University for Development Studies

Risk analysis in Road Construction Projects:

The case of Tamale Metropolitan Area

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2011

RISK ANALYSIS IN ROAD CONSTRUCTION PROJECTS

THE CASE OF TAMALE METROPOLITAN AREA

A THESIS SUBMITTED TO THE DEPARTMENT OF BUSINESS STUDIES, FACULTY OFEDUCATION, LAW AND BUSINESS STUDIES, UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILMENT FOR THE AWARD OF A MASTERS OF BUSINESS PLANNING AND MICROFINANCE MANAGEMENTS

BY

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2011

DECLARATION

STUDENT

I hereby declare that this submission is my own work towards the award of MA Business Planning and Micro-Finance 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.

AUGUSTUS ABABIO-DONKOR

SIGNATURE.....

DATE 12-09-2012

SUPERVISOR

I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development studies

MR. ELVIS ATTAKORA-AMANIAMPONG

SIGNATURE .....

DATE .....

DEDICATION

This study is dedicated to God Almighty who has brought me this far, and to my entire family.

ABSTRACT

The construction industry is the largest sector of developing countries' economies,accounting for 5% to 7% of their GDP. Nonetheless, empirical evidence from research by various organisations attests to the fact that the road construction industry in developing countries is fraught with corruption,contributing to its underperformance; however, there is scarcity of empirical studies of what these risks are and their effects on road infrastructural projects delivery in Ghana.

The objective of this study is to identify the risks in road construction projects and the effects they have on the project triple constraint (Time, Quality and Cost) delivery in Ghana. The aim is to improve road project quality and timely completion by letting the project major stakeholders know the risk and how they affect the project delivery.

This study, investigated the risks and challenges in Road Construction Projects procurement and delivery and how they affect the quality and timely delivery of road construction projects in the country, with a focus on the Tamale Metropolitan area in the northern region of Ghana The research was a perception study of individual staff of the road sector agencies (GHA, DFR and DUR), contractors and other stakeholdersand organisation with interest in the road sector, particularly from Tamale in the Northern region of Ghana, using online survey questionnaire (surveymonkey).

The results showed a very high level of political interference (risk) in the award of road infrastructure projects, projects are awarded without due regard to the Public Procurement Act, the study also affirms delay in payment by the Ghana Road Fund as another major risk factor in the delivery of road infrastructural projectsin Tamale. Overall, the research saw close correlations between these risks (1. political interference in the award of road infrastructural projects, 2. delay in payment by the GRF) andproject triple constraint delivery (Project quality delivery, project schedule completion /Time and overall project Cost).

Aside the Academic nature of this work, the road sector is more likely to deliver efficient and cost effective road infrastructure projects, if project stakeholders are made aware of the most prevalent risks, their causes, and effects in the road infrastructure projects delivery.

ACKNOWLEDGEMENTS

My unreserved gratitude goes to the AlmightyGod, who lavishly gave me the fortitude, resilience, foresight and thoughtfulness to undertake this project and to complete it satisfactorily

I wish to specially thank my supervisor, Mr Elvis Attakora-Amaniampong, who provided invaluable advice regarding the direction and approach that this research project should take, and was frequently available to provide support and guidance.

I wish to acknowledge the contributions of my good friend Mr Abdul RazakIddrisu, who helped me by proof reading the draft and his objective criticism to fine tune this work.

I will also like to appreciate my beloved wife, Victoria and Daughter, Phoebe for theiremotional support and understanding throughout the period of undertaking this research work.

Lastly I wish to extend my profound gratitude to the entire Ababioh family and good friends for their prayer and invaluable amount of support, encouragement and advice.

Augustus Ababio-Donkor
Tamale, Ghana
August, 2012.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

ASROC.....	Association of Road Contractors
DCE	District Chief Executive
DFR	Department of Feeder Roads
DUR	Department of Urban Roads
GDP	Gross Domestic product
GHA	Ghana Highways Authority
GRF	Ghana Road Fund
MCE	Municipal Chief Executive
MMDCEs.....	Metropolitan, Municipal and District Chief Executives
NDC	National Democratic Congress
NPP	New Patriotic Party
PPA	Public Procurement Authority
PUFMARP	Public Financial Management Reform Programme
RS	Road Safety Commission
TI	Transparency International
WB	World Bank

CHAPTER 1
INTRODUCTION

1.1 Background of the Project

The expansion of a roadway network or the construction of new roads in any community is a strong indicator of economic growth. Roads support economic growth and improve quality of life. It is therefore not surprising that governments invest huge sums of money in road projects. Ghana has seen a significant change in its road network in the past ten years, Ghana has seen 80.7 percentage growth between 2000 and 2010, the road network grew from 37,321 kilometres in 2000 to 67,448 kilometres in 2010 (Adutwum, 2011). New roads are being constructed and old roads rehabilitated (Baffour, 2011).

However, road projects in both developed and developing countries are often plagued with corruption, fraud and collusion (Messick, 2011 as cited in Bugapeh, 2011). Although corruption is widespread in road projects in both developed and developing economies, it is more costly to developing countries in terms of opportunity costs, and lost economic growth. Given the importance of roads in poverty reduction, this challenge needs to be addressed. An in-depth study of *Risk in Road Construction Projects procurement and how it affects the quality and timely delivery of road projects* may identify the effects these risks have on the effective management of the road network.

A survey by Price Water house coopers (2009), Corruption Prevention in Engineering and Construction in Ghana, suggests government involvement in the road industry both as customer/client and regulator, may have substantial influence on the overall exposure of the sector to a greater proportion of corruption risk than other industry sectors. Other challenges include the lack of good corporate governance to manage a complex supply chain performance.

But whilst government participation may significantly expose the industry to a greater level of corruption risk, there is no reservation that, government intervention in the sector was necessary to coordinate the complex and fragmented nature of the industry, but this should be directed towards good leadership and commitment in the fight against corruption in the sector (Bugapeh, 2011). To reform the system, the Government of Ghana embarked upon an exercise in1996 to reform the Public Procurement System, as an integral part of a wider Public Financial Management Reform Programme (PUFMARP). The exercise was to improve the overall public financial management in the country. The reform exercise

identified shortcomings and organizational weaknesses inherent in the country's procurement system. These include the absence of a comprehensive public procurement policy and the lack of a comprehensive legal regime to safeguard the integrity of the public procurement system (Public Procurement Authority, 2003).

The new structure was to promote the use of public procurement as a tool for national development and harmonise the application of procurement related rules with International conventions and treaties. It was expected to foster competition, efficiency, transparency and accountability in the public procurement process and finally provide equal access for any citizen to participate in the public procurement process (PPA, 2003)

Government involvement may significantly expose the industry to a greater level of corruption risk, because construction projects often involve large sums of money, the perception and attitudes of the ruling political party towards such funds tends to be diverted or easily influenced for political gain.

