a broad concept than a single question. Secondly, the use of a number of items can help to illustrate finer distinctions items. Thirdly, if a question is misunderstood by a respondent and only one question is

asked, that response would not be appropriately interpreted, whereas if a few questions are asked, a misunderstood question could be offset by those which are properly understood. In this study, only five categories were used, for example: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD).

3.4.2 Validity and Reliability of Questionnaire

The alpha value of 0.733 was determined. The instrument was considered as reliable since alpha value is above 0.7 with the sample of 36.

3.5 Data Analysis

The data gathered from the field of study were edited by the researcher to ensure that all questionnaires were completed and contain accurate information. The researcher used a digital-recording device which ensured that participant responses to questions would accurately reflect in the data transcript to facilitate data analysis.

The data collected were analysed in themes as they emerged from literature and match with the response from the questionnaire. The researcher generated these themes from the literature, reviewed and looked for data that matched or agree with these predetermined themes. The collected data was analyzed using quantitative data analysis methods. Quantitative method involved both descriptive and inferential analysis. Descriptive analysis such as frequencies and percentages presents quantitative data in form of tables. Statistical analyses including descriptive statistics was carried out using the Statistical Product for Service Solution (SPSS) version 21.0. Data gather the open ended questions were analyzed qualitatively using content analysis.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the data collected during the surveys'. It also presents the analyses of the data and as well as their discussions. This discussion of the data is guided by the research questions that guided this research as mentioned in chapter one of this study.

4.1 Socio-demographic Characteristics of the Contractors

This section provides background data of the respondents. There were a total number of thirty six (36) respondents employed for the study. The socio-demographic characteristics of the respondents of the construction firms includes gender, marital status, level of education, religious denomination, form of business establishment and years of working experience. That of the works department were gender, educational qualification, designation and years of working experience.

4.1.1 Gender of the Respondents

Out of the 36 construction firms, 31 of them were males constituting 85% whilst the remaining 5 constituting 15% were females. This is displayed in Table 4.1 below.

Table 4.1: Gender of the Respondents

Gender	Frequency	Percentage (%)
Male	31	85.0
Female	5	15.0
Total	**36**	**100.0**

Source: Field Survey, 2018

4.1.2 Category of Company

The research revealed that majority 23(64%) were D3K3 contractors, followed by D1K1 with 19% and the minority 6 respondents constituting 17% were D2K2. The above is demonstrated in Table 4.2.

Table 4.2: Category of Company

Variables	Frequency	%
D1K1	7	19.0
D2K2	6	17.0
D3K3	23	64.0
Total	**36**	**100.0**

Source: Field Survey, 2018

4.1.3 Years of Working Experience

The respondents' years of working experience is demonstrated in Figure 4.1 below. 14 respondents had 6-10 years working experience indicating 39% followed by 27% of 10 respondents. 7(20%) 11-15 years working experience while the remaining 5(15%) had more than 15 years working experience.

