

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, KUMASI, GHANA**

**The Effects of Payment Delays on the Successful Implementation of
Road Construction Projects in Ghana: Case Study Ghana Highway
Authority, Brong-Ahafo Region**

by

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MASTER OF SCIENCE

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DECLARATION

I hereby declare that this submission is my own work towards the MSc Procurement Management 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 acknowledgement has been made in the text.

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ABSTRACT

Some of the main issues that lead to a successful implementation of a project are when timely payments and well organized practices to contractors on road construction projects are performed. Nonetheless, payment delays still constitute myriad of major setbacks in the successful implementation of road construction projects. The study therefore aimed to identify the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority. Literature was extensively reviewed and relevant of it laid the foundation for the development of the questionnaire which was distributed to the key project participants; clients, consultants, and contractors. The study adopted the quantitative method which sprung from the use of the positivists approach to knowledge with which a number of clients and consultants were selected purposively and contractors were also selected simple randomly for the survey. Owing to that, descriptive statistics was used to analyze the demographics whiles Relative Importance Index was used to analyze the subject variables. Results indicated that the main factor causing payment delays on road construction projects is delay in certification. It can be implied that the stakeholder responsible for this cause is the client. Respondents also indicated that the major effect among the effects of payment delays on road construction projects is abandonment of projects which ranked first after analysis. The results testify to the numerous abandoning of road construction projects. Practice of good financial management ranked first among the possible ways to mitigate payment delays. The research concluded that the main factor causing payment delays is delay in certification and it has manifested in the several abandonment of road construction projects in Ghana. The recommendation suggested that proper payment schedules are to be agreed by all the stakeholders before the commencement of the project. Proper communication channels or skills are to be implemented by the stakeholders to aid smooth flow of information and realistic duration and cost must be set for the project.

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DEDICATION

This Thesis is dedicated to God Almighty for His support throughout this study. This work is also dedicated to my dearest brother, Dr. Theophilus Adjei-Kumi, my lovely wife Akosua Asante, my children, entire Agyei-Kumi family, Mr Emmanuel Damoah (MD Emmahall Limited, Sunyani) who partly financed the studies, Mr Wuni Ibrahim Yahaya who also helped during the course of studies, workers in the Ghana highway authority especially Surv. Nii Farouk Quarshie who aided in the formulation of this research topic and all members of ASROC in Brong-Ahafo region.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Construction Industry has been identified as one of the major backbones sustaining the Ghanaian economy since it employs people from all levels of skills attainment ranging from educated, average educated and non-educated. Amankwa (2003) identified that in 2002 2.3% of the active economic population was employed by the construction industry. It adds up an average of 8.5% to the Gross Domestic Product (GDP) of Ghana (Ghana Statistical Service, 2007). Its socio-economic importance is wider. An all-around oversight and successfully distributed construction projects enhance public services (education, transport and health), business efficiency, (communications, offices and retail) cultural, housing and public spaces. A survey conducted by Ayudhya (2012) stated, client financial problems, major accidents, lengthy period of approving works, substandard workmanship and inaccurate bills of quantities among others were factors in causing delayed payments to the contractor.

Payment delay is one of the major problems faced by road construction project and its successful implementation in the present economic condition. For a project to be successfully implemented, well-organised preparation should be done and payment should be timely released to contractors of road construction projects. The imperativeness of further payment is increased by the way that the road construction contracts generally encompasses long periods to finish projects, a lot of money to spend and the wide utilization of credit payment terms as opposed to payment on delivery in procuring of goods (Ameer, 2005).

Several actors in the road construction industry of Ghana are affected by delayed payment. As such, there is the urgency to identify the effects of the delayed payment and to develop pragmatic measures which could successfully put a stop to the causes of payment delays in our road construction industry in Ghana and its eventual effects on the successful implementation of road constructions.

In road construction contracts, the contractors' cardinal obligation is to execute and complete the works in accordance with the terms and conditions of contract on time, while that of the employer is to pay the contractor for the works which have been executed to the satisfaction of the supervising agents or consultants. Once the two parties enter into a contract, their respective focus becomes parallel with the contractors', hoping and working towards making as much revenue as possible from the client while the employer hopes to get the most work for least payment possible. To a great extent, payment becomes the central focus for both of them. It is however poignant that despite the indispensable nature of payment to the successful implementation of road constructions in Ghana, the sector has been bedevilled by delays payments.

The long and bureaucratic nature of issuing payment certificate is considered by the clients, consultants and contractors as one cause of the delay in payment. This system of making payment certificate receive approval from various levels within the government institutions before payment can be effected came about in order to curb the rising corruption that was immerging in the construction industry. In so doing payment certificates will be properly scrutinized by these institutions to ascertain and confirm that work has actually been done to the required standard but this has turned out to be a rather disastrous move for road contractors as unusual lengthy period of time are taken for honouring of payments..

It is an undeniable fact that many road construction projects have either been abandoned, become standstill or moving at a very slow pace as a result of the many hindrances in payment process that contractors, consultants and the respective government institutions encounter.

A failure on the side of the contractor in receiving timely and regular payment could as well be a recipe for reduced profitability, delay in completion of projects and in worst case scenarios, such construction firm may fold up (Judi et al, 2010). The effects of delayed payment to contractor causes a rippling effects on other construction business chain such as banks, sub-Contractors, hirers, suppliers and workers therefore causing everyone to suffer (Judi et al, 2010).

The incidence of the delayed payment is eating deep into the fabric of the true values and virtues of road constructors and it is by this logic that the research then pursues to identify the practical causes and effects of delay payment on the successful implementation of road construction in Ghana and to suggest pragmatic measures to mitigate the menace.

1.2 Statement of the Problem

Honouring payment certificates to contractors for road construction projects in Ghana under the supervision of Ghana Highway Authority really takes a longer time to complete and it affects the successful implementation of the projects. It was established that delays in honouring payment certificates in construction projects to contractors for work executed rank as the number one (1) of the factors causing construction project delay in Ghana, from the viewpoint of Clients, Contractors and Consultants (Fugar & Agyakwah-Baah, 2010).

Despite the supposed interest paid on the delayed payment certificates in a contract with a specific clause on interest on delayed payment, effectively the amount paid to the contractors do not reflect the actual face value of the amount certified if the certificate is honoured beyond the contractual due date. These situations may cause serious cash flow problems to contractors resulting in excessive pressure from their creditors which lead to seizure of the road contractors' plants and equipment and going on liquidation. Due to these, most of the road contractors get frustrated and determined the projects which affect the implementation and government not being able to meet infrastructural needs of the people. This is the more reason why there exist a great number of uncompleted or the poorly constructed roads for road projects in the Brong-Ahafo Region

The additional mammoth amount as are result of paying interest on delayed payment certificates, client loses extensive amount of money which could have been used for other meritorious road projects (Donkor, 2011).

Road construction projects is one of the major infrastructure projects in Ghana and are mostly government funded the projects. There are numerous factors that lead to the payment delays in the construction of roads. In some cases, inadequate source of client's funding mostly creates financial setbacks for which affect its cash flow and will not be able to pay the contractors on time. Haphazard submissions of valuation for interim payment affect the client cash flow which also contributes to the payment delays. It is therefore crucial to identify these factors causing payment delays and its effects on the successful implementation of road constructions.

In spite of the fact that client and the different participants in the road construction industry keep on complaining on how road contractors are not able to deliver

projects, there still remains the fact that payment delays are rampant in the industry and this affect project cost and quality. Many negative effects come with these delay payments as it tends to make some companies liquid, produces unemployment, brings about a huge cost overrun on the project, disputes and delay of the project.

The bureaucratic process involved in honouring certificate causes many problems to the contractors, the beneficiary body and the government itself. All contractors and even consultants admit to the fact that payment issues remain a huge problem in the sector of construction in Ghana. Each year the construction industry records a substantial number of bankruptcies related to delayed payments.

Delayed payment to contractors seriously affects early finish of all construction projects all around the globe. Despite the fact that there has been a push to enhance instalments in the late years by Government of Ghana, issues emerging are more serious as attached to issues in paying contractors. The research looked to unwind the impacts of delayed payments on the successful implementation of road constructions in the Brong-Ahafo Region.

1.3 Research Aim and Objectives

1.3.1 Aim of the study

The Principal aim of the study is to identify the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority.

1.3.2 Objectives of the study

In achieving the stated aim, these objectives have been outlined:

1. To identify the factors causing payment delays on the implementation of road construction projects in Ghana;

2. To ascertain the effects of payment delays on road construction projects delivery in Ghana; and
3. To suggest possible ways to mitigate payment delays on the successful implementation of road construction projects in Ghana Highway Authority.

1.4 Research Questions

To achieve the above research objectives, pertinent questions that must be answered are;

1. What are the factors causing payment delays on the implementation of Ghanaian road construction projects?
2. What are the effects of payment delays on road construction projects delivery in Ghana?
3. What are possible ways to mitigate payment delays on the successful implementation of road construction projects in Ghana Highway Authority?

1.5 Scope of the Study

The study seeks to identify the factors causing payment delays on the successful implementation of road construction projects in Ghana. It further goes to determine the effects of payment delays on road construction projects delivery in Ghana and consequently, to suggest possible ways to mitigate payment delays on the successful implementation of road construction projects in Ghana Highway Authority. The study concentrated on the key project participants of road construction; clients, consultants and contractors with characterization of A1B1 to A3B3 in the Brong Ahafo Region because such classification usually undertakes large and huge projects and, hence, involves the use of a couple of labourers.