According to Transparency International Global Corruption Report 2009, there have been cases of grand corruption in Ghana in relation to public procurement. The tender award committees that are responsible of conducting the tendering and awarding of contracts are chaired by the political leaders of the local authorities, including the district chief executives (DCE). According to Withal of Transparency International, a survey conducted pointed to the dominance of state capture and patronage as well as use of state resources for political advantage, including award of contracts to political cronies in the country. A similar study conducted by Ghana Integrity Initiative in 2005, majority of households identified that the government favours bidders based on their loyalty to the government, underhand activities, nepotism and ethnicity when awarding contracts.

Nyame (2011), stated that, the Public Procurement Act, 2003 (Act 663) could have helped in reducing corruption in public sector procurement, but intimated there were allegations against the ruling party of making procurements without going through due process prescribed by these laws.

There is a litany of allegations against the present administration of overusing sole sourcing as the mode of public procurement and accusationsby the general public about government officials awarding contracts to party membersand cronies(Chronicle, 2009).

On October 1, 2002.a group calling itself "ConcernedCitizens of the Upper East Region of Ghana" accused the Regional Minister of discriminating attitude in the award ofcontracts; according to the group, his favourites(who were not qualified to execute the tasks) were being awarded the jobs to his favourites who are not qualified to do the jobs satisfactorily (Peacefmonline.com, 2011).

In an article written by Gadugah in The Chronicle in November 2009, he acknowledged political influence in the awards of contracts andasserted thata pressure group within Tamale Metropolitan Area(Gbewa Youth Group), besieged the offices of the MCE and demanded that specific contracts be allocated to them for execution and in December the same year,the Greater Accra party chairmen also accused the ruling Government of failing to award contracts to party members, contrary to what pertained during the previous government, which remained loyal to their party people (Chronicle, 2009).

Hamza(2010), also buttress the assertion of Gadugah in a similar article, reporting that some youth in Tamale accused the MCE of deliberately sidelining NDC members in the award of contracts in Tamale, stressing that the MCE is always quick to award contracts to his cronies.

On Tuesday, May 11 2010, The Upper West Regional Minister was dismissed following the displeasure by a youth group over the award of contracts to members of the opposition New Patriotic Party (NPP) by the embattled Regional Minister.The youth, alleged that he had neglected the foot soldiers (party grass root supporters) in the region in the award of contracts and instead awarded contracts to supporters of the NPP,although the regional ministervehemently dismissed the allegations and asserting that all awarded contracts went through due process, he was dismissed from his post.Today, the Procurement Law has been thrown to the dogs while, contracts are shared among NDC constituency and regional executive members, as well as other supporters and financiers at the residencies of MMDCEs (Bawah, 2011). Political influence in the award of contracts does not only render the public procurement system ineffective, it poses serious risk to the quality and timely delivery of the projects involved,

In Ghana, the availability of work and whether a contractor will win a contract is linked to the political regime or party in power. The frustration of many contractors with the contracting environment in Ghana is the politics that often surrounds it, that the business environment is driven by politics. Each government that comes into power tries to propel its own set of

contractors because they realise that contractors are a very good source of raising money for financing political campaigns. In short,"Politics is a major problem"Sometimes contractors that are not known to members of the Association of Road Contractors (ASROC)are the ones that win contracts (Laryea, 2010).

In most cases the selected contractors do not have the resources (financial, equipment, experience and personnel) to undertake the said road works, leading to poor quality work and unduly delay projects. Roads that are supposed to last for twenty years last for two years in Ghana (Baffour, 2011).

Laryea, (2010) cited delay in payment of works as one of the biggest challenge facing road contractors in the country today, the level of success of contractors keep declining as a result of delayed payments for executed works.

The above stated points coupled with lack of funds make it difficult for contractors to pay their staffwell. Sometimes some contractors do not even have money to pay monthly staff salaries. Because of lack of funds, contractors find it difficult to procure necessary materials (chippings, gravels, bitumen and even water, fuel) to carry out works and payfor the services of qualified and experienced human resource (Engineers, Quantity Surveyorsetc.) to carry out work(ibid).

Procurement agencies, funders and major stakeholders need to agitate for increased transparency and good corporate governance in the roadconstruction sector. It is also necessary for project stakeholders and especially clients to be aware of the various elements and activities that affect the project quality delivery as well as timely delivery. This research study therefore investigates the procurement and financial risk in the road construction project, the effectsof these risks on road quality and timely delivery by contractors in Ghana.

1.2 Problem Definition and Justification

The problem that this research study seeks to address is the *Risks in the Road construction industry and how they affect the quality and timely delivery of road construction projects in the country, with a focus on Tamale Metropolitan Area.*

Studies and reports suggest that, road infrastructure in Ghana is the bedrock for economic growth; however, poor quality of worksin the road sector continues to impede the nation's ability to achieve the sustainable road infrastructure delivery required(Boehm, 2008). The construction industry is also perceived the most corrupt segment of Ghana's economy and this could be extremely worrying for developing countries because, road infrastructure remains the most effective and efficient mode of transport, accounting for 80 to 90 percent of passenger and goods traffic (Economic Commission for Africa, 2009).

Whilst efforts arebeing pursued to ensure these risks are mitigated in all economic spheres including the road projects towards delivery of expected outcomes, there is a need to understand where these risks are most prevalent in road construction projects delivery, so that adequate project management tools are designed to eliminate or curb their occurrence. The present research seeks to complement this effort by investigating the risks in theroad projects to identify effects of the risks and how to minimise or curb them.

Findings from the study will support stakeholders involved in road infrastructure delivery in the Tamale metropolis, seeking to understand which major risks affects road project delivery and how they affect the quality and timely delivery of road construction projects, thus enabling additional efforts to be employed to minimise the negative effects of these risks in the sector.

1.3 Research Questions

1. What are the risks facing the road construction industry in the Tamale Metropolis?
2. To what extent do these risks affect the quality delivery of road construction projects in the Tamale Metropolis?
3. To what extent do these risks affect the timely delivery of roads construction projects in the Tamale Metropolis?

1.4 Research Aim and Objectives

The purpose of this project is to investigate and appraise the risk associated with the road construction industry in Tamale. The following objectives were developed from the research questions;

1. To determine and investigate the risks associated with the road construction industry in Tamale
2. To determine the effects of these risk on the road construction projects delivery.
3. To assess the stakeholders'perceptions of these risks and identify measures to mitigate them.

1.5 Scope and Limitations of the Study

This study examines the risk (procurement/ financial) and the effects these risks have on road construction projects' quality and timely performance in the Tamale metropolitan area since the introduction of the Public Procurement Act, 2003, Act 663. Owing to time and resource constraints, representative sample of the stakeholders (Contractors, Road Agencies and Consultants) were used in obtaining general information about their operations and difficulties and risks facing the road construction projects.