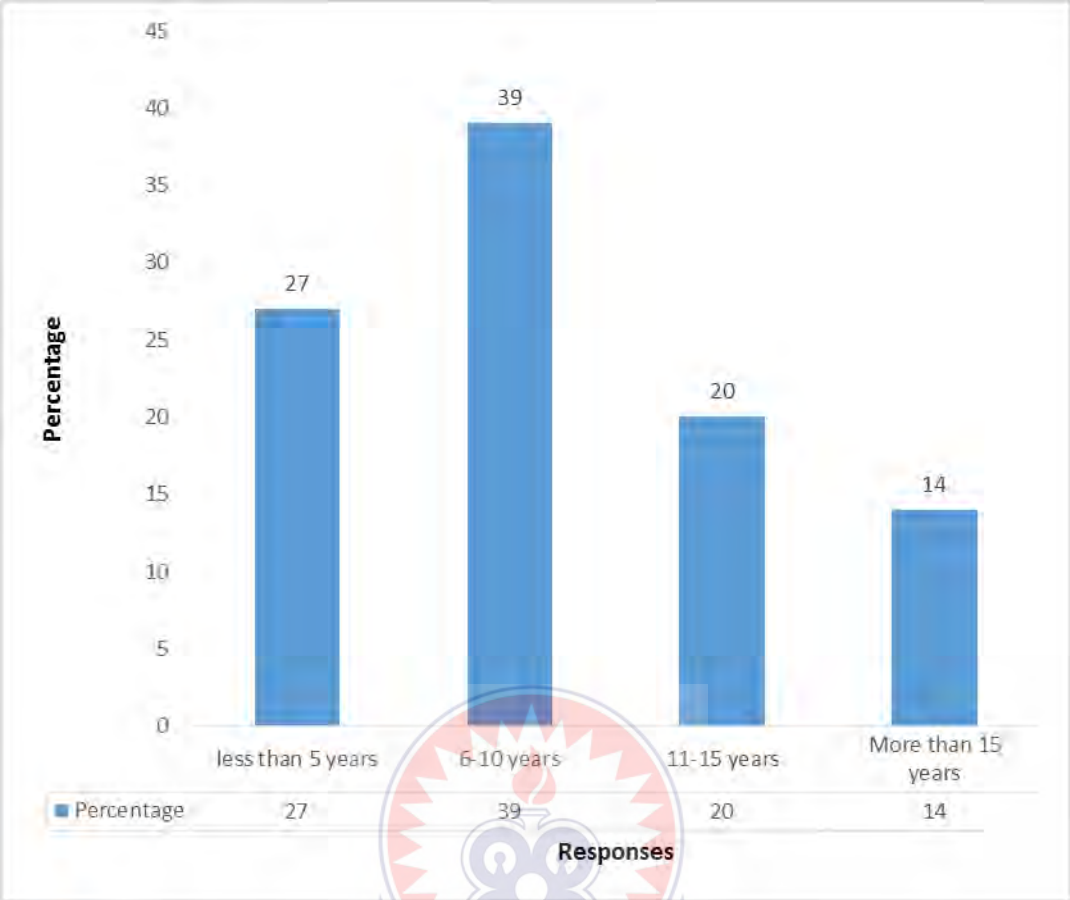

Figure 4.1: Years of Working Experience

Source: Field Survey, 2018

4.1.4 Respondents Position in your Organization

Table 4.3 exhibits the respondents' position in your organization. Majority were works engineers representing 36**%** whilst the least 2 were directors constituting 6%.

Table 4.3: Respondents Position in your Organization

Variables	Frequency	%
Director	2	6.0
Works Engineer	13	36.0
Works Superintendent	4	11.0
Quantity Surveyor	9	25.0
Architect	8	22.0
Total	**36**	**100.0**

Source: Field Survey, 2018

4.1.5 Respondents Highest Education Qualification

Figure 4.2 indicates the respondents' highest education qualification. Majority 39% had first degree whiles the least 10% holds doctorate degree.