For the purpose of this study, the research shall be limited to road constructions projects within the Brong-Ahafo Region of Ghana with the focus on Regional Ghana Highway Authority and the three stakeholders in the construction industry comprising of the client, the consultant and contractors in respective of these classes, in order for the researcher to be able to receive accurate response from the respondents. However, the researcher also focused on the construction industry identifying few clients and consultants for the study.

1.6 Significance of the Study

The output of this research work shall be significant in the following ways.

Contribution to existing literature shall be one of the greatest significance of this research work. There already exist literary works on the thematic area. However, the result of the research work shall contribute to the existing knowledge or literature as new trends and recommendation shall be identified. The study will accordingly create a record that could be valuable to researchers who mean to attempt research on causes and effects of payment delays on the successful implementation of road construction in Ghana. The study would provide basic information and present a much brighter picture on the current state of the effects of payment delays on social projects.

The road industry in Ghana is very poor and has to be improved. The study tends to identify itself to establish some of the effects and ways that road contractors can use in dealing with payment delays. This will also aid the Government in its issues concerning delays in payment on road constructions. The study if accepted will allow many contractors to avoid disputes and comfortably execute their projects. The study will also go a long way to aid strategy creators, contractors and clients. It will also

decrease delay in payment and the financial forecasting of contractors can be increased which would promote the timely completion of infrastructural projects.

1.7 Structure of the Thesis

Chapter 1: Introduction

The Chapter identifies with the foundation of the study and the study question. Other related activities, the objectives and aim are all captured by the chapter and additionally characterizes the extent of the study.

Chapter 2: Literature Review

The chapter extensively reviews literature pertaining to the top in question and works related to other works by different authors in the field. It discusses current knowledge on the topic and related works.

Chapter 3: Research Methods

The sample and sampling procedure, the population and the research design are among those discussed in this chapter. In analysing the data, the research method, procedure for data collection and the research instrument was also discussed. The quantitative approach to research was adopted for this study. The research was conducted by collecting the views of clients, consultants, road contractors from the Brong Ahafo region via the collection of a survey questionnaire.

Chapter 4: Data Presentation, Analysis and Discussions

The major results of the study were deliberated in this chapter. The outputs of the analysis were presented in forms that are easy to comprehend

Chapter 5: Summary of Findings, Recommendations and Conclusion

This presented the conclusion drawn from the study the data analysis and a set of recommendations necessary to improve the current state of the research problem.

The chapter ended with subject areas recommended for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews related literature on the effects of payment delays on the successful implementation of road construction in Ghana. The review is composed of operational definition of concepts and terminologies, and proceeds with the brief description of the construction industry, causes of payment delays in road construction, effects and impacts of payment delays on the successful implementation of road construction in Ghana and associated issues. Strategies currently used to deal with the problem of delayed payment, challenges with the strategies currently used to deal with the delayed payment and innovative strategies to address the effects of payment delays. The chapter concluded on the summary of all the literature that was reviewed regarding the construction of road.

2.2 Operational Definitions of Concepts and Terminologies

2.2.1 Payment

Giving a sum of money to someone is called payment. Payment is made to contractors when they have adequately completed their work without any faults on a particular project. There have been many proposals with which some of it is incorporated in the Construction and Regeneration Act 1996 as it is merged with the Housing Grant the second part of the Act. There was also a proposal by Latham (1994) in his report that the ordinary strategy for debate determination must be mediation and that payment must be done by building up compulsory reserves in trust. As indicated by Johnston (1999), overview of performance for payment in Britain has demonstrated that the development business, specifically, was inclined to late-payment culture, with payment of obligations because of subcontractors and suppliers being made, all things considered, 53 days after solicitations or applications

for payment had been rendered. As expressed by Kennedy (2006), 'Paying, not startlingly, has dependably been the fundamental subject of question.' It is foreseen that contention if unsettled will grow into debate which can likewise bring about late and non-payment. A few applicable studies have been led in the United Kingdom which tended to the issues identified with payment issues in the development business.

2.2.2 Delay

Delay refers to the period of time for which a project is said to be late or postponed. Sanders and Eagles (2001) further defined delay as an occasion that causes stretched out time to finish all or part of a project. The above two views are also supported by Fugar, and Agyakwah-Baah (2010) who distinguished that postponement is the time overrun, either past the date for finish indicated by the agreement or past the amplified contract period where an expansion of time has not been conceded. This is indeed an extended definition from the first two views where the elements of extension in a contract is considered as within the time and beyond such extension is said to be a delay.

2.2.3 Delay Payment

Delay Payment generally occurs when payment for stipulated time in a contract are postponed or deferred to later date later than an agreed earlier date. Donkor (2011) also agrees with this definition when he stated that in the event that the Interim Payment Certificate (IPC) is not paid within the contractual stipulated time, then delay is said to have occurred and the contractual worker is qualified to get enthusiasm on the aggregate sum that was postponed in payment. Judi et al (2010) also defined Delay payment as the disappointment by the Employer to pay the Contractor inside the time expressed in the Contract.

It was also identified that delay payment can occur when the Contractor is not being paid at all for his work. For the purposes of this thesis, delayed payment as used in contract shall be said to be delay in releasing funds for payment certificate certified by the Consultant which is due to the Contractor beyond permissible days of delay in the contract. At the point when the agreement time frame is delayed, it implies the agreement can't be finished inside the stipulated time. Payment delays will consequently promise: addition to the agreed time; termination of contract; non-completion.

2.3 The Construction Industry

The construction industry is fundamental for the improvement of any country. From various perspectives, the pace of the monetary development of any country can be measured by the improvement of physical frameworks, for example, structures, streets and extensions. Construction improvement includes various gatherings, different procedures, distinctive stages and phases of work and a lot of contribution from both the general population and private segments, with the real point being to convey the undertaking to an effective conclusion.

The level of accomplishment in finishing construction projects change activities will depend overwhelmingly on the way of the administrative, money related, specialized and authoritative execution of the separate gatherings, while mulling over the related danger administration, the business environment, and financial and political security. As indicated by Wang (1994), as development is turning out to be more perplexing, a more advanced methodology is important to manage starting, arranging, financing, outlining, endorsing, executing and finishing a venture.

The regular appraisal of the achievement of construction undertakings is that they are conveyed on time, to spending plan, to specialized detail and meet customer

fulfilment (Baker et al., 1983; Slevin and Pinto, 1986; Morris and Hough, 1987; Turner, 1993). In any case, the criteria for accomplishment are in truth much more extensive, fusing the execution of the partners, assessing their commitments and comprehension their desires (Atkinson et al., 1997; Wateridge, 1998).

An accomplice is an individual or bundle, inside or outside the construction project, which has a stake in, or can affect, the construction execution. Development extends possibly can have distinctive arrangements of partners and, with the end goal of this paper; they are restricted to four gatherings: customer, specialist, contractual worker, supplier and the group. As per Atkinson, et al., (1997), fruitful development venture execution is accomplished, when partners meet their necessities, separately and aggregately. In any case, with a specific end goal to meet their necessities and ceaseless interest, it is critical for the partners to address and recognize the three introduction criteria that exist in the life cycle of a task: the 'acquirement', the "procedure" and the "outcome" introduction. This structures the system and limit for this paper.

2.4 Causes of Delayed Payments

Delay Payment has bedevilled many road constructions in the Brong-Ahafo Region which has thwarted the successful implementation of road constructions. A number of causes can be identified to be a fuel or recipe for such delays. A survey by Ayudhya (2012) demonstrated that proprietor money related issues, delay in work endorsement, significant mishaps, off base bill of amounts and substandard workmanship were regular elements in bringing about delayed payment to main contractor. A sizeable number of payment delays however may be due to insufficient budgetary allocation, diversion of funds meant for the project, and or loss of interest in the project and reluctant to pay for work done. Delay in disbursement of fund from

the central government to the public institutions may also cause delayed payment since many public institution's major source of income emanates from the central government fund for development.

2.4.1 Technical Problems

According to Ahmed et al (2003), the magnitude of delays considerably varies from projects to projects which occur in every construction project. Different projects have its own delay time; some goes as far as a year and some a few days behind their normal schedule. This makes it very important to identify these delay and find solutions to them.

There are so many of these delays according to the views of various researchers on the delays posed in engineering and construction projects. According to these researchers, some of these delays are attributed to deficiencies or systematic faults rather than groups (Alaghbari et al, 2007).

2.4.2 Poor communication between contracting parties

Poor communication was cited as one of the causes when it comes to Project delays as explained by Alaghbari et al (2007) and Ahmed et al (2003) in their studies on the causes of delay on construction projects. Coordination and communication problems were also concluded on as a cause of project delay by Al-Ghafly (1995) on his studies on construction project delays.

2.4.3 Contractual Provisions

Delay is the most common, complex, costly and risky problem that are found in construction projects. Because of these complexities it breeds frequent claims and disputes that lead to lawsuits always the reason being that, time is both important to the contractor (in terms of money) and the owner (in terms of performance) (Alaghbari et al, 2007).

Mansfield et al (1994) posits that, the most important factors in their research on causes of cost overrun and delay in Nigeria is poor contract management. A study by Mezher and Tawil (1998) also confirmed the fact that contractual relationships were also a major cause when it comes to delay.