A myriad of problems were encountered in the collection of the data for the research and it is quite important that these problems are brought to light. Most frustrating was the unwillingness of respondents from the road agencies to give out detail information, especially that which had to do with procurement processes as well as procurement procedures they employed in their organisations with the suspicion of such information getting into the hands of the media and the public.

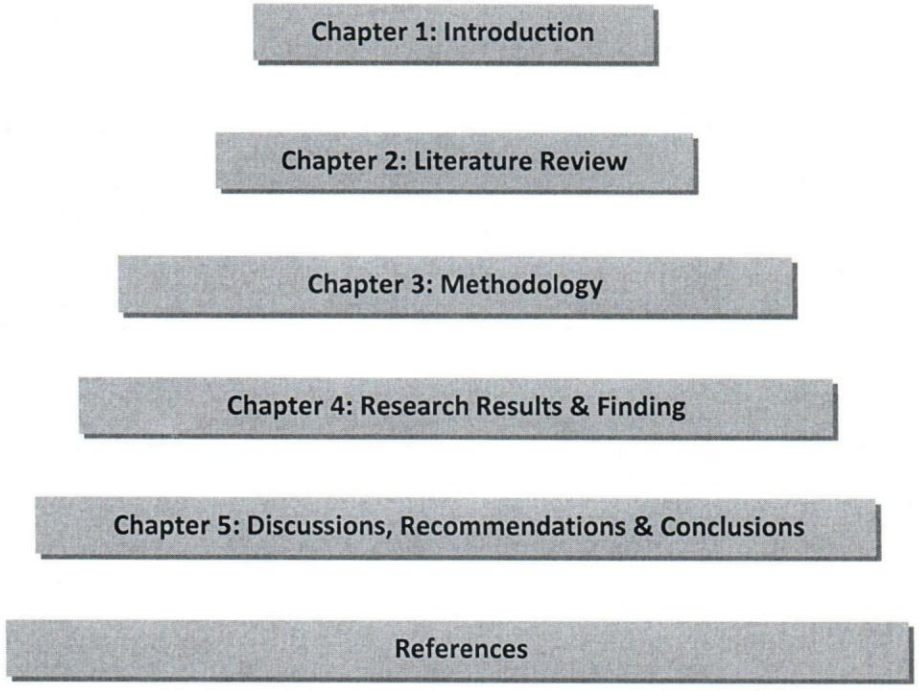
Also the low level of literacy among respondents from construction companies demanded that one on one interview questionnaire method be used. Even though respondents were forthcoming with answers, the method was time-consuming.

Furthermore, in some cases there was outright refusal of some respondents to answer questions they thought were suspicious or could be used for covert purposes other than stated and explained to them, to overcome these difficulties, the questionnaire was administered online using Surveymonkey softwareanddemographic questions like respondent's name, sex, age etc. were avoided to hide the identity of the respondents.

1.6 Organization of the Study

This thesis is sectioned into five chapters as shown in Figure 1 below. Chapter one introduces to us the trends of Procurement Chapter two provides extensive literature on risks in the construction industry. Chapter three contains details of the study location, research methodology. Chapter four presents the study findings and results. Chapter five contains my discussions, concluding remarks and recommendations.

Outline of the Thesis



Source: adapted from Onuorah (2009)

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter attempts a critical review of some available literature on the subject under investigation-risk in road construction project. The researcher critically reviewed the role of road infrastructure in developing countries and also explores reasons why developing countries have not been able to deliver road projects effectively. One cannot complete a review of a study on risk in road construction project without considering the economic perspective of the subject and factors militating against the region's ability to deliver sustainable roads to drive its economies.

Road projects however are often confronted with many uncertainties due to factors such as the presence of interest groups, resource availability (financial challenges), the physical, economic and political environments, statutory regulations, etc. According to Wang and Chou (2003), these risks have a considerable effect on the output of a road construction process.

For this and other reasons, the study also ventured into a review of the financial challenges facing developing countries and how corruption has contributed to compound the financial difficulties of developing countries in meeting road needs and providing sustainable road infrastructure. The study also looked into procurement issues in Ghana and how political interference in the sector is affecting the quality of road infrastructure delivery (outcome) in Ghana. Furthermore, the need for increased transparency and good corporate governance in the road sector for an extensive and well-maintained network of primary, secondary, and feeder roads for economic growth and poverty alleviation.

2.2 The Role of Roads in Development

Roads are the dominant mode of transport in most developing countries. In Africa, road transport accounts for between 80 and 90 percent of goods and passenger traffic. According to the Economic Commission for Africa (2009) cited in Bugapeh (2011). In Ghana 94 percent of freight tonnage and 97 percent of passenger traffic is by road traffic Amoah (2005). Road transport plays an essential role in Africa's quest to alleviate poverty and achieve sustainable economic growth for sustainable development. Road infrastructure is therefore essential for developing countries, where roads are needed to link the rural markets (agricultural

production areas) to the urban consumption centres in many parts of the third world is a vital component for facilitating trade and social integration (Amoah, 2005).

World Bank (2011) in its report, *Curbing Fraud, Corruption and Collusion in the Road Sector*, suggest that road transport has a high and diverse functionality with a wide range of benefits linking all sectors of the economy, and serves as an essential component of developing nations transport systems. For instance, in Ghana, the most dominant carrier of freight and passengers is the road transport system.Thisis in line with Ghana National Transport Policy paper in 2000;Ghana had an extensive road network of 42,000 kilometers.

Socially, roads also augment interaction necessary for the maintenance of the African family system and culture, Road Network enhances attending of funeral rites, naming ceremonies, etc. which is predominant in the northern region (Bugapeh, 2011). A similar report by the World Bank, *World Development Report 1994: Infrastructure for Development*, a cross-country analysis cited in Bugapeh (2011), alludes to a strong and steady linear relationship between a nation's road network and its level of development (Bugapeh, 2011). In countries with good road network, economic activities are enhanced and the costs of doing business are reduced, thus facilitating growth and sustaining the environment. Finding from Shenggan et al. (1999), and Douglas and Rogerson (2010), in a similar research conducted in India and Uganda reinforced the point earlier made by (Bugapeh, 2011). However, The conclusion of Shenggan et al. (1999) suggests that increased investment on rural infrastructure, including roads, in India accounted for a boost in agriculture production, increase in labour productivity which had significant impact in the reduction of poverty levels from between 50 to 65 percent in the mid-1960s to about one-third by the early 1990s, and enabled growth predominantly in the agricultural sector. The case of Uganda according toDouglas and Rogerson (2010) in a study also assert, increased in road investment improved significantly the agricultural sector.

In fact, the debate over the relationship between roads and development is a long- standing one, which continues to this day. The views expressed above point to the fact that lack of good roads may have an overwhelming effect on developing economies, with severe penalty of economic stagnation and higher levels of poverty. Luggard (1922) stated as follows, 'the material development of Africa may be summed up in the one word, 'transport.' This could hardly be stated more appropriately. It is therefore disheartening to mention that the envisioned socio-economic development of Africa, especially that of Ghana, is threatened by the quality of transportation (road) system.