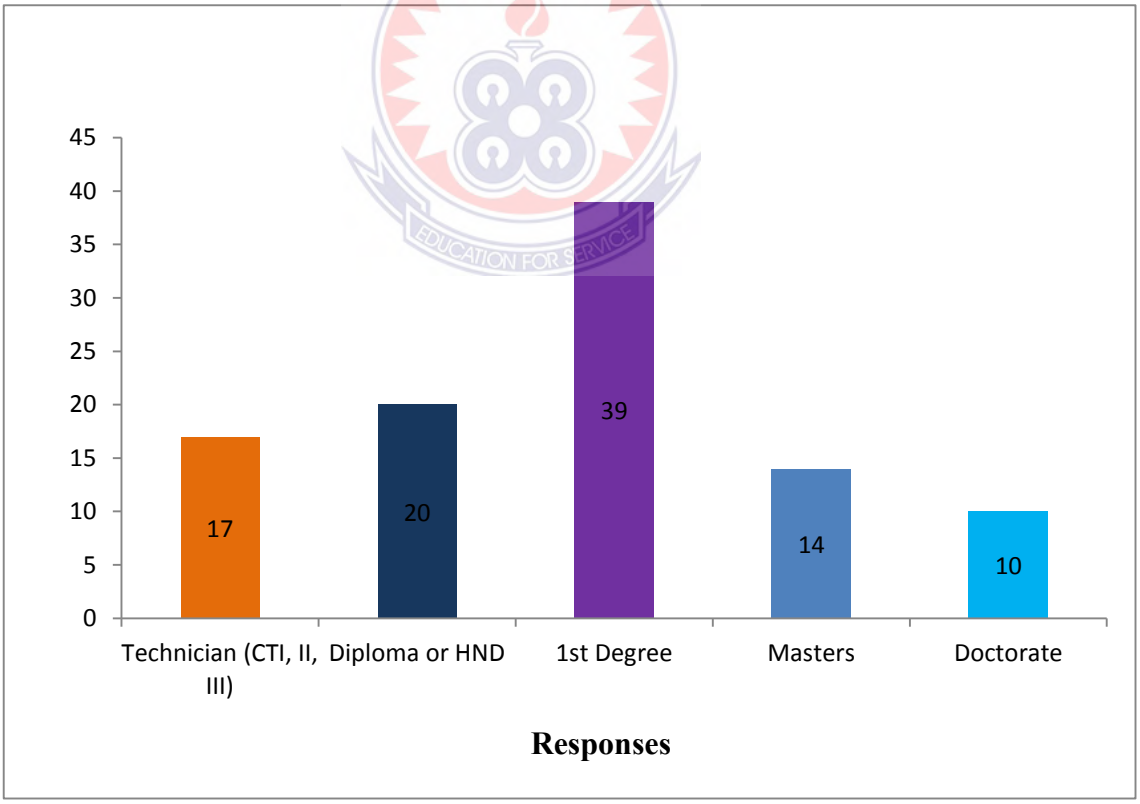

Figure 4.2: Respondents Highest Education Qualification

Source: Field Survey, 2018

4.1.6 Years of Professional Practice

The respondents' years of professional practice in the construction is demonstrated in Figure 4.3. Data shows that majority had worked ranging from to 10 years in the profession recording 38%. The minority on the other hand indicated 16 years and above representing 8%.

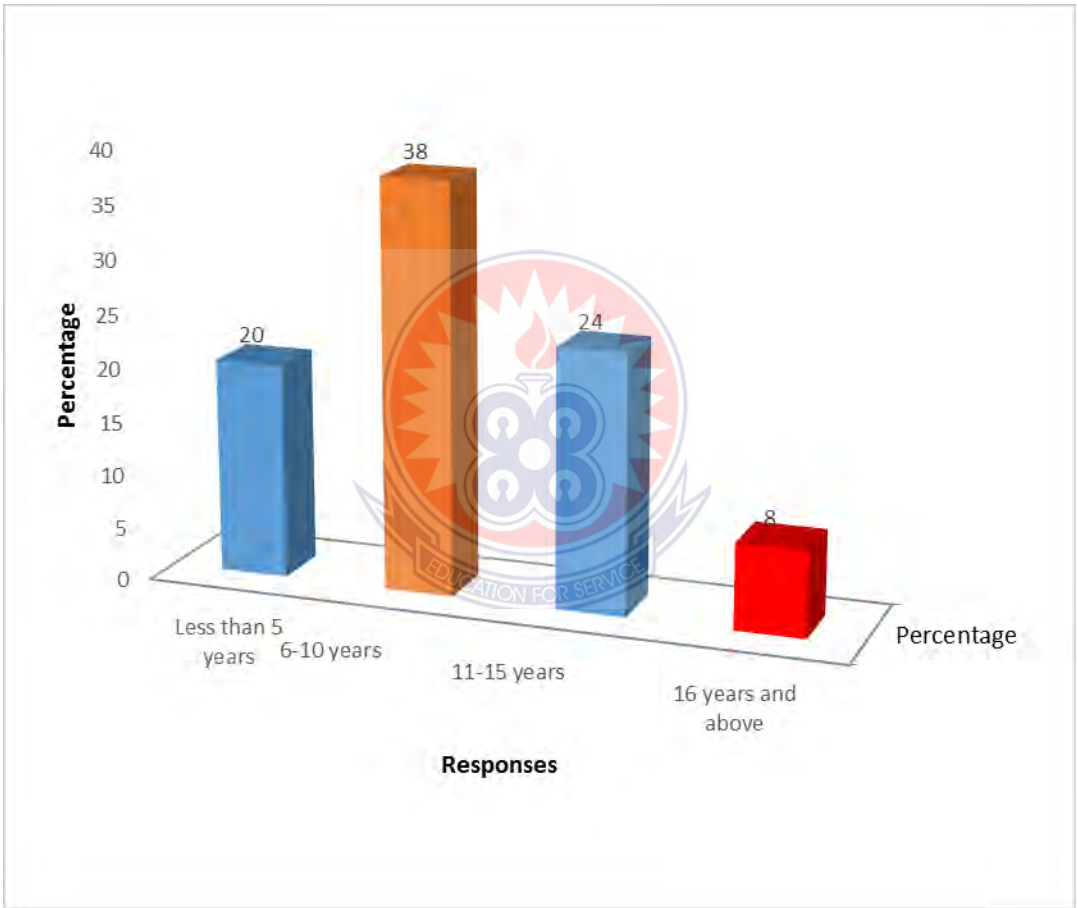

Figure 4.3: Years of Professional Practice

Source: Field Survey, 2018

4.2 Causes of Delays in Construction Project

Table 4.4 indicates the causes of delays in construction projects. The high mean scores values of 4.6, 4.5, 3.9, 3.7 and 3.2 with the corresponding factors contractors improper planning during construction, underestimation of the project costs, poor supervision of works on site, poor communication between contracting parties and bureaucracy in decision making indicates the respondents agreement as the causes of delays in construction projects.