2.4.4 Delay in certification

District Assembly Common fund newsletter (2014) also agrees with the causes when it indicated that delays are one of the biggest challenges which is the distribution of the fund. According to the 1992 constitution, which made the regular fund, assignments to the fund must be paid quarterly (falling behind financially) amid the year. However, disbursement of the fund is characterized by long delays. This is indeed a major stumbling block on the development efforts of the Assemblies as most of the Metropolitan, Municipal and District (MMDAs) rely on the District Assemblies Common Fund (DACF) for their development projects and delivery of many programmes and services.

2.4.5 Shortage of resources of current year's project

According to Kaming et al (1997) studies on influencing factors of construction project delays, they revealed that shortage of resources was also a major factor when it comes to delay on construction projects. This supports the fact that speed of completing a project largely depends on the availability of resources and lack of which will definitely leads to delay in projects completions. However, the thesis is yet to test this component.

2.4.6 Local Culture / Attitude

Many cultures have their own way and attitude of receiving new development into their communities. The locals might deem it good or bad and this could drag or delay the approval process in starting the project. Baloyi and Bekker (2011) discovered that

delay in work approval was a major influencing factor when it comes to delay. Hamzah et al (2011) in their studies also attested to the fact delay in getting approval for the work was a major factor.

2.4.7 The Use of Pay When Paid Clause in Subcontractor payment

The course arrangement of payment begins from the money related organization to fundamental contractor, primary temporary worker to sub-contractual worker in that descending order of the chain (Latham, 1994). The failure of one gathering within payment organogram could bring about extreme effects to parties beneath another within the payment chain. The resulting effects are aggravated with due to the way which has become a typical practice to incorporate a main contractor paying a subcontractor only when he is paid provisos arrangement within sub-contractual covenants. The weight associated with fundamental temporary worker's failure to get paid as a result of undeliberate errors of his are being shifted to the sub-contractor also would have an impact on the sub contractual worker's income. The effects becomes violent if the cause of the business' inability to pay to the primary contractual worker can be traced to the contractor's own default without any influence from the sub-contractor.

2.4.8 Conflict among the Parties Involved

Since construction is not done by one party but different parties coming together to achieve a common goal, conflicts tend to arise because of few misunderstandings between parties. According to Sambasivan and Soon (2007) problem arising from these parties brings about delay in the project.

2.4.9 Withholding of Payment by Client

A study by Kumaraswamy and Chan (1998) identified the significant factors that causes delay on construction projects and they did not fail to mention the payment of

completed works by the client. Project financing as explained by Frimpong et al (2003) also adds to the discussion of clients not paying when projects are completed.

2.4.10 Poor Financial Management by Client

The main causes as outlined by Assaf et al (1995) in their study of large projects in Saudi construction projects revealed that, cash problems on the side of the client was a deterrent and a delay to the smooth operation of the project that was going on. A study by Mezher and Tawil (1998) also attested to the fact that, financial issues on the part of the client is a big blow to the construction industry when it comes to monetary issues.

2.5 Effects of Payment Delays on Road Projects

The consequences of payment delay are categorized by the researcher in this thesis into effects and impacts of payment delay. For the purposes of this thesis, effects of payment delays shall be considered as the change which result or a consequence of the payment delay. It is generally the short term consequence of the payment delay on the project and the impacts of payment delay shall be considered as a strong long term effect of payment delay creating a conspicuous impact serving as an impediment to the implementation a construction activity.

Artidi and Chotibongs, (2005) stated in their work that delayed payments create great deal of injustice to construction firms. Sub-contractors are especially very similar, if not more regrettable state, in light recently in paying them what they are worth. The course arrangement of payments begins from the money related organization to fundamental contractual worker, primary temporary worker to sub-contractual worker thus on down the chain (Latham, 1994). The bankruptcy of person who is in charge of paying could bring about extreme effects to parties beneath them.

2.5.1 Results in Formal Dispute Resolution

A disappointment regarding opportune honouring of contractual obligations often result in debate determination. As indicated by Bob (2005), before, to recuperate payment, the petitioner was compelled to initiate mediation or prosecution; those procedures are immoderate and take quite a while. The impacts generally and when payment are not effected; it might in specific situations make negative societal stigmas as talked about in the accompanying chapters.

Delay Payment to contractors or complete lack of payment is a common cause of disputes in the construction industry. Timeliness of payments affects many contractors, for whom receiving delayed payments from their employers is a cause of friction between the two parties. Meng (2012) identified that nearly all problems in construction begin when payment is not received at the exact amount or date. Such disagreements then aggravate to arguments as relationships are threatened, and the stage becomes a setting for conflict, blame, and lawyers. When this occurs, Projects surpass starting time and cost gauges and experience broad delays. Contractual workers are the ones who endure the most when things like this happen.

2.5.2 Leads to Abandonment of Projects

Myriads of consequences result when delay payment occurs. Ramus et al (2006) believes that if a payee does not receive full payment of the amount due, and there has been no effective notice given to state that monies were being withheld, then the payee has the right to suspend the performance of their obligations under the contract with the payer. In effects Ramus et al (2006) believes that delayed payment will consequently leads to suspension of the whole construction project.

2.5.3 Leads to Bankruptcy or Liquidation

Judi et al (2010) also stipulated that a disappointment of the Contractor getting consistent and opportune payment could bring about undertaking delay, diminished productivity and in the compelling case, the organization may go into liquidation. It will likewise have a thumping impact in general of development business chain in light of the fact that the Contractor won't have the capacity to pay his banks, his sub-Contractors, suppliers, hirers and specialists on time along these lines making everybody endure

2.5.4 Delay in Completion of Projects being the Results in most cases

Commentators have likewise bludgeoned the development business for its obsolete and wasteful payment works on coming about because of an unsatisfactory finish of debated and postpone honouring of payments as well as the vulnerability in times of expectation of payment (Lip, 2005). It was further seen by Shi, et al. (2001), that postponements can happen in all exercises, and these deferrals can simultaneously or at the same time cause delays in the undertaking fulfilment. As it were, a venture postponement is the collected impact of the deferrals in individual exercises. Deferrals can offer ascent to interruption of work and loss of efficiency, late consummation of venture, expanded time related expenses and outsider cases and relinquishment or end of agreement.

2.5.5 Create Cash Flow Problems

The debate transcendentally about payment issues are getting to be bigger and more unpredictable. In Cheng (2006), it was further demonstrated that there are different strategies for debate determination, starting with improperly organized type of intervention through to the unbending systems noticed in court prosecution. The drawn out and confounded strategies in intervention can be the reason for the

requirement for presenting legal or formal mediation. There are deferrals in honouring payments to temporary workers emanating from most government organizations experiencing budgetary issues– with an ensuing antagonistic impact on the contractual worker's income (Ofori, 1991). Numerous small contractors likewise encounter challenges in getting cash from money related establishments to fund their business because of the large amounts of liquidation in the business; subsequently the underlying funds for the firm must originate from the contractual worker (Miles, 1979). Regardless we discover temporary workers who travel every which way, not as a result of work quality or administration, but rather in view of the absence of money available to pay their bills. The likelihood that the contractor's funds accumulation is seriously influenced, this might lead to postponement in fruition of ventures as examined here.

2.5.6 Creation of Negative Chain Effects on other Parties

It was expressed by Lip (2005), that the construction payments have domino impacts. A deferred payment by emanating from a single party in the payment chain may influence the entire production network being paid for a development venture. For example, if a business prolongs the honouring of payment to a contractual worker, this thusly will bring about temporary worker's deferral in honouring payment due to the temporary worker. The added outcomes of the domino impact will make income issues (Mohammed and Isah., 2012)

Payment delay has a long term negative consequences on the successful implementation of road constructions and on all connected parties. Generally, delayed payment has numerous other impacts on the project and all the stakeholders. Therefore, proactive mechanisms must be put in place to ensure a smooth cash flow

throughout the life of the project. Any negative deviation to such an arrangement could be an active recipe for a disaster, not only for the Contractor but also to the owner and the project itself as confirmed by (Judi et al, 2010).

As per the analyst's perception, if construction delays are brought on by the payment delays or non-payment, structures, for example, the auto park of a restorative focus, understudies' private pads thus on couldn't be put into utilization on time. These will bring about issues, for example, patients couldn't be recuperated early, new understudies have inconveniences in securing a 21 house, etc. Traffic issues may emerge if the abandonment as a result of delayed payment or non-payment happens in the road and bridge projects.

2.5.7 Creates Financial Hardship

Ghana news agency (2014) further identified that delays in the payment of jobs completed had brought intense pressure on contractors from their creditors mainly the banks. Their workers would also suffer unduly since they cannot find money to pay their wages. If the situation is allowed to persist it could become a major disincentive and put off many from contractors accepting government contracts.

When all is said and done, inability to pay on time what is expected under an agreement won't typically be dealt with as an adequate break to legitimize the other party in deciding the agreement, yet inability to pay on time what is owed is even more averse to be a rupture as finished up by Judi et al, (2010).

Fugar and Agyakwa-Baah (2010) also concluded by stating that project is not only delayed due to delay payment, but the morale of workers is threatened because of non-payment or irregular payment of wages and that is why Fugar and Agyakwa-

Baah (2010) ranked delay in payment as the number one cause of project delay in Ghana.

2.5.8 Creates Negative Social Impacts

Kikwasi (2012) in his studies discovered that, when a project is disrupted or delayed it amounts to so many negative effects and negative social impact came up as one of them.