Developing countries/economies like Ghana therefore require a vigorous investment in the roads sector to reduce the huge backlog of road infrastructure projects, enhance economic growth and meet the high expectations of the majority of its citizens.

From the above analysis, it is ascertained that, developing countries need a more robust approach to speed up their development effort with emphasises on an effective and efficient road sector. There is the need therefore to identify problems that negatively affect efficient road infrastructure delivery systems, why road infrastructure deficits are prevalent in developing countries, so that, appropriate measures are utilized to reduce the ever-increasing road infrastructure deficits in developing economies.Since without good (well-built), well-maintained roads, goods cannot access markets, children cannot access schools, the sick and injured cannot access health care.

2.3 Road Infrastructure Deficit

The preceding paragraphs discussed the role road infrastructure plays in developing countries and how improved road infrastructure system would enhance economic growth and reduce poverty. Nonetheless, numerous challenges confronting the developing countries makes it difficult to meet this road infrastructure requirements over the years, thus creating a huge road infrastructure deficit and hampering the region's ability to meet the expected economic growth aimed at alleviating poverty. A World Bank policy report, *Road Deterioration in Developing Countries*, proposes $45 billion as a requirement to fix roads left unmaintained over the past two decades (Harral and Faiz, 1988).

Mafusire et al. (2010), in a study for Africa Development Bank Group, ascertained infrastructural deficits and opportunities in Africa cited in Bugapeh (2011), stated, wider road infrastructure gaps exist between Sub-Saharan African countries and the world's requirements. The report revealed that the total road network in sub-Saharan African countries is only 204 kilometres per 1000 square kilometres of land, of which 25 percent is paved, compared with the world's average of 944 kilometres per 1000 square kilometres. Road density in sub-Saharan Africa also translates to about 3.6km per 1000 persons against the world's average of 7km per 1000 persons.

Studies and reports reveal the enormous deficit of the rural roads. It is shown that Malawi's rural road network is only about 0.5km per 1000 persons, compared to a world average of 7km per 1000 persons. In Ghana for instance, the total road network as of 2010 was 67,450 kilometres, of which 18.4% are urban roads, 62.6% are feeder roads and 19% are trunk roads (Adutwum, 2011).

Road density for the same period was approximately one and half kilometres per 100 square kilometres of land out of the country's 239,000 square kilometres and a population of 24,233,431. Research also shows that road deficits in developing countries are caused by institutional and operational weaknesses (Gwilliam, 2011). This is justifiable so because responsibility for road delivery is mostly not allocated to a single agency and also because decisions on policy and implementation fall within the domain of politicians and civil servants who may have varied reasons for selecting road projects for implementation. For example, government's interest may be directed at implementing projects with the aim of gaining political capital, whereas the road agencies' interest may be influenced by the economic benefit of the project.

The report by Mafusire et al. (2010) suggests that Africa's infrastructure deficits significantly impede its per capita economic growth by up to two (2) percentage points annually, reducing productivity of firms by up to 40 percent. These findings strengthens the stand of the Economic Commission for Africa, (2009) and Messick (2011) assertions that developing countries need to improve and increase road infrastructure assets in order to become competitive in international trade.

While Foster and Bricen-Garmendia (2010) share the view of Messick (2011) and Economic Commission for Africa (2009) they also suggest that the negative effect of deficient infrastructure in Africa is effectively due to "crime, red tape, corruption and financial market constraint". Lack of commitment to enact and enforce laws favourable to attract private sector investment may account for the minimal participation of the sector in road infrastructure delivery. Apart from the above factors, African governments face several other challenges, including technical constraints. These may be attributed to the continent's inability to motivate and retain professionals in the sector. The need to overcome these challenges and ensure that road infrastructure deficits are reduced cannot be overemphasised. This requires measures to attract and retain both professionals in the road sector and the private sector investment needed to accelerate growth and reduce road infrastructure deficits

in the region. On the whole, it may not be sufficient to say that the absence of suitable technology, professionals and sufficient funding are the only causes for inadequate development of the road sector. According to the Global Infrastructure Anti-Corruption Centre (2011) the greatest challenge to the development of adequate and safe road networks in developing countries, particularly in sub Saharan Africa is primarily due to theft and grand scale corruption. The inability to address issues of corruption alongside the above challenges means that developing countries will continue to face financial challenges and may not be able to effectively deliver the expected outcomes from road projects.

From the analysis, it is certain that more emphasis needs to be placed simultaneously on attracting experts in the road sector as well as encouraging the government to revitalise the approaches adopted in the road sector. The road density comparison of Africa's 3.6km per 1000 persons with 7km per 1000 persons as a global requirement depicts the fact that not only does quality matter but also quantitative measures needs to be envisaged to close road infrastructure deficits. There is also a need to improve the required management skills, technical and financial resources necessary to deliver road infrastructure projects. Emphasis should also be placed on a more rigorous and transparent project management processes to avert corrupt practices and encourage private sector investment into the sector. It is therefore appropriate to suggest that developing countries have to show more commitment in the fight against corruption in order to safeguard scarce resources from abuse and also attract the private sector investment necessary to overcome the large financial challenges facing the road sector.

2.4 Financial Challenges to Road Infrastructure Delivery

The road construction industry undisputedly needs enormous financial resources to reduce the deficit. Research studies have shown that the construction industry is by far the largest sector, accounting for huge spending over the decades. A report compiled by the World Bank in 2009 suggested that the construction industry accounted for about $1.7 trillion, representing 5% to 7% of GDP of most countries, and total investment in the road sector within the same period accounted for between 2% to 3.5% of GDP in most developing countries (Kenny, 2009).

According to Messick (2011), the World Bank alone lent out close to $56 billion for road infrastructure projects between 2000 and 2010 representing about one fifth of the bank's total

lending to all sectors of the economy, suggesting that huge financial investment into road infrastructure is required to accelerate growth of the sector. The *Africa Review Report on Transport*, by the Economic Commission for Africa (2009), also suggests that Africa requires an estimated $14.2 billion annually to meet transport infrastructure gaps with as much as $6.4 billion for 13 Sub-Saharan African countries.

Notwithstanding efforts by developing countries and international development partners to mobilise financial resources to deliver road infrastructure projects, there are still several challenges. One major challenge is corruption. According to the Sohail and Carill (2008) Transparency International conservative estimates in 2005 suggest 10 percent of global construction cost is lost annually through bribery, fraud and corruption, which has direct consequences for the funding and quality of road projects.