This implies that Improper planning at the initial stages of a project manifests throughout the project and causes delays at various stages. The study supports Sambasivan and Soon (2007) findings that local contractors often fail to come out with applied and practicable work program at the initial planning stage. The failure is interrelated with lack of systematic site management and inadequate contractors experience towards the projects. This supports Okpala and Aniekwu (2008) findings that lack in construction materials in market always became an excuse for delay in project completion. The insufficient construction materials in the market were due to, not enough statistical data related to construction materials in current. Market, rise and fall price of construction materials in market, waiting period quite long and uncertain delivery of ordered construction materials, not enough financial sources to pay the order and not enough transportation for construction materials.

Also in line Manavazhia and Adhikarib (2006) survey, they found that material and equipment procurement delays in highway projects in Nepal. Delay in the delivery of materials and equipment to construction sites is often become a contributor to the cause

of delay and make the cost overruns in construction projects. The main causes of material and equipment procurement delays were found to be organizational weaknesses, suppliers' defaults, governmental regulations and transportation delays.

The low mean score values of 2.8, 2.7, 2.0, 2.0, 1.9, 1.7 1.6, 1.5 and 1.3 indicates the respondents disagreement to the factors delays in honoring payment certificates for work done, client's inadequate financial resources, contractors poor site management, complexity, difficulties in accessing bank credit, underestimation of the project duration, errors in design and specifications, change orders during construction, unfavorable site conditions, bad weather condition, delays in sub-contractors work and lack of complete documentations before commencement as the causes of delays in construction projects.

The study however disagreed to delays in honoring payment certificates for work done, client's inadequate financial resources, contractors poor site management, complexity, difficulties in accessing bank credit, underestimation of the project duration, errors in design and specifications, change orders during construction, unfavorable site conditions, bad weather condition, delays in sub-contractors work and lack of complete documentations before commencement as the causes of delays in construction projects. This findings contradicts Okpala and Aniekwu (2008) who found that lack in construction materials in market always became an excuse for delay in project completion.

Table 4.4: Causes of Delays in Construction Projects

Causes of Delays in Construction Project	Respondents level of agreement					
	1%	2%	3%	4%	5%	Mean
Poor supervision of works on site	0	0	0	48	52	4.6
Bureaucracy in decision making	0	4	8	9	79	4. 5
Contractors improper planning during construction	10	0	0	70	20	3.9
Underestimation of the project costs	12	0	0	58	30	3.9
Poor communication between contracting parties	0	15	0	85	0	3.7
Unfavorable site conditions	24	0	40	6	30	3.2
Errors in design and specifications	24	16	40	0	20	2.8
Bad weather condition	20	0	70	0	10	2.7
Client's inadequate financial resources	0	72	28	0	0	2.0
Contractors poor site management	44	46	0	15	0	2.0
Complexity, difficulties in accessing bank credit	43	32	17	5	3	1.9
Lack of complete documentations before commencement	36	38	26	0	0	1.9
Delays in sub-contractors work	53	26	17	4	0	1.7
Underestimation of the project duration	68	42	0	0	0	1.5
Change orders during construction	70	30	0	0	0	1.3
Delays in honoring payment certificates for work done	40	60	0	0	0	1. 6

Source: Field work, 2018

Key: 1 = **strongly disagree**, **2= disagree, 3** = **fairly agree**, **4** = **agree, 5** = **strongly agree**.

Scale: 5 + 4 = agreed; and 3 + 2+ 1 = disagreed

4.3 Effects of Delays/Suspension in Construction Project

The major effects of project delays or suspension in construction project is indicated in Figure 4.4 below. On cost overrun, majority 50% agreed, 20% strongly agreed whilst the remaining 30% were neutral or undecided. More than half, 73% agreed to time overrun and least 27% strongly agreed as the effects of delays in construction project. On

disputes, results confirmed that, 54% agreed, 6% strongly agreed whilst 40% on the other hand were undecided or neutral.

Data on the arbitration and litigation as the effects of delays in construction project show that, while 15% were undecided or neutral, 47% agreed and 38% strongly agreed. Respondents' agreement to total abandonment of project as one of the effects indicates that, majority 53% agreed, 26% strongly agreed while 21% were undecided or neutral. This agrees with a study conducted by Fugar and Agyakwaah-Baah (2010) who found delays of payment may result in cost overruns, time overrun, disputes, arbitration litigation and total abandonment. Also in line with Arditi et al. (2005) studies that long delays as a result of inadequate funding in inflationary periods increase cost overruns extremely.

The study findings concur Ahmed et al. (2000), construction projects delays present many adverse effects such as adversarial relationships, disbelief, lawsuit, cash-flow problems, project abandonment and many other issues which impact negatively on project costs.