2.5.9 Poor quality of work

As indicated by Murdoch and Hughes (1996), 'it is not exceptional to find that a temporary worker or sub-contractor who has not been paid what his due debilitates to suspend work under the agreement until payment is made'. It should however be noticed that without an unmistakable legally binding right to suspend the works, the contractor is not qualified for do as such despite the fact that the business has neglected to pay him inside the time stipulated in the agreement. In this appreciation, if the temporary worker suspends the work the courts may discover him blameworthy of denying the agreement. Payments delays are frequently connected manifested in different issues in Ghana's construction industry, for example, non-conformance, profitability, safety, delay in completion and sometimes abandonment issues (Oon, 2002).

2.5.10 Idleness of equipment

When a project is delayed many resources including equipment and plants go to waste. When the project comes to a halt, the equipment is no longer in use. This and many are some of the effects project delays brings (Kikwasi, 2012).

2.5.11 Affect the contractors Public Image

Continuous delay payments could bring about loss of notoriety, exchange credit limitations, and lessened credit ratings (Hasmori et al., 2012)

2.5.12 Time overrun

Time overruns implies the contractor couldn't do their work inside contract period. By and large, time invade can be classes into two gathering which incorporate reasonable deferrals and baseless. Once the undertaking is confronting time overrun, it will influence the advancement of work and can't be done on time. Other than that, the issue gathering will assume the liability to pay the significant gatherings for harms in view of deferral. Case in point, if the task is verging on finished, yet in the meantime temporary worker due to outstandingly actualize climate he can't finish the undertaking inside contract period. In this circumstance the temporary worker qualifies for case expansion of time. Then again, if that temporary worker can't finish the work inside contract period because of his own flaw, he has no qualification to case augmentation of time and he have to pay liquated harms (Abdul Rahman et al, 2011).

2.5.13 Cost overrun

Ezekiel (2009) however identified that Delays in honouring payment certificates by Government of Ghana results in additional cost in terms of interest payment, increase in cost of capital to the contractor and delay in completion of projects, which subsequently leads to loss of revenue generation from tolls, projects etc.

2.6 Mitigating Payment Delays

2.6.1 Financial Institution

Funding can be said to be providing financial resources to finance a need, program, or project as explained by Business Dictionary (2012). A Funding bond or guarantee

in construction industry can be said to be a surety provided by a Client from a Bank, Insurance Company or a Funding Institution toward a continuous payment for work done in respect of a contract awarded by him. This means that, before a contract is awarded, the Client shall make arrangement with the Surety Institution to pay the Contractor any certificate presented, in case he/she (employer) fails at a point in time to honour part or all payment due to the contractor.

Just as Contractors are required under various contracts to provide various Bonds and Guarantees such as advance payment Guarantee, Performance Guarantee, Retention Payment Guarantee etc, the Clients ability to provide continues payment Guarantee will enable all payment certificates raised to be paid and on time. This will provide life blood to the project and to see a smooth execution of the project as confirmed by (Judi et al, 2010).

2.6.2 Technical Issue

The subtle element and legitimate methods of case issuance to determine matters emerging and the pertinent arrangements of construction disappointment ought to be expressed in partitioned condition because of its extent of occasion (Mohammed et al., 2012).

2.6.3 Local Attitude

Key change in the outlook towards auspicious payments and statutory institution to manage payment in construction industry (Hasmori et al., 2012)

2.6.4 New way of Payment method

ConstructionWeblink (2005) suggested that, in order to avoid lengthy days for which the certificate is prepared and the time for the employer to honour certificate, reduce the certification and payment 28-day periods to 14 days apiece. This is commercially reasonable and will reduce the time delay for payment by at least one month.

It was suggested that the introduction of prompt and adequate payment legislation for the construction industry as integral part of the government's strategy is highly recommended in his attempt to solving the problem of payment delayed (ConstructionWeblink, 2005). Adopting a new way of payment method among developers or clients whom wrongfully withholding the payment (Hasmori et al., 2012)

2.6.5 Legislation

Public procurement act, Act 663(2003) gives that Payments should be balanced for reasoning for development payments and maintenance. The Employer should pay the Contractor the sums guaranteed by the Project Manager inside 28 days of the date of every authentication. On the off chance that the Employer makes a late payment, the Contractor might be paid enthusiasm on the late payment in the following payment. Interest might be computed from the date by which the payment ought to have been made up to the date when the late payment is made at the overarching rate of enthusiasm for business obtaining for each of the monetary standards in which payments are made.

The Act further expresses that if a sum guaranteed is expanded in a later declaration or as an aftereffects of a grant by the Adjudicator or an Arbitrator, the Contractor should be paid enthusiasm upon the delayed payment as set out in this Act. Interest might be computed from the date whereupon the expanded sum would have been confirmed without dispute. Government of Ghana Condition of agreement (1988) Clause 23(1) of the states of agreement gave that at the Period of Interim Payment Certificate named in the Appendix to these Conditions, between time valuation should be made and the advisor might issue an authentication expressing the sum because of the Contractor from the Employer and the Contractor might be qualifies

for payment thusly inside the time of Honouring Certificates named in the Appendix to these Conditions any payment that is past the time of Honouring Certificate to the Contractor can in this manner be said to be deferred payment.

The basic components for question determination in Ghanaian development industry are quickly by method for intervention and suit. These instruments have constantly included the legal framework and a perplexing assemblage of principles as to method. It's a well-known fact that these systems of question determination come up short. Reactions are as often as possible made as to its numerous insufficiencies and deficits. Prosecution is reasonable however it sometimes assume an unusual lengthy period of time. It might be reviewed or tried only after several months or years of being adjourned by the court with practically zero involvement in the field of development (Rajoo, 2003). Then again, mediation is speedier however it is costly. Regardless, both modes will at present take an impressive time span as the question will must be resolved and arranged as per the law, which must amongst others, require bearing the respondent normal equity in the presentation of their particular case (Lim, 2005).

2.6.6 Contractual Matters

Public procurement act, Act 663 (2003) explained that at the period of Interim valuation stated at the appendix of the Condition of Contract, an Interim valuation shall be made and the Consultant might issue Certificate expressing the sum because of the contractual worker from the Employer and the temporary worker should be qualified for payment subsequently inside the time of honouring certificate named in the index to these conditions.

2.6.7 Practice of good Financial Management

The Consultant might issue Certificate expressing the sum because of the contractual worker from the Employer and the contractor should be entitled for payment subsequently inside the time of honouring certificate named in the index to these conditions (Fugar and Agyakwah-Baah, 2010). Therefore, to prevent delay in payment, the employer must ensure there is an adequate financial resource available before the start of the project and if the funding is not available then there is no need to commence the project, but the project commencement should be delayed until funds become available as confirmed by (Ezekiel 2009).

2.7 Chapter Summary

In summary, it was revealed throughout the literature review that the major cause of delay in project execution in Ghana is due to delayed paying for work done (Fugar and Agyakwah-Baah, 2010). In order to eliminate delay in paying for work done due to lack of funds, it is recommended that Employers must be made to show evidence of funds availability before the commencement of the project. In practice, this phenomenon really happens and drastic measures must be taken to forestall in this direction in order to avoid delay in payment for work done and its subsequent effects on the project and the stakeholders.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The part explains the various materials and methods adopted in conducting the study. The sample and sampling procedure, the population and the research design are among those discussed. In analysing the data, the research method, procedure for data collection and the research instrument was also discussed. The quantitative approach to research was adopted for this study. The research was conducted by collecting the views of clients, consultants and contractors from the Brong-Ahafo region via the collection of a survey questionnaire. A questionnaire was developed based on the literature review which was distributed to the respondents which dealt with payment delays and associated relevant topics. The questionnaires were precise and concise to adequately solicit the views and expression through the selection of the appropriate answers that was given in the questionnaire. This was done to adequately receive valid and high response from the respondents.

3.2 Research Strategy and Design

Research strategy as the enquiry of research objectives (Naoum, 2007). Bouma et al. (1995) explained in his studies that research strategy is the means in which the research objectives are probed and Baiden (2006) in his stated triangulation, quantitative research strategy and qualitative research strategy as among the three major research strategy types. Making a decision on which type of research strategy to use, depends on the purpose of the study and type and availability of the information which is required.

To determine whether a theory or hypothesis is true, quantitative research inquiries into human or social problem which is decide by testing a theory or hypothesis made

up of variables which are analysed using statistical procedure that is also measured with numbers. (Creswell, 1994). The researcher uses the quantitative research in his inquiry.

The researcher employed a descriptive survey method. According to Leedy (2002), in answering any questions a descriptive survey approach should be adopted in collecting the data that pertains to the problem at hand. Observation, interview and questionnaire are some of the tools and techniques which is mostly used in the collection of data in this type of research. Through this deduction and the fact that this study is to identify the Effects of Payment Delays on the Successful Implementation of Road Construction Projects in Ghana in the construction industry, the descriptive survey study is found most appropriate.

3.3 Research Population and Sampling Technique

3.3.1 Target population

The target population of the study are the key project participants; clients, consultants and contractors in the Brong-Ahafo Region who are involved in the construction of road. The population of the study consists of ten (10) clients, ten (10) consultants and thirty-seven (37) A1B1 to A3B3 contractors registered with the office of Ghana Highway Authority in the Brong-Ahafo Region which sum up to fifty-seven (57). Sectional heads of the Ghana Highway Authority in the Brong-Ahafo Region as consultants and representatives from Regional Coordinating Council, Newmont Gold Ghana limited and Bui Power Authority as clients in the Brong-Ahafo Region.