According to the Economic Commission for Africa (2009), lessons learnt from on-going initiatives show that there is potential for African countries to speed up implementation of road infrastructure delivery. However, these must be complemented with high demands and commitments to ensure that regulations and enforcement mechanisms are strengthened to allow fair participation in the sector. Appropriate institutional frameworks are required to clearly define and separate regulatory and operational functions for all modes of transport. Emphasis must be placed on engaging the public, and ensuring full participation of stakeholders in all phases of policy making and implementation of transport infrastructure. Furthermore, a liberal transport sector to attract private sector financing and develop both institutional and human capacities must be seen as a necessary strategy to maximise resources, and ensure that institutions have appropriate mandates to deliver project outcomes.

From the analysis, it is ascertained that road transport plays a very significant role in developing countries both in terms of the direct effects of high mobility for citizens and goods and also by way of providing employment for citizens. The requirement for developing countries to increase and improve road infrastructure assets in order to grow their economies cannot be over emphasised. It is essential for the region to mobilise funding, especially from the private sector, to realise these dreams. There is also a high demand for developing countries to ensure transparent and more accountable systems to attract both foreign and private investment to the sector and, as emphasised by ECA, developing countries needs to ensure that adequate laws, regulations and institutional frameworks are established to facilitate transparency and good governance in the road sector. In this regard, corruption in

the sector is one aspect which needs to be effectively addressed by both developing countries and donor partners to minimise the effects of leakage and waste in road projects.

2.5 What is Risk

The literature on the study would be incomplete without the definition of risk and its contribution to the overall deficit in the road sector. The road construction industry is one of the most dynamic, risky and challenging businesses. However, the industry has a very poor reputation for managing risk, with many projects failing to meet deadlines and cost targets. Risks are most often either ignored or dealt with in a completely illogical way (Mills, 2001). In a business as complex as the construction industry, such an approach is often inadequate, resulting in expensive delays of projects (Hayes et al., 1986 cited in Mills, 2001).

The 2000 edition of the PMBOK defines risk as "an uncertain event or condition that, if occurs, has a positive or negative effect on a project's objectives." Bufaied (1987) cited in Akintoye and Macleod, (1997) also described risk in relation to construction as "a variable in the process of a construction project, whose variation results in uncertainty as to the final cost, duration and quality of the project"

All aspect of human life involves some form of risk, the success or failure of any course of action therefore depends to a large extend on how we deal with it (Dey, 2001). The construction industry is more prone to risk and uncertainty than most other industries (Tah and Car, 2000), the element of uncertainty having to do with its inherent characteristics (Hayes et al., 1986). But these risks are not always dealt with properly by the industry (Thomson and Perry, 1992; Mills, 2001). Since risk is an unavoidable phenomenon in construction projects, proper risk identification and allocation in construction contracts is given much eminence because risk identification and allocation have a direct bearing on risk handling decisions.

2.5.1 Risk Identification and Classification

Hayes et al. (1986), Williams (1995), and Godfrey (1996) acknowledged risk identification as foremost requirement in the risk management process. Dawood (1998) has shown that systematic risk management enables the early detection of risks. Risk identification involves identifying the source and type of risks. According to Flanagan and Norman (1993), an identified risk is no longer a risk but a management problem. Therefore, obtaining a clear

view of the risk event is the first step when focusing on the sources of risk and their potential effects.

Classification of risks involves the identification, consequence and impact of the risk. According to Bunni (1997), when a risk has been identified, assessed and analyzed, it must be assigned to various parties in order to keep it under control and to prevent the occurrence of unfavourable consequences.

2.5.2 Financial Risk

Until 1997 when the Road Fund Act 1997 (Act 536) was passed, Ministry of Roads and Highways was responsible for road maintenance, which was funded from the ministry's annual budget. As more roads were constructed as part of the ERP launched by the government in the 1980s, cost of maintenance began to rise beyond the competence of annual budgetary provisions.

To address this situation, Parliament passed the Road Fund Act in 1997, thus, establishing the Ghana Road Fund. To resource the Fund, levies on petroleum products, road/bridge tolls and vehicle registration and road user fees were ceded to it. The Act recommended the composition of the Road Fund Board, to be supported by a secretariat in the performance of its administrative functions, with the minister of Roads and Highways as its chairman. (Agyeman, 2006).

In the Auditor General's Audit report of the Ghana Road Fund for the period 2000 to 2004, presented the following findings; The audit shows that the current resources provided by the fund to support road maintenance programmes are not enough, the Director of Road Fund states that the fund was expected to generate about ¢630.0 billion while it needed ¢1.3 trillion to maintain all the roads in the country for the year 2003. This created a shortfall of about ¢670 billion (51.5%). The above situation represents a consistent pattern of revenue shortfall that the Road Fund has to contend with annually. Consequently, the road sector agencies prepare their budgets in line with what Ghana Road Fund can afford, thus exacerbating the road deficit in the Country (Agyeman, 2006).

Table 2.1 shows the road funding deficit in Ghana for the period 2003 to 2007, the figures suggests deficits of 27.8%, 40.6%, 29.4% and 29.9% for the years 2003, 2004, 2005 and 207 respectively and an average deficit of 26.6% for the same period under review.

Table 2.1: Funding Gap of Roads in Ghana

YEAR	2003	2004	2005	2006	2007	TOTAL
	mn (US$)	mn (US$)	mn (US$)	mn (US$)	mn (US$)	mn (US$)
ROAD FUND FORECAST	71.6	78.2	98.8	116.1	131	495.7
REQUIRED FUNDING	179.2	186.8	153.5	167.9	127.7	815.1
FUNDING GAP	107.6	108.6	54.7	51.8	-3.3	319.4
SECURED DONOR FUNDS	57.8	32.8	9.5	1.6	0.8	102.5
NET FUNDING GAP	49.8	75.8	45.2	50.2	-4.1	216.9

Source: GRF, 2003

The deficit discussed above, is the major cause of delay in payment for works done by contractors, according to Laryea, (2010), delay in payment of works is one of the biggest challenge facing road contractors in the country to today, the level of success of contractors declined as a result of delayed payments to contractors for works completed.

The above stated point coupled with lack of funds makes it difficult for contractors to pay their staffs well. Sometimes some contractors do not even have money to pay monthly staff salaries. Because of lack of funds, contractors find it difficult to procure necessary materials like chippings, gravels, bitumen, water, and fuel (gas oil and other lubricants) to carry out works and hire the services ofQualified and experienced Human resource (Engineers, QS etc) to carry out work (Laryea, 2010).

2.5.3 Public Procurement Risk

In 1996, Ghana embarked upon Public Financial Management Reform Programme (PUFMARP). Under which the Public Procurement System was also reformed to improve the overall public financial management in the country. The reform exercise identified shortcomings and organizational weaknesses inherent in the country's procurement system. These include the absence of a comprehensive public procurement policy and the lack of a comprehensive legal regime to safeguard the integrity of the public procurement system (Public Procurement Authority, 2003).

The new structure was to promote the use of public procurement as a tool for national development and harmonise the application of procurement related rules with International

conventions and treaties. It was expected to foster competition, efficiency, transparency and accountability in the public procurement process and finally provide **equal access** for any citizen to participate in the public procurement process Ibid.