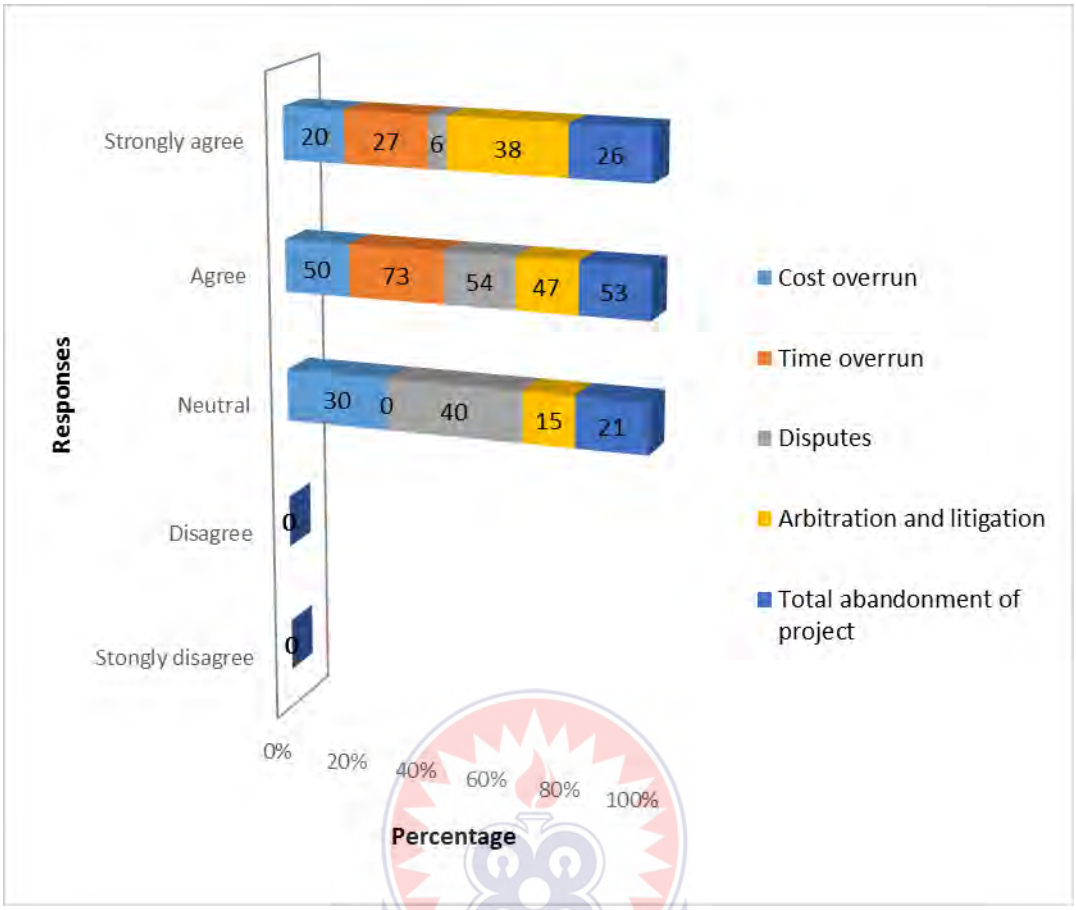

Figure 4.4: Effects of Delays/Suspension in Construction Project

Source: Field work, 2018

4.4 Best Strategies for Minimizing Delay/Suspension in Second Cycle Building Projects

Table 4.5 shows the best strategies for minimizing delay in building projects. The respondents agreed to the following statements clients have to make sure that the contractors are not selected based only on the lowest bid, clients should not interfere frequently during the execution and keep making major changes in the design, clients should have the finances in time to pay the contractors after completion of a work, clients

must make quick decisions to solve any problem that arises during the execution, contractors should not take up the job, in which they do not have sufficient expertise, contractors should have able site-managers for the smooth execution of work, contractors must make sure they have a sound financial backing and initial proper planning should be considered to reduce or avoid on necessary delays as best strategies in minimizing construction delays.

Others were, change from the traditional contract type to the design-build type will safe time, consultants should prepare and approve drawings on time, awarding bids to the right/experience consultant and contractor ensure adequate and available source of finance until project completion and hire an independent supervising engineer to monitor the progress of the work.

This means that prevention of delays is possible when all the project stakeholders work as a team to ensure the success of the project. This supports Kikwasi (2012) findings that adequate proper briefing to client before final design will help solve the problem. Engagement of competent person will also help to reduce errors and faulty design. Also in line with Baar (2002) studies that planning and analyzing the details can be done by interactive planning which includes an integrated program that defines key milestones, constraints and identifies the major issues that may affect the project.