3.3.2 Population Definition

The process of selecting the respondents of the contractors were restricted to A1B1 to A3B3 road contractors registered with Ghana Highway Authority in the Brong-Ahafo Region. The classification of the contractors was selected based on the

database from the Ghana Highway Authority in the Brong-Ahafo Region who have the database of all these registered contractors with them. The selection of these contractors was based on the fact that the type and size of project they handle exposes them to payment delays and are equipped with various strategies and methods of handling them. The population of the contractors acquired was 37, that is registered A1B1 to A3B3 contractors. The population used for the study was fifty-seven (57) that is 10 clients, 10 consultants and 37 contractors.

3.3.3 Sample and Sampling Techniques

A sample is a part of a population that is studied to learn more about the population. Kumar *et al* (1999) in their research posits that the entire population can be expressed using an ideal representation which is a sub-group of the population is known as the sample. Because the population under study by a researcher may be too large to directly make observation for each element, a small data is collected from the population as a subset and a representation of the total population to make observations and infer it to represent the total population under the researcher's study (Zikmund, 1991). The sampling techniques that were judiciously employed to collect the data included random sampling technique and purposive sampling technique.

3.3.3.1 Random Sampling

With the use of paper slips, throwing a dice, tossing a coin and even using a computer a sample can be randomly picked from any population that has been sampled if they are numbered. The choice of choosing any of the sample does not affect any of the other samples at all, it gives an equal prospect of choosing any of the sample and guarantees any of the members being chosen. Therefore, a number of the contractors were randomly selected from the database of contractors in the office of the Brong-Ahafo Branch of the Ghana Highway Authority. The random sampling

technique is therefore selected to incorporate unbiased data collection in the entire data collection process.

3.3.3.2 Purposive Sampling

The subject of investigation in every research is sometimes related to a specific group or category of individuals and researchers many at times handpick these individuals based on the knowledge they have and how they understand the population. Purposive sampling is very advantageous in the sense that it gives consideration to the particular subject under the research for appropriate and valid data to be collected.

A purposive method of sampling was used to select the clients and consultants. This is because the number of clients and consultants were limited and reachable within the road construction industry in the Brong-Ahafo Region. The researcher also relied on his own judgement when choosing cases of population to participate in the study and they were contacted by the administration of the questionnaire. This approach helped in gathering the appropriate sample for the study.

3.4 Sample Size Determination

A number of techniques or formulae exist for determining the sample size. Regardless of the technique used, the size of the sample obtained should give the required data to which possible conclusions can be drawn from the entire population. The sample consisted of 30 contractors who were seriously undertaking construction of road and readily available, 10 consultants who were supervising the works being undertaken by these contractors and 10 clients who were 4 representatives from Regional Coordinating Council, 3 representatives from Newmont Gold Ghana Limited and 3 representatives from Bui Power Authority located in the Brong-Ahafo Region. The mathematical calculation below was used to determine the sample of the contractors.

Conclusively, the number of road contractors which were used for the study accumulated to thirty (30), in determining the sample size, the Kish formula (1965) was adopted:

$$n^1 = \frac{n^1}{1 + \frac{n^1}{N}}$$

Where n=sample size

N = Size of population (the number of A1B1 to A3B3 road contractors in the Brong-Ahafo Region)

$$N = 37$$

$$n^1 = \frac{s^2}{v^2}$$

S= maximum standard deviation in the population of elements.

(Total error of 0.1 at a confidence interval of 95%)

v= standard error of the distribution assumed to be 0.05

$s^1 = p(1-p)$ where p is the proportion of population elements that belong to the defined class.

$$s^1 = 0.5(1-0.5)$$

$$s^1 = 0.25$$

$$n^1 = \frac{0.25}{0.05^2}$$

$$N^1 = 100$$

$$n = \frac{100}{1 + \frac{100}{37}} = 27.0072993 = 27$$

An addition of 5 to 15 percent is added as the non-responsive rate which depends on the particular topic expressing a lower rate when the interest is higher.

The use of 12 as the non-responsive rate was chosen (Ameer, 2005)

$$12/100 * 27 = 3.24 = 3$$

$$3 \text{ plus } 27 = 30$$

Sample of road contractors = **30**

Total sample size for the study = 10(clients) + 10(consultants) + 30(contractors) = **50**

3.5 Data Collection Method

According to Bernard (2002), in any research the data is very important as the theoretical background is better understood with the gathering of appropriate data. When data is collected improperly you can never make up for it. There is the need to therefore select the best way of collecting your data and make sound judgement on who to collect the data from Tongco, 2007. Both secondary and primary data was collected for the purpose of this study. Patton (2002) posits that, using different instruments in your data collection can give credibility and fortify the researcher's study.

3.5.1 Primary data source

Primary data sources are mainly involved with field survey in the collection of empirical data. Field work according to Naoum (2007) can be associated with three

practical approaches; the problem-solving approach, the case study approach and the survey approach. The case study approach was used for this research where the primary data were collected from contractors, consultants and clients in the Brong-Ahafo Region. A case study is an empirical enquiry that allows for investigation of dynamics of a particular system. It was the most economical and convenient for the study (Hagget and Frey, 1977).

3.5.2 Secondary data sources

Secondary sources of information were identified and collected in technical journals, articles, books and from databases. Interviews and questionnaires are developed from these sources as they serve an essential part in developing survey instruments for the field (Owusu, 2008). The secondary source of information for this study was collected from two sources which are mainly internal and external sources.

3.6 Data Collection Instrument

A questionnaire survey was used as the research instrument made up of close and open ended questions. The literature review with the help of the research questions guided the researcher in developing the questionnaire and issues covered on the effects of payment delays on the successful implementation of Road Construction Projects in Ghana. Further, the questionnaire included open-ended and closed ended items for client, contractors and the consultants.

3.6.1 Content of questionnaire

Largely, the questionnaire was developed to collect data from stakeholders on the subject and on the field. The questionnaire was grouped in categories to collect data on the effects of payment delays on the successful implementation of road construction projects in Brong Ahafo. Section A, solicited demographic data from the respondents using objective test.

Section B, solicited information on the factors causing payment delays in road construction projects. Information on some of these delay factors were asked. The factors were rated from 1-5 with the statement **strongly disagree, disagree, neutral, Agree, strongly agree.**

In section C information was solicited on the effects of payment delays on road construction projects which was rated from 1-5 with the statement **strongly disagree, disagree, neutral, Agree, strongly agree.**

Lastly, section D were factors which were to mitigate payment delays which was also scaled from 1-5 with the statement **strongly disagree, disagree, neutral, Agree, strongly agree** and a suggestion on any other ways they knew about.

3.6.2 Questionnaire Administration

An introductory letter shall be collected from my departmental head, for Institute of graduate studies Kwame Nkrumah University of Science and Technology enabled me to have a good rapport with the contractors, clients and consultants in the Brong-Ahafo Region. For the responses to be accurate and precise the researcher explained the questions to the respondents to make it easier for them to understand and provide the appropriate answers on the study. This approach provided a very successful way of making sure that all respondents answered and gave the most appropriate response to what was being requested of them. It took the researcher two to three weeks to collect the data from the respondents.

3.6.3 Pilot Testing

Pilot testing of the research instruments (questionnaires) for the respondents were conducted to clarify any ambiguities and check for consistency of the collected data. A total of four contractors and a consultant who are into road construction was

chosen to pilot the questionnaire. Based on the piloting changes were made to some of the questions owing from the findings of the pilot.

3.7 Analysis of Data

The responses from the questionnaires using the Statistical Package for Social Science (IBM SPSS Statistics 20) analysed the data as frequencies and percentages. The responses were then presented with the use of descriptive statistics and Relative Importance Index. Below is the statistical method that was used for the analysis of the data:

3.7.1 Relative Importance Index

Relative Importance Index helps in identifying the hierarchy of the effects of payment delays on the successful completion of road construction in Ghana. The higher the relative importance value (i.e. as it gets to one), the most harmful effects of the payment delay on the successful completion of road construction in Ghana and hence the need to find pragmatic solution to improve the issue. The highest of the relative importance was ranked as the highest effects that occur frequently. The formulae below served as the basis for calculating the Relative Importance Index (RII) (Fagbenle et. al., 2004):

$$\text{Relative Important Index (RII)} = \frac{\sum P_i U_i}{N(n)}$$

$$N(n)$$

Where, RII = Relative importance index

P_i = respondent's rating of effects experienced by contractors

U_i = number of respondents placing identical weighting/rating on the effects of delayed payments

N = sample size

n = the maximum achievable score (i.e. 5)

3.7.2 Reliability and Validity

Reliability is defined as the “degree to which measures are free from error and therefore yield consistent results “(Zikmund, 2003). Reliability requires repeatability of results; the same results must be attained by different researchers who are at different locations working under totally different conditions (Krippendorff, 1980; Zikmund, 2003). Zhang and Wildermuth (2009) argue that the knowledge and experience of the Coder can have a significant influence on the research results. The researcher is conscious of his current position as a member of staff of GHA may bring in potential bias for the results. In an attempt to ensure reliability therefore the coding of the statements gathered were checked by an independent coder that had no links or interest with the construction industry. Zhang and Wildermuth (2009) argue that in order to ensure the validity and reliability of inferences from the data, qualitative analysis requires a “set of systematic and transparent procedures for processing data”.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter explores the data, processing, analysis, interpretation and discussion of the data received from the survey questionnaires with respect to the research objectives. A good analysis and discussion of results can be achieved after having settled the introduction, reviewed most pertinent literature and defined the research methodology. The data analysed in this chapter was completely primary data, it was obtained from questionnaires distributed to respondents which now forms the foundation for the analysis in this chapter. The questionnaire was in four sections A, B, C and D. Section A was the background of demographic pertaining to the respondents. Section B, to identify the factors causing payment delays in road construction projects in Ghana. Section C and section D, to ascertain the effects of payment delays on road construction projects and to identify ways to mitigate payment delays on the successful implementation of road construction projects respectively. Fifty (50) questionnaires were received from respondents and then analysed. The demographic data were analysed using descriptive statistics while the subject variables were analysed using relative importance index.