Interestingly, the Public Procurement Act is not being as effective as it should have been. Nyame (2011), stated that, the Public Procurement Act, 2003 (Act 663) could have helped in reducing corruption in public sector procurement, respectively but intimated there were allegations against ruling political parties of making procurements without going through due process prescribed by these laws. Statements and explanations of Transparency International's Global Corruption Report 2009 are similar to that of Nyame (2011) and further explained that, a survey conducted pointed to the dominance of state capture and patronage as well as use of state resources for political advantage, including award of contracts to political cronies in the country. This is possible because, the tender award committees that are responsible forconducting the tendering and awarding of contracts are chaired by the political leaders of the local authorities, including the district chief executives (DCE) (Business Anti-Corruption Portal, 2011), making manipulation easier in favour of their political parties.

The above assertion is supported by a study conducted by Ghana Integrity Initiative in 2005, which emphasized that, majority of households identified that the government favours bidders based on their loyalty to the government, underhand activities, nepotism and ethnicity when awarding contracts

In Ghana, the availability of work and whether a contractor will win a contract is linked to the political regime or party in power. The frustration of many contractors with the contracting environment in Ghana is the politics that often surrounds it, that the business environment is driven by politics. Each government that comes into power tries to propel its own set of contractors because they realise that contractors are a very good source of raising money for financing political campaigns (Laryea, 2010). In most cases the selected contractors do not have the resources (financial, equipment, experience and personnel) to undertake the said road works, leading to poor quality work and undue delay of projects, Roads that are supposed to last for fifteen years starts deteriorating after two years in Ghana (Baffour, 2011).

2.5.4 Project Quality, Cost and Time Delivery (project Triple constraints)

Project quality is defined by Parfit and Sanvido, (1993) as the totality of the features required to satisfy a given need and that Clients' long-term interests lie in the high quality of their projects. The work performed must conform to the specifications established for the project. Low cost and speedy construction should not be achieved at the expense of the quality of the project. In fact, poor quality of performance results in increased rework, which has significant cost and schedule implications (Hong and David, 2002).

Quality -The scope of a project (sometimes called the Scope of Work) is a clear or specific statement as to what has been agreed to be carried-out in a particular project. In other words, the scope expressly lays out the functions, features, data, content, etc. that will be included in the project at hand. You could also say that the scope clearly expresses the desired final result of a project.

Cost - The second element of the Triple Constraint is known as either Resources or Cost. Resources always cost money so the two are interchangeable in many ways. When we talk about the cost of a project, we are talking about what needs to be applied or assigned to a project in terms of money and effort in order to get the entire project completed.

Time - project management is the amount of time required to complete each and every component of a project is analysed. Obviously from all of this we are able to estimate the duration of the entire project as a whole as well as what and how many/much resources need to be dedicated to that particular project.

These three elements (triple constraint) of a project are known to work in tandem with one another. Where one of these elements is restricted or extended, the other two elements will then also need to be either extended/increased in some way or restricted/reduced in some way. Below is the relationship between the triple constraints (Time, Cost & Quality).

$$Quality = Cost \times Schedule/Time$$

Construction quality may sometimes be taken for granted and insufficient attention may be paid to it (Rad and Khosrowshahi, 1998). Assessment of project quality has always been subjective (Chan and Chan, 2004). The poor are particularly vulnerable to in such cases since without well-built, well-maintained roads, goods cannot access markets, children cannot access schools, the sick and injured cannot access health care.

2.5.5 Risk Allocation

Andi (2006) has argued that "construction risks can hardly ever be eliminated. They can merely be transferred or shared from one party to another through contract clauses". A party to whom a risk is allocated is considered to have the "ownership of risk," which according to Uff (1995) and Godfrey (1996) has several meanings:

a) having a stake in the benefit or harm that may arise from the activity that leads to the risk;

b) responsibility for the risk;

c) accountability for the control of risk; and

d) financial responsibility for the whole or part of the harm arising from the risk should it materialize.

Kartam and Kartam (2001) have argued that all the risks should rightfully reside with the owner and transfer to another party should entail fair compensation. However, the common understanding on risk allocation has it that the receiving party has both the competence and expertise to fairly assess the risk and to control or minimize it (Hartman, 1996; Fisk, 1997; Godfrey, 1996; Perry and Hayes, 1985). Roads in Ghana are constructed for the people of Ghana and by resources of the general populace, the general public is therefore the risk owner in the road construction industry, the onus therefore lies with the citizenry of the country to minimise this risk in the country by ensuring that regulations and enforcement mechanisms are adhered to by the authorities.

2.5.6 Risk Handling / Risk Response

Risk handling by lessening their impact is a critical component of risk management. Managers need to realize the contents and effects of all alternatives before making decisions about an appropriate strategy for risk handling (Wang and Chou, 2003). Risk handling is the choice of a proper strategy to reduce the negative impact of the risk (Miller and Lessard, 2001). It is defined as the first step in risk control by Baker et al. (1999a). However, Kim and Bajaj (2000) define risk handling/response as the way risk issues are dealt with. According to Flanagan and Norman (1993), risk response refers to how the risk should be managed either by transferring it to another party or by retaining it. Further, risk handling principles are classified mainly into four categories, i.e. risk retention, risk reduction, risk transfer and risk avoidance (Carter and Doherty, 1974; Flanagan and Norman, 1993; Raftery, 1994; Baker et

al., 1999b; Dey, 2001; Wang and Chou, 2003). Wang and Chou (2003) see risk handling strategies as consisting of one, or a combination, of the above methods. Studies have proved the validity of various strategies chosen on the basis of individual projects.

2.6 Chapter Summary

Road constructional projects plays an essential role in the quest to alleviate poverty and achieve sustainable growth for development, socially, roads also augment the interaction necessary for the maintenance of our culture and family system.

Studies have ascertained the existence of wide road infrastructural deficit in the sub-Saharan Africa including Ghana, this according to Mafusire et al. (2010), impede per capita economic growth and reduce productivity.

The road sector is the largest sector in almost every economy, accounting for between 5% and 7% of GDP for most countries, but all this efforts is not paying off as it should, due to corruption and the inherent risks which are not being well managed.

There is therefore the need to identify these risks, how they manifest and their effects on projects triple constraint (Cost, Time & Quality) since roads that are constructed to last for fifteen years or more starts giving way after few months and the poor are mostly vulnerable to in such cases as without well-built, well-maintained roads children cannot access schools, the sick and injured cannot access health care and farmers cannot get their goods the markets.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

The preceding chapter underlined the theoretical framework of this study. This chapter describes the methodology undertaken in relation to justification of the research paradigm, questionnaire design, sampling process and data collection and administration. The ethical consideration pertaining to data collection and relevant to this research is discussed.