In support of Abdelnaser (2005) findings which cited that implementation of adequate planning during the inception and design phases of the project can be a strong measure of avoiding delay during the construction phase. Also agreement with Nguyen (2004) research in an attempt to establish measures to minimize delay in large construction project in Vietnam. He recommended five important measures were; availability of sufficient resources, multidisciplinary or competent project team, competent project managers, accurate first cost estimates and accurate initial time estimates.

The study again supports Aibinu and Jagboro (2002) who found out two major ways of avoiding construction delays (time overrun) to be acceleration of site activities and contingency allowances. The enforcement of liquidated damages and offering of incentives for early completion were also strong measures to improve construction project situations.

Koushki et al (2005) also carried out a study for the time delay and cost overrun minimization. They pointed out the following measures, sufficient and readily available financial resources until completion of the project, selecting highly skilled consultant and reliable and competent contractors to carry out the project.

The study again found that good communication with the entire design team and integrating a design process and review on time and design quality assurance reviews at the design stage are not best strategies for minimizing delay in building projects. It implies that proper communication channels between the various parties has no impact during the planning stage.

The respondents however disagreed to statements as good communication with the entire design team and integrating a design process and review on time and design quality assurance reviews at the design stage to be best strategies for minimizing delay in building projects. These produced low mean score values of 1.3 and 1.2 respectively.

This agrees Abdelhalim and Duff (2005) studies which states that poor communication among stakeholders has the tendency to cause cost overruns. Any problem with communication can lead to severe misunderstanding and therefore, delays in the execution of the project.

Table 4.5: Best Strategies for Minimizing Delay/Suspension in Second Cycle Building Projects

Best Strategies for Minimizing Delay/Suspension	Respondents level of agreement					
	1%	2%	3%	4%	5%	Mean
Contractors must make sure they have a sound financial backing	0	0	0	21	79	4.8
Initial proper planning should be considered to reduce or avoid on necessary delays.	0	0	0	68	42	4.8
Change from the traditional contract type to the design-build type will safe time	0	0	10	0	90	4.8
Contractors should not take up the job, in which they do not have sufficient expertise	0	0	0	35	65	4.7
Clients should not interfere frequently during the execution and keep making major changes in the design.	0	6	0	34	60	4.5
Clients should have the finances in time to pay the contractors after completion of a work	4	2	20	0	72	4.3
Consultants should prepare and approve drawings on time	0	0	12	43	45	4.3
Awarding bids to the right/experience consultant and contractor	0	8	0	55	37	4.2
Hire an independent supervising engineer to monitor the progress of the work	0	0	21	57	22	4.0
Clients must make quick decisions to solve any problem that arises during the execution.	7	0	5	77	11	3.9
Ensure adequate and available source of finance until project completion	0	8	10	65	17	3.9
Contractors should have able site-managers for the smooth execution of work	0	10	0	80	10	3.8
Clients have to make sure that the contractors are not selected based only on the lowest bid.	10	20	0	50	20	3.5
Good communication with the entire design team and integrating a design process and review on time.	70	30	0	0	0	1.3
Design quality assurance reviews at the design stage	85	15	0	0	0	1.2

Source: Field work, 2018

Key: 1 = **strongly disagree**, **2**= **disagree, 3** = **fairly agree**, **4** = **agree, 5** = **strongly agree**.

Scale: 5 + 4 = agreed; and 3 + 2+ 1 = disagreed

Where is the Statistical aspect which you claim you used SPSS to analysed?

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the study and makes conclusions based on the results. The recommendations from the findings are also presented below:

5.1 Summary of Findings

The research was conducted to assess into causes and effects of delayance in completion of second cycle building projects in Sunyani municipality, Brong-Ahafo Region. The study was based on the core objectives; causes of delays in construction in project and effects of delay in building projects. The study adopted a descriptive study design with a stratified and simple random sampling technique in sampling a total sample size of 44 respondents. Quantitative data analysis methods was used with the aid of Statistical Product for Service Solution (SPSS) version 21.0. The following were the major findings of the study.

5.1.1 Causes of Delays in Construction Project

The study found several causes of delays in construction projects. Factors such as contractors improper planning during construction, underestimation of the project costs, poor supervision of works on site, poor communication between contracting parties and bureaucracy in decision making were found as the causes of delays in construction projects.

The study however disagreed to delays in honoring payment certificates for work done, client's inadequate financial resources, contractors poor site management, complexity, difficulties in accessing bank credit, underestimation of the project duration, errors in design and specifications, change orders during construction, unfavorable site conditions, bad weather condition, delays in sub-contractors work and lack of complete documentations before commencement as the causes of delays in construction projects.