4.2 Demographic Data of Respondents

The section A of the questionnaire informs the researcher on the demographic background of all the respondents of the study. To check the credibility and trustworthiness of the responses from the questionnaire, the demographic section was categorized according to gender, age, stakeholder's position of the respondent and the years of working experience in road construction.

4.2.1 Gender distribution of respondents

Respondents were asked to indicate their gender by form of ticking. From the figure 4.1, the number of male respondents are thirty-eight (38) representing seventy-six percent (76%) of the population and number of female respondents are twelve (12) representing twenty-four percent (24%) of the population.

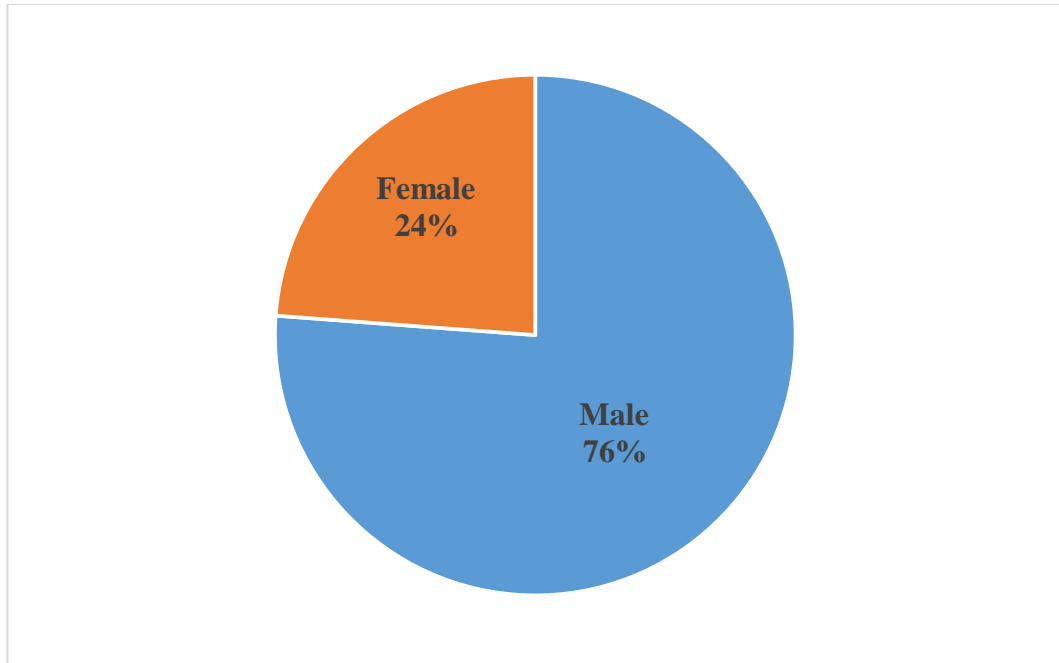


Figure 4. 1: **Gender distribution**

This implies that males are dominating in road construction project than females. The assertion that females are few in the construction industry is also implied by the outcome of the survey conducted on the gender grouping in the industry.

4.2.2 Age distribution of respondents

The age of the respondents was required to help the research know their level of maturity. After analysis it was revealed that about 4% of the respondents were below 25 years of age, 58% of the respondents were 25-35 years of age, 26% of the respondents were 36-45 years of age and the remaining 12% were above 45 years. The bar chart figure 4.2 show a graphical presentation of the results;

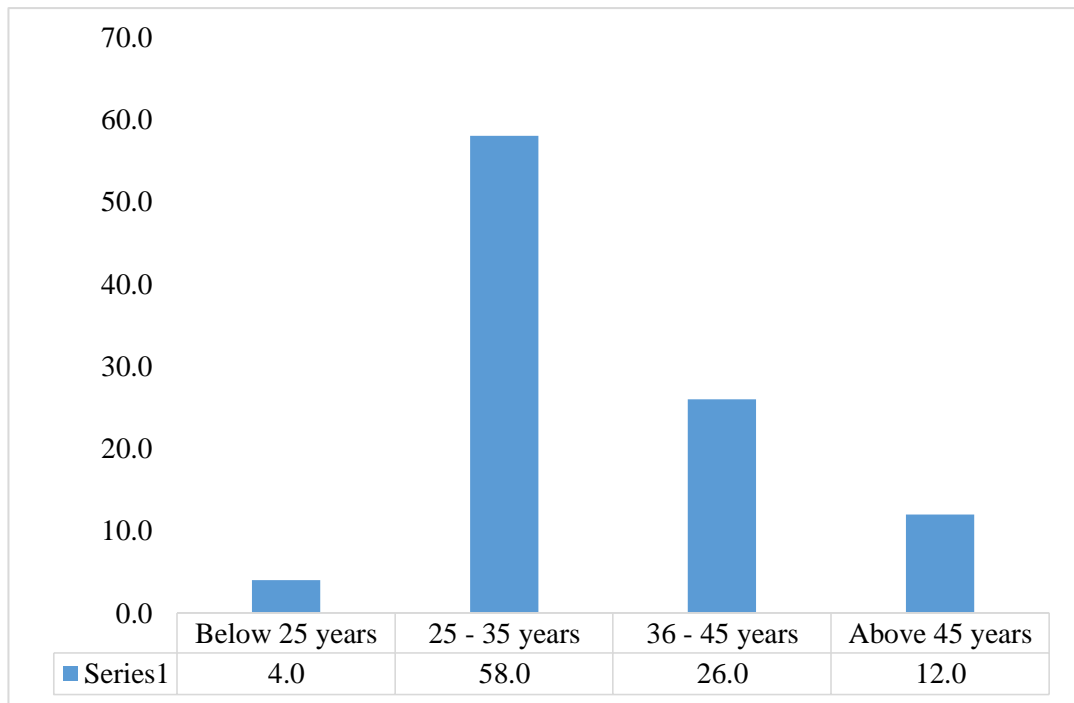


Figure 4. 2: Age distribution

The age distribution attested to the fact that, the working group in the construction industry are young and youthful and are the best in performing their day to day activities.

4.2.3 Stakeholder’s response

The analysis helped determine the various positions held by the respondents in their respective organisations. The results revealed that 60% of the respondents were Contractors, Consultants represented 20% of the respondents and Client represented 20% of the respondents. This goes a long way to ensure that the right results are obtained from respondents. The results are showed in table 4.1 below.

Table 4. 1: Stakeholder’s Response

<i>Type</i>	<i>Client</i>	<i>Consultant</i>	<i>Contractor</i>	<i>Total</i>
<i>% response</i>	<i>20</i>	<i>20</i>	<i>60</i>	<i>100</i>
<i>Number</i>	<i>10</i>	<i>10</i>	<i>30</i>	<i>50</i>

Source: Field survey (2016)

This shows that the selected representatives for the research were consulted so that valid response could be obtained and used for the analysis.

4.2.4 Years of working experience

The respondents were required to indicate their years of experience in the road construction project. Results obtained were to help confirm the credibility of the data collected from respondents. Respondents having a specific years of experience are expected to know better and have learnt a lot from the job and perform better on the job site.

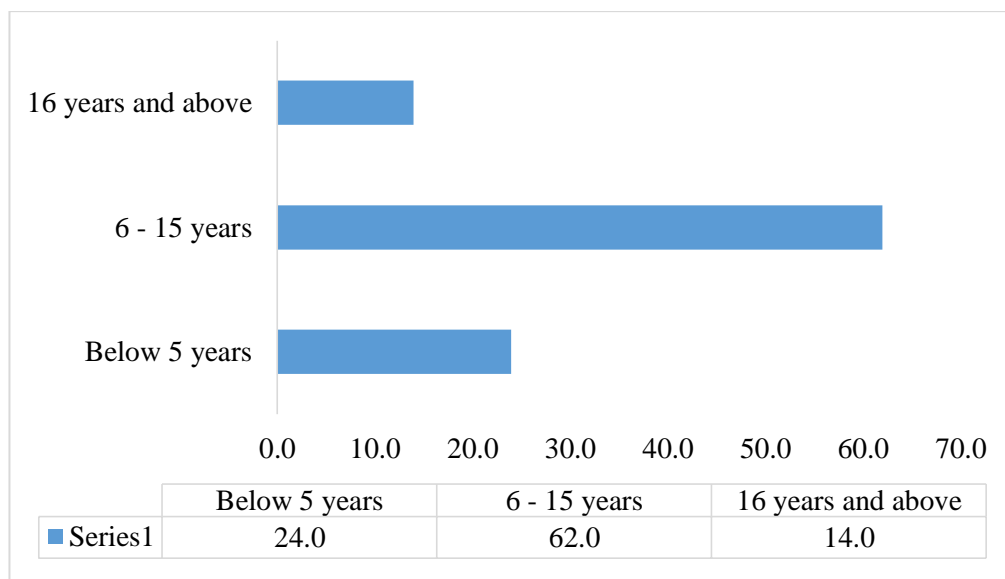


Figure 4. 3: Years of working experience

From figure 4.3, results show that 62% of respondents had 6-15 years of working experience which was the majority, next to 24% of respondents had below 5 years of working experience and 14% of respondents had a working experience between the 16 years and above. The results from the survey gave the researcher assurance of credibility in the answers and responses from the respondents.