This research study had an objective of identifying the risks in road construction projects and the effects these risks have on the project quality and timely delivery in Ghana. The aim is to improve road project quality and timely completion by letting the project major stakeholders know the risk and how they affect the project delivery.

The road sector was selected for the study because of the cry about the rate of road deterioration in the country especially the north. The research therefore seeks to find the cause of the canker. Roads are directly linked to development, GDP Growth and poverty reduction; hence any factor that affects the effective and efficient implementation of quality roads infrastructure delivery will have to be looked at since it will retard national and regional development.

In order to realise the research objectives outlined in the first chapter, staff of the road sector agencies (GHA, DFR and DUR), contractors and stakeholders' views about risk and their effects on these projects delivery was solicited particularly from the Northern region.

The research was conducted with the main focus on qualitative data collection using a questionnaire survey. Similar studies and other academic works were also explored. These methods enabled understanding of risk inherent in the road construction industry. The literature has also revealed that corruption is widespread in the construction industry as compared to other sectors of the worldwide economy Kenny (2009), and that it manifests itself on how they affects quality and timely completion of road infrastructure projects. From the above suggestions, it can be argued that any research methodology proposed to study the problem should be based on perceptions of the individual players in the sector.

The chapter discusses the procedures and instrumentation used in the data collection and analysis.

3.2 Population and Study Area

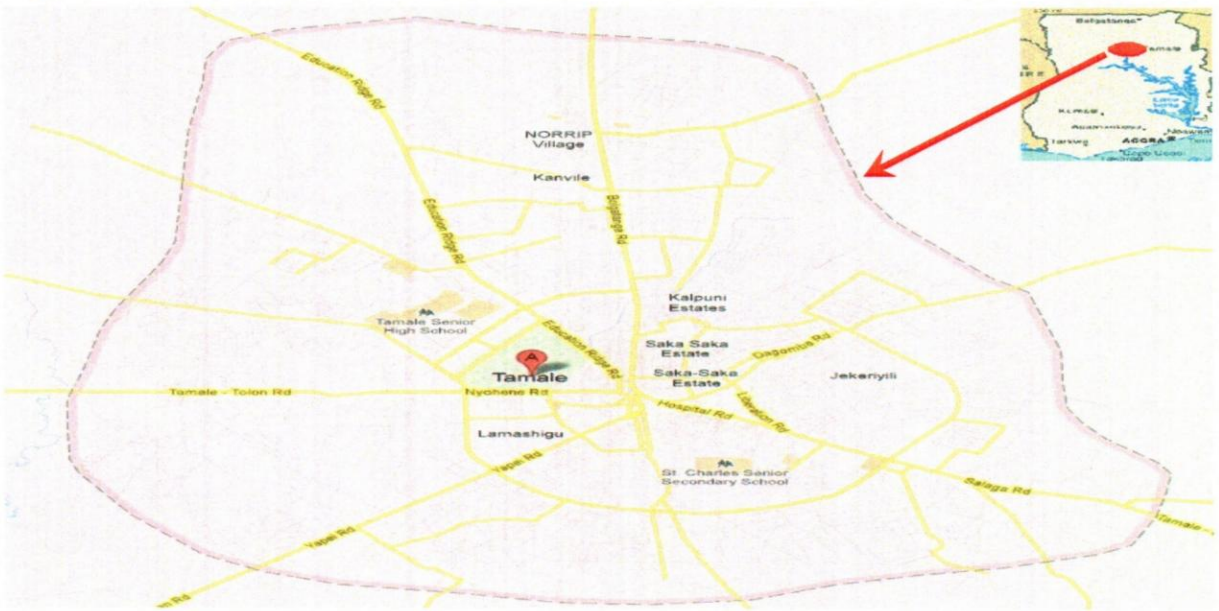
Tamale metropolitan area is situated between latitude 9°23'5.15"N, Longitude 0°49'12.12"W and latitude 9°25'11.09"N, Longitude 0°52'28.98"W and lies in the central part of the Northern region of Ghana, and situated about 600 km North of Accra, the capital city of Ghana.

Tamale is the capital city of the Northern region of Ghana and the capital of the Tamale Metropolitan, it is mostly inhabited by the Mole-Dagomba linguistic group. The city is home to about 537,986 people (2012 census). It is a nodal city that serves as convergence zone as well as the commercial capital of the three northern regions (Ghanaweb, 2011).

Located in the northern part of the country, the town is like a conglomeration of villages where one can find an architectural blend of traditional mud houses and modern buildings. While the majority of the houses are roofed with corrugated iron sheets, a good number of them are still roofed with grass

It is a middle to low class community and thrives on agricultural production of cereal, yam etc, merchandise offered for sale and services rendered by small business holdings. Most businesses are strictly retail outlets, however some involved in the manufacture of leather sandals, just to mention but a few.

Fig. 3.1:Map of Tamale-the study area



Source: An extract from Google map (2012)

3.3 Research design

A research design provides an overall strategy for linking the theoretical research problem to appropriate and practicable empirical research. The quality of any research study therefore depends on how well a research design has been formulated, which means selection of the most appropriate and adequate research design to effectively provide information to answer the research problem within the constraints placed on the researcher (Ghauri et al, 1995).

Research design is defined as a set of advance decisions that make up the master plan specifying the methods and procedures for collecting and analyzing the needed information (Burns & Bush 2002, p.120). An appropriate research design is essential as it determines the type of data, data collection technique, the sampling methodology, the schedule and the budget (Hair et al. 2003) primarily, it assists to align the planned methodology to the research problems (Churchill &Iacobucci 2004; Malhotra 1999).

Robson (1993) and Yin (2009) agrees with Burns & Bush (2002) on the definition of research design. however, Yin (2009) further propose, that the research design should be seen as a logical sequence that links empirical data collection to initial research question, analysis and conclusion and should be thought of at the onset and kept in mind when carrying out a research project.

The information requirements determine the source from which the information could be obtained. This stage begins with identifying the information needed to meet the research objectives and address the research problem or question for which the research is being carried out.

According toGhauri and Gronhaug (1995), data sources are categorised into Secondary Data or Primary Data. They define secondary data as any information collected and stored by original (primary) researchers which may be available for use by other researchers, whilst primary data are original data collected by a researcher to address a particular research problem at hand (Bugapeh, 2011).

Secondary and primary research data were used to study the research problem. The secondary data aided enormously in the literature review, it helped in the formulation and understanding of the research problem and made the focal point of the research question more tangible. It

also provided a yardstick for comparing the findings of the research results (Ghauri and Gronhaug, 1995).

The following are some of the sources from which secondary data for the research was acquired:

1. Textbooks and other research publications related to the research problem and pertinent to the research study,
2. Articles related to road infrastructure project procurement in Ghana.
3. Journals and newsletters relevant to the research problem.
4. Internet sites and web pages of key institutions and organisations, including the public procurement authority (PPA), the World Bank (WB), Transparency International (TI), and the Business Anti-Corruption Portal. 2011 and Ghanaweb. These organisations and institutions were chosen because of their leading role in research into the subject area.