5.1.2 Effects of Delays/Suspension in Construction Project

The study found that building constructors go through series of challenges during building constructions. The challenges identified were insufficient planning, integration or allocation of resources, inaction or wrong action due to incorrect information communication, unenforceable conditions, impacts of accidents, fire and theft, unpredictable price changes errors in calculation and among others.

The study revealed major effects of delays in construction project as cost overrun, time overrun, disputes, arbitration litigation and total abandonment of projects.

5.1.3 Best Strategies for Minimizing Delay/Suspension in Second Cycle Building Projects

The study found that there are best strategies for minimizing delay in building projects. It was found that to minimize delays, clients should have the finances in time to pay the contractors after completion of a work, clients must make quick decisions to solve any problem that arises during the execution, contractors should not take up the job, in which they do not have sufficient expertise, contractors should have able site-managers for the

smooth execution of work, contractors must make sure they have a sound financial backing.

The study again found that good communication with the entire design team and integrating a design process and review on time and design quality assurance reviews at the design stage are not best strategies for minimizing delay in building projects.

It was again found on best strategies that there must be change from the traditional contract type to the design-build type will safe time, consultants should prepare and approve drawings on time, awarding bids to the right/experience consultant and contractor ensure adequate and available source of finance until project completion and hire an independent supervising engineer to monitor the progress of the work.

5.2 Conclusions

The research was conducted to assess into causes and effects of delayance in completion of second cycle building projects in Sunyani municipality, Brong-Ahafo Region. This study on key causes and effects of construction projects delays, target and seek views of Ghanaian contractors/firms of Financial Class D3K3, D2K2 and D1K1 working on second cycle buildings projects in the Sunyani Municipality. The study conclude on the causes of projects delays as contractors improper planning during construction, underestimation of the project costs, poor supervision of works on site, poor communication between contracting parties and bureaucracy in decision making being the causes of delays in construction projects. The major effects of delays in construction project were cost overrun, time overrun, disputes, arbitration litigation and total abandonment of projects. Long delays as a result of inadequate funding in inflationary

periods increase cost overruns extremely. Most challenges are primarily due to an unreasonable project scope, inadequate early planning and the absence of risk management systems. The study found that prevention of delays is possible when all the project stakeholders work as a team to ensure the success of the project. In conclusion, this study points to the fact that, clients must have strong economical ability and financial arrangement for projects and make correct timely decisions. Secondly, to curb delays in projects execution needs all the contracting parties' commitment and devotion to address the challenges.

5.3 Recommendations

To decrease delays in construction projects the following recommendations are noteworthy.

1) A master plan/work programme comprising; human resources schedule, plant and equipment schedule; material delivery and rotation schedule, quality control plan, and work schedule and their duration.
2) Consultants should plan properly to ensure that contract processes are duly followed, thus, documentation including preparation and approval of drawings to reduce variation during construction.
3) Consultants should monitor their assigned work closely by making inspections and corrections at the appropriate time to reduce or avoid rework.
4) Since consultant serves as an intermediary between client and contractors their communication skill is essential to aid smooth flow of information to other contracting parties.

5) Proper payment schedules must be agreed by client and contractors thus, either monthly or stage completion payment before project commencement
6) Clients should not select contractors based only on the lowest bid but should look for their working experience, key personnel, works executed similarly in nature, equipment holding, financial capacity, work load and experience in modern construction technology before choosing a contractor.
7) Contractors must plan their work properly and provide the entire schedule to clients for smooth flow of information and payment. Contractors must have knowledge about their resources strength and obtain up to date machinery and train their staff to meet the current trends.

5.4 Suggested Further Research

From the above findings of the study; the researcher suggests the following further research studies.

1. A research should be conducted on the predictor model for successful construction project implementation. This model should include interplay of risks, success factors and weighted factor for the unknowns in construction project implementation. This will ensure that a success or failure of a project can be properly managed with more certainties and anticipated outcomes.
2. The study used only Sunyani Municipality, therefore further study could be conducted to examine the whole region if not all a sizable number of districts.
3. Studies on the socioeconomic impact on second cycle construction projects could be assessed.

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APPENDIX: QUESTIONNIARES FOR THE RESPONDENTS

UNIVERSITY OF EDUCATION, WINNEBA

My name is Cynthia Kala-Iriba. Construction Management Student from Department of Building Technology at the University of Education, Winneba. As partial requirements for graduation. I am carrying out a study on the topic: "to identify the factors affecting the completion of second cycle projects funded by the Ghana Education Trust Fund (GET fund).