4.3 Reliability Test for the Effects of Payment Delays

Reliability statistics of results were checked by using the Cronbach's Alpha. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. From table 4.2 the alpha coefficient for the 10 items constituting the factors causing payment delays is 0.754, the 13 items showing the effects of payment delays on road construction projects is 0.601 and the last test having 7 items and showing the ways of mitigating payment delays is 0.668, which proves that the consistency between the items are very high.

Table 4. 2 : Reliability Statistics

Item	Cronbach's Alpha	N of Items
Factors causing payment delays	0.754	10
Effects of payment delays on road construction projects	0.601	13
Ways of mitigating payment delays	0.668	7

Source: Field survey (2016)

The Cronbach's Alpha between the items show a high correlation between the members. This gives the researcher a proof of reliability that the respondents gave in answering the questionnaires that was sent to them. This shows that the respondents gave their all and that they were the right people to answer those particular questions.

4.4 Factors Causing Payment Delays

Respondents were required to rank the various factors causing payment delays on road construction project. Table 4.3 indicates the factors causing payment delays in terms of mean responses to a range *1 = Strongly disagree* *2 = Disagree* *3 = Neutral* *4 = Agree* *5 = Strongly agree*

Table 4. 3: Factors Causing Payment Delays

No	FACTORS	Degree of relative importance quoted by the respondents					Total number of respondents	(ΣW)	RII= $\Sigma W/(5*N)$	Rank
		1	2	3	4	5				
1	Delay in certification	1	3	5	10	31	50	217	0.868	1
2	Poor Financial Management by client	2	2	3	15	28	50	215	0.86	2
3	Withholding of Payment by client	0	3	6	22	19	50	207	0.828	3
4	Contractual Provisions	0	2	8	28	12	50	200	0.8	4
5	Conflict among the Parties Involved	0	7	9	18	16	50	193	0.772	5
6	Technical Problems	3	6	4	25	12	50	187	0.748	6
7	Poor communication between contracting parties	1	7	10	21	11	50	184	0.736	7
8	Shortage of resources of current year's project	0	3	22	21	4	50	176	0.704	8
9	The Use of Pay When Paid Clause in Subcontractor payment	2	5	18	18	7	50	173	0.692	9
10	Local Culture / Attitude	1	14	8	24	3	50	164	0.656	10

Source: Field survey (2016)

From table 4.3, it is identified that all ten factors causing payments delays have been ranged in their level of impact in the road construction project. Delay in certification had an RII value of 0.868 and was ranked 1st, Poor Financial Management by client had an RII value of 0.86 and was ranked 2nd, Withholding of Payment by client had an RII value of 0.828 and was ranked 3rd, Contractual Provisions had an RII value of 0.8 and was ranked 4th, Conflict among the Parties Involved had an RII value of 0.772 and was ranked 5th, Technical Problems had an RII value of 0.748 and was ranked 6th, Poor communication between contracting parties had an RII value of 0.736 and was ranked 7th, Shortage of resources of current year's project had an RII

value of 0.704 and was ranked 8th, The Use of Pay When Paid Clause in Subcontractor payment had an RII value of 0.692 and was ranked 9th and Local Culture / Attitude had an RII value of 0.656 and was ranked 10th.

After the analysis results shows that Delay in certification is the major factor causing delays on road projects. Fugar and Agyakwaah-Baah (2010) identified delay in certification (payment certification) as the main factors that cause delay in construction projects in Ghana. From the table it can be identified that the three topmost factors causing payment delays are caused by the contracting party (the client), the client should address all challenges related to funding before the start of any project and have a good payment plan to ensure that payments are honoured on time. When this is practiced it will help reduce delays in payments on road projects.

The second factor which is poor financial management which was ranked by the respondents is also a very huge cause of delay as revealed by Alaghbari et al (2007) in their studies on causes of delay in Malaysian Construction Industry. In their research, financial problems were ranked as one of the main factors that causes delay. These factors are backed by various researchers as the major factors when it comes delays in construction projects (Alaghbari, 2007; Sweis *et al*, (2008); Fugar and Agyakwaah-Baah, 2010).

4.5 Effects of Payment Delays on Road Construction Projects

Similarly, respondents were required to rank the numerous effects of payment delays on road construction project. Table 4.4 indicates the effects of payment delays in terms of mean responses to a range *1 = Strongly disagree* *2 = Disagree* *3 = Neutral* *4 = Agree* *5 = Strongly agree*

Table 4. 4: Effects of payment delays

No	EFFECTS	Degree of relative importance quoted by the respondents					Total number of respondents	(ΣW)	RII= $\Sigma W/(5*N)$	Rank
		1	2	3	4	5				
1	Leads to Abandonment of Projects	0	0	2	14	34	50	232	0.928	1
2	Cost overrun	0	0	6	10	34	50	228	0.912	2
3	Results in Delay in Completion of Projects	0	1	3	15	31	50	226	0.904	3
4	Leads to Bankruptcy or Liquidation	0	0	7	12	31	50	224	0.896	4
5	Time overrun	0	1	4	16	29	50	223	0.892	5
6	Create Cash Flow Problems	0	0	5	22	23	50	218	0.872	6
7	Creates Financial Hardship	1	2	5	19	23	50	211	0.844	7
8	Results in Formal Dispute Resolution E.g. Litigation/Arbitration	0	3	4	23	20	50	210	0.84	8
9	Poor quality of work	3	5	2	16	24	50	203	0.812	9
10	Creates Negative Chain Effects on other Parties	0	2	13	27	8	50	191	0.764	10
11	Creates Negative Social Impacts	0	2	24	17	7	50	179	0.716	11
12	Idleness of equipment	6	12	6	18	8	50	160	0.64	12
13	Affect the contractors Reputation	10	10	7	15	8	50	151	0.604	13

Source: Field survey (2016)

Payment delay has a long term negative consequences on the successful implementation of road constructions and on all connected parties. From table 4.4 it is known that thirteen effects of payment delays were identified on road construction projects.

Leads to Abandonment of Projects had an RII value of 0.928 and was ranked 1st, Cost overrun had an RII value of 0.912 and was ranked 2nd, Results in Delay in Completion of Projects had and RII value of 0.904 and was ranked 3rd, Leads to Bankruptcy or Liquidation had and RII value of 0.896 and was ranked 4th, Time overrun had an RII value of 0.892 and was ranked 5th, Create Cash Flow Problems

had an RII value of 0.872 and was ranked 6th, Creates Financial Hardship had an RII value of 0.844 and was ranked 7th, Results in Formal Dispute Resolution had an RII value of 0.84 and was ranked 8th, Poor quality of work had an RII value of 0.812 and was ranked 9th, Creates Negative Chain Effects on other Parties had an RII value of 0.764 and was ranked 10th, Creates Negative Social Impacts had an RII value of 0.716 and was ranked 11th, Idleness of equipment had an RII value of 0.64 and was ranked 12th and Affect the contractors Reputation had an RII value of 0.604 and was ranked 13th.

Myriads of consequences result when delay payment occurs with results of the researcher proving that delay causes the abandonment of many projects in our country. Ramus et al (2006) believes that if a payee does not receive full payment of the amount due, and there has been no effective notice given to state that monies were being withheld, then the payee has the right to suspend the performance of their obligations under the contract with the payer. In effects Ramus et al (2006) believes that delay payment will consequently leads to suspension of the whole construction project.

Also the finding attests to Ezekiel (2009) research as he identified that Delays in honouring payment certificates by Government of Ghana results in additional cost in terms of interest payment, increase in cost of capital to the contractor and delay in completion of projects, which subsequently leads to loss of revenue generation from tolls, projects etc.

4.6 Ways of Mitigating Payment Delays

In the same way, respondents were required to rank the ways of mitigating payment delays on road construction project. Table 4.5 indicates the various ways of

mitigating payment delays in terms of mean responses to a range *1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree*

Table 4. 5: Mitigating payment delays

No	MITIGATING FACTORS	Degree of relative importance quoted by the respondents					Total number of respondents	(ΣW)	RII= ΣW/(5*N)	Rank
		1	2	3	4	5				
1	Practice of good Financial Management	0	0	3	13	34	50	231	0.924	1
2	New way of Payment method	1	1	4	19	25	50	216	0.864	2
3	Contractual Matters	0	0	8	20	22	50	214	0.856	3
4	Legislation	0	3	7	21	19	50	206	0.824	4
5	Technical Issue	0	3	9	17	21	50	206	0.824	4
6	Financial Institution	0	3	9	24	14	50	199	0.796	6
7	Local Attitude	1	6	10	18	15	50	190	0.76	7

Source: Field survey (2016)

From table 4.5, Practice of good Financial Management had an RII value of 0.924 and was ranked 1st, New way of Payment method had an RII value of 0.864 and was ranked 2nd, Contractual Matters had an RII value of 0.856 and was ranked 3rd, Legislation and Technical Issue had an RII value of 0.824 and was ranked 4th, Financial Institution had an RII value of 0.796 and was ranked 6th and Local Attitude had an RII value of 0.76 and was ranked 7th.

The necessity in providing timely and adequate resources pertaining to financing should not be over emphasized in construction project management as the results emphasises that good financial practice in any construction project can go a long way. Sufficient finance is the nucleus around which everything else revolves (Fugar, 2010). Therefore, to prevent delay in payment, the employer must ensure there is an adequate financial resource available before the start of the project and if the funding is not available then there is no need to commence the project, but the project

commencement should be delayed until funds become available as confirmed by (Ezekiel 2009).

4.7 Chapter Summary

This chapter consists of the analysis and discussion of the outcomes which were acquired from the research survey. The chapter four showed the analysis methods, research survey results and a discussion of the results obtained from the field. The results obtained from this study show the consistency in results obtained by other research studies on the factors causing and effects of delays in payment on road projects. Relative importance index method was employed to rank the factors causing delays in payments, effects of delays in payment and factors to mitigate delays in payment on road projects. Cronbach's Alpha test was conducted to check the reliability of results from the effects of delays in payment on road projects

CHAPTER FIVE

SUMMARY, RECOMMENDATION AND CONCLUSION

5.1 Introduction

This chapter brings together the findings, recommendation and conclusion of the study. It summarizes the objectives according to the aim of the study and gives further future research recommendations. The chapter also concludes with a summary of the chapter.

5.2 Review of Research Objectives

The purpose of this research study as stated earlier is to identify the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority. Objectives were established to achieve the aim of the research study. The achievement of each objective is stated in the subsequent sections.

5.2.1 The first objective; To identify the factors causing payment delays on the implementation of road construction projects in Ghana;

To attain this object, an extensive literature was reviewed based on the factors causing payment delays on road projects. Ten factors were attained from the literature reviewed. Respondents in the quest to find the appropriate responses were asked to rank the factors of delays based on their importance. Relative importance index was run to identify the importance of each factor of delay in payment.

5.2.2 The second objective; To ascertain the effects of payment delays on road construction projects delivery in Ghana;

Therefore, literature on the various effects of payment delays was reviewed, covering a number of effects of payment delays. In achieving this objective, thirteen payment delay effects were identified from the reviewed literature and respondents were required to rank them in relation to their level of impact on the various road

construction projects in Ghana Highway Authority. The data retrieved were ranked using Relative Importance Index and Cronbach's Alpha test was conducted to identify the consistency of the results.

5.2.3 The third objective; To suggest possible ways to mitigate payment delays on the successful implementation of road construction projects in Ghana Highway Authority;

Following the literature review several possible ways to mitigate payment delays were identified. From the various ways to mitigate payment delays, seven ways were identified and analysed using Relative Importance Index. It is strongly believed that when these factors are implemented in road projects it will help reduce the rate of payment delays.

5.3 Findings

In conclusion to this research, the following findings were identified after a succession of thorough review of literature and analysis of results relating to the research topic. Below are the most important and significant factors acknowledged from the results.

- Most respondents were males representing 76% of the population. This implies that males are dominating in the road construction projects that females.
- The majority of respondents had a working experience between 6 – 15 years which represents 62% of the population.
- From the respondents it was revealed that, 60% of the respondents were Contractors, Consultants represented 20% of the respondents and Client represented 20% of the respondents. From this results it can be stated that the majority stakeholder on the road construction projects is the Contractor.

- Results indicated that the three main factors causing payment delays on road projects are Delay in certification, Poor Financial Management by client and Withholding of Payment by client. It can be implied that the stakeholder responsible for this causes are the client.
- Respondents indicated that the three major effects of payment delays on road projects are; Abandonment of Projects which was first ranked after analysis. The results testify to the numerous abandoning of road projects. Cost overrun and delay in completion of projects confirmed previous findings by researchers that these two are some major effects of payments delays.
- The results indicated that all the mitigating factors were significant because they had a mean of more than 3.0. The study shows that when all the mitigating factors are employed on road construction projects it will help reduce payment delays. The two main mitigating factors were Practice of good financial management and new way of payment methods.

5.4 Recommendation

The principal objective the study was to unravel the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority. In respect to the findings of this research, to decrease payment delays on road projects the following recommendations are noteworthy;

Proper payment schedules are to be agreed by all the stakeholders before the commencement of the project. Proper communication channels or skills are to be implemented by the stakeholders to aid smooth flow of information and realistic duration and cost must be set for the project. According to the results obtained by this study contractor are the biggest stakeholders on road construction project, it is

prudent for contractors to plan their work properly for smooth flow of payment and information.

5.5 Limitation

Most researchers encounter several limitations in their research studies. The principal limitation encountered during the course of this research study was the difficulty in reaching respondents to make available the needed information for the research.

5.6 Conclusion

There is a rising level of appreciation of importance to identify the factors causing, effects and strategies to reduce the effects of payment delays on road construction projects in Ghana by the Ghana Highway Authority. From this research it can be concluded that the main factor causing payment delays is Delay in certification (payment). The main effects of payment delays is the several abandonment of road projects. Finally, in reducing payment delays it advised to practice a good financial management system.

5.7 Recommendation To Future Research

A widened further research should be carried out to identify the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority considering a wide scope for the research. Also further research should be undertaken to identify additional ways to mitigate payment delays on road construction projects in Ghana.

5.8 Chapter Summary

This chapter consists of a summary of the findings, which forms part of contributing to the knowledge body and fills the research and knowledge gap regarding the effects of payment delays on the successful implementation of road construction projects in Ghana Highway Authority. The conclusion to this research have been presented and

the limitation of this research have been recognised. Recommendation for future research studies have been noted in the study.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

KUMASI

COLLEGE OF ART AND BUILT ENVIRONMENT

DEPARTMENT OF BUILDING TECHNOLOGY

(MSc Procurement Management)

SURVEY QUESTIONNAIRE

(This questionnaire has been designed to aid in collecting relevant information necessary for this research for the completion of Master of Science degree in Procurement Management in KNUST, Department of Building Technology. This questionnaire is to achieve the aim of identifying the effects of payment delays on the successful implementation of road construction projects. I will be very grateful to you if you could give us part of your valuable time in responding to the following questions. Your opinions will only be used for this study only and as well kept confidential)

Research Topic:

***THE EFFECTS OF PAYMENT DELAYS ON THE SUCCESSFUL
IMPLEMENTATION OF ROAD CONSTRUCTION PROJECTS IN GHANA: A
case study of Ghana highway authority, Brong Ahafo region.***

By:

AGYEI KUMI STEPHEN

Supervisor:

Prof. BERNARD KOFI BAIDEN

A. Demographic Background

Please tick [√] where appropriate and provide brief answers where necessary.

1. Gender

Male Female

2. Age

Below 25 years

25 - 35 years

36 - 45 years

Above 45 years

3. State your position on the project.

Client

Consultant

Contractor

4. How many years of working experience do you have?

Below 5 years

6 - 15 years

16 years and above

B. Factors Causing Payment Delays

5. Please rate the following objectives of the factors causing payment delays in road construction projects by ticking once (√) as appropriate for the following in order of degree of agreement. **KEY: 1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree**

ITEM	FACTORS	RANKINGS				
		1	2	3	4	5
1	Technical Problems					
2	Poor communication between contracting parties					
3	Contractual Provisions					
4	Delay in certification					
5	Shortage of resources of current year's project					
6	Local Culture / Attitude					
7	The Use of 'Pay When Paid' Clause in Subcontractor payment					
8	Conflict among the Parties Involved					
9	Withholding of Payment by client					
10	Poor Financial Management by client					

C. Effects Of Payment Delays On Road Construction Projects

6. Please rate the following objectives of the effects of payment delays on road construction projects in Ghana by ticking once (√) as appropriate for the following in order of degree of agreement. **KEY: 1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree**

ITEM	EFFECTS	RANKINGS				
		1	2	3	4	5
1	Results in Formal Dispute Resolution E.g. Litigation/Arbitration					
2	Leads to Abandonment of Projects					
3	Leads to Bankruptcy or Liquidation					
4	Results in Delay in Completion of Projects					
5	Create Cash Flow Problems					
6	Creates Negative Chain Effects on other Parties					
7	Creates Financial Hardship					
8	Creates Negative Social Impacts					
9	Poor quality of work					
10	Idleness of equipment					
11	Affect the contractors Reputation					
12	Time overrun					
13	Cost overrun					

D. Ways Of Mitigating Payment Delays

7. Please rate the following objectives of ways of mitigating payment delays by ticking once (√) as appropriate for the following in order of degree of agreement. **KEY: 1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly agree**

ITEM	FACTORS	RANKINGS				
		1	2	3	4	5
1	Financial Institution					
2	Technical Issue					
3	Local Attitude					
4	New way of Payment method					
5	Legislation					
6	Contractual Matters					
7	Practice of good Financial Management					

8. What are some of the other ways of mitigating payment delays in road construction projects?

.....

.....

.....

.....

THANK YOU