I would be grateful if you could spare sometime to respond to this questionnaire. I would assure you that all the information provided would be e used strictly for academic purposes and your identity will be kept confidential.

Do not write your name or that of your school on this paper.

SECTION A: Background Information

1. What is your gender?
    a) Male [ ]
    b) Female [ ]
2. Which of these classifications do your company or organization belongs to?
    1. Class D1KI [ ]
    2. Class D2K2 [ ]
    3. Class D3K3 [ ]
    4. Class D4K4 [ ]

3. How long have you worked with Assembly?

   a) Less than 5 years [ ]

   b) 6-10 years [ ]

   c) 11-15 years [ ]

   d) More than 15 years [ ]

4. Please indicate your position in your organization.

   a. Director [ ]

   b. Works Engineer [ ]

   c. Works Superintendent [ ]

   d. Quantity Surveyor [ ]

   e. Architect [ ]

5. What is your highest education qualification?

   a. Technician (CTC I, II, III) [ ]

   b. Diploma or HND [ ]

   c. 1st Degree [ ]

   d. Masters [ ]

   e. Doctorate [ ]

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

   1. Less than 5 years [ ]

   2. 6-10 [ ]

   3. 11-15 [ ]

   4. 16 and above [ ]

Section B: Causes of Delays and Suspension in Construction Project

Read carefully the following statements and tick against the appropriate option causes of delays in construction project below. **S.A (Strongly Agree), A (Agree), N (Neutral), D (Disagree), S.D (Strongly Disagree)**

	Statements	SD	D	N	A	SA
1	Contractors improper planning during construction					
2	Delays in honoring payment certificates for work done					
3	Client's inadequate financial resources					
4	Contractors poor site management					
5	Underestimation of the project costs					
6	Complexity and difficulties in accessing bank credit (Client)					
7	Complexity, difficulties in accessing bank credit (Contractor)					
8	Poor supervision of works on site					
9	Underestimation of the project duration					
10	Errors in design and specifications					
11	Change orders during construction					
12	Unfavorable site conditions					
13	Bad weather condition,					
14	Poor communication between contracting parties					
15	Delays in sub-contractors work,					
16	Bureaucracy in decision making					
17	Lack of complete documentations before commencement					

Section C: Effects of Delays and Suspension in Construction Project

Read carefully the following statements and tick against the appropriate option the effects of delays in construction project below. **S.A (Strongly Agree), A (Agree), N (Neutral), D (Disagree), S.D (Strongly Disagree)**

	Variables	**SD**	**D**	**N**	**A**	**SA**
1	Abandonment of projects/ Termination of projects					
2	Arbitration and litigation					
3	Cost overrun on construction projects					
4	Destruction of contractor's capital					
5	Dispute involvement					
6	Government does not attain target set towards the improvements of infrastructures in educational sector					
7	Lead to un-achievement of national progress					
8	Loss in potential revenues (when completion delayed)					
9	Loss of value for money by government when the construction project is not able to come to completion					
10	Specified quality not achieved due to delay and suspension in completion					
11	Time overrun					
12	To reap the desired national benefits. (Project not delivered not time)					

Section E: Best Strategies for Minimizing Delay and Suspension in Building Projects

Read carefully the following statements and tick against the appropriate option best strategies for minimizing delays in construction project below. **S.A (Strongly Agree), A (Agree), N (Neutral), D (Disagree), S.D (Strongly Disagree)**

	Statement	SD	D	N	A	SA
1	Clients have to make sure that the contractors are not selected based only on the lowest bid.					
2	Clients should not interfere frequently during the execution and keep making major changes in the design.					
3	Clients should have the finances in time to pay the contractors after completion of a work					
4	Clients must make quick decisions to solve any problem that arises during the execution.					
5	Consultants should monitor the work closely by making inspections and correction at appropriate times.					
6	Contractors should not take up the job, in which they do not have sufficient expertise					
7	Contractors should have able site-managers for the smooth execution of work					
8	Contractors must make sure they have a sound financial backing					
9	Initial proper planning should be considered to reduce or avoid on necessary delays.					
10	Change from the traditional contract type to the design-build type will safe time					
11	Good communication with the entire design team and integrating a design process and review on time.					
12	Consultants should prepare and approve drawings on time					
13	Human resources schedule; plant and equipment schedule; quality plan, and work schedule should be check at tender stage.					
14	Design quality assurance reviews at the design stage					
15	Resource Availability					
16	Commitment to projects					
17	Absence or less bureaucracy					
18	Ensure timely delivery of materials					
19	Awarding bids to the right/experience consultant and contractor					
20	Ensure adequate and available source of finance until project completion					
21	Hire an independent supervising engineer to monitor the progress of the work					

Thanks for participation