The use of Secondary data allowed enormous savings in terms of time and cost and served as an instrument that facilitated the interpretation and understanding of the primary data. Secondary data help broaden the base from which conclusions can be drawn, and the reliability of the information and conclusions is greatly enhanced (Ghauri and Gronhaug 1995).

Data collection is an important aspect of any research study and should be designed to suit a research method and identify the techniques suitable to answer the research question or problem. According to Ghauri and Gronhaug (1995), the choice of data will depend upon the overall judgment of which type of data is suitable and most appropriate to solve the research problem or question. Ghauri and Gronhaug (1995), classified data into two distinct types, qualitative and quantitative, and suggest that consideration of the type of answers expected should influence the type of analysis to be undertaken and must be thought of at the outset of data collection.

This research adopted the qualitative method of data collection and systematically collected information from the stakeholders of the road construction sector in Tamale in order to address the research question as mentioned above. The qualitative method allowed information obtained for the purpose of the research to be adequately investigated and individuals' perceptions, beliefs and understanding regarding corruption and how it manifests in road construction project procurement properly assessed.

3.4 Sample Design

The sample design is to ensure a practical means of collecting data to answer the research question, which sought to identify the risks in road construction industry and the effects these risks have on the project quality and timely delivery in Ghana. According toGhauri and Gronhaug (1995), there are two ways to select a research population and a decision must be made whether to collect information from all members of a population or from a portion of members of a large population.

The baseline survey target population in this study was the individual stakeholders of the road sector in the Tamale metropolis of the northern region of Ghana comprising engineers, technician engineers, quantity surveyors, administrators, accountants, contractors, consultants and other stakeholders. The Tamale Metropolis has a population of about 537,986 as of the year 2010 with 20 districts, the majorities are road users. The sample also included other organisations outside the road sector that have an interest and relevant information necessary for the research. The involvement of respondents outside the road sector makes it difficult to obtain a definite sample frame. Because of the nature of the research and the probability that many people might not be willing to participate, the use of a probability sample technique was not appropriate, instead the research adapted a non-probability sample.The decision to choose a survey method may be based on a number of factors which include sampling, type of population, question form, question content, response rate, costs, and duration of data collection (Aaker et al. 2000). The most appropriate survey method for this research was referral sampling or snowball sampling technique.

Snowball sampling is a method in which a researcher identifies one member of some population of interest, speaks to him/her, and then asks that person to identify others in the population that the researcher might speak to. This person is then asked to refer the researcher to yet another person, and so on. Snowball sampling is very good for cases where members of a special population are difficult to locate.

3.5 Sample Technique

A snowball sampling technique was adopted: first ten (15) staff of various stakeholder organization like road agencies (GHA, DFR and DUR), Contractors and Consultants were contacted, those contacted then identified other members whose characteristics match the population the research seeks to gather information from. This enabled an additional thirty

(30) people to be contacted, thus more staffs were invited to participate in the survey. There are however disadvantage in using the snowball approach. One major drawback of the technique is the inability of the researcher to control the sampling method. The researcher is not able to determine the true representativeness of the sample, which means that he has no idea of the true distribution of the population and of the sample.

The way that the sample is chosen by target people makes it liable to various forms of bias. People tend to associate not only with people with the same study selection characteristic but also with other characteristics. This increases the chance of correlations being found in the study that do not necessarily apply to the generalized wider population (Heckathorn, 2002)

The need to get the person to give you a referral also means that the researcher has to form a relationship with the person and be nice to them. This can change the study results as affective biases in both the researcher and the target person change how they think and behave (ibid).

In spite of this, concerns about external validity and the ability to generalise do not appear as large within qualitative research as it does in quantitative. Nonetheless, snowball sampling approaches are used in quantitative research, especially where a researcher needs to focus upon or reflect on a relationship between people and trace connections. (Bugapeh, 2011)

Researchers including Bryman 1998 cited in Bugapeh (2011) used a similar approach when they studied British visitors to Disney theme park (Bryman and Bell, 2003). Similar research studies by the Chartered Institute of Building – UK used a non-probability approach to study corruption in the UK construction industry in 2006 which yielded high response rate. Identification of the research population then enabled the selection of the most appropriate data to collect for the research study.

Individual staff of the road agencies (GHA, DFR and DUR) including staff of other stakeholder organisations,and individuals who have working experience in the road sector within the Tamale metropolis were selected for the study. The logic for selecting these groups of people was based on the fact that, they have ample information on happenings within the road sector including exposure to procurement problems, challenges and practices in the road sector, since most some of them work in committees with the political leadership.

3.6 Research Instrument

Different authors define qualitative research using different terms. Clark (1991) uses the term "descriptive study"; Jorgensen (1989) "participant observation"; Yin (1984) "case study"; Kidder (1981) "naturalistic research"; Schatzman and Strauss (1973) "field study";. Wright (1995) describes qualitative research to mean any research where number counting and statistical techniques are not the central issues, where an attempt is made to get close to the collection of data in their natural setting, this she said includes but not limited to formal and informal interviewing, participant observation and case studies, content analysis, videotaping, and archival data surveys.

The Qualitative method was preferred, the aim is to have a clear understanding of the risks facing the Road construction industry and what their effects are on the quality and timely delivery of road infrastructure projects, since there are varied risks facing the road infrastructure industry and obtaining or gathering documented information about figures and numbers is really knotty therefore the perception of stakeholders will provide the best means of addressing the research problem and make realistic judgments about the risks.

Qualitative research emphasises on the way individuals perceived things and reality is inherent in the perception of individuals (Glatthorn, 1998). The qualitative approach uses words and meanings and smaller samples to build theories and is usually seen as inductive, that is reaching conclusions bases on observations and logically generalising to produce a universal claim or principle. It does not require the use of hypotheses to begin the research, unlike the quantitative approach which builds on hypotheses(Sobh, 2005). The advantage of using the qualitative method is that it provides rich data about real life situations of people and enables the researcher to make sense of individual opinions and behaviour and to understand them within their wider context.

3.5.2 Unit of Analysis

The perceptions of individual stakeholders of the Ghana Road Sector in the Northern region were gathered. This enabled the identification of the risks and challenges prevalent in the sector. The data in this case were attributes of the individuals, which were aggregated into a group score to draw conclusions about the research problem (Baker, 1988).

Tamale road sector agencies (GHA, DFR, DUR & RS), under the Ministry of Roads and Highways, like all other road ministries or roads agencies in Ghana, is the sole policy-making

body of the road sector establishment, with responsibilities for policy formulation and monitoring and evaluation of the performance of the road sector. The similar characteristics of the road sectors in Ghana suggest that carrying out a research in Tamale Road Sector will be fairly representative of Ghana.

3.7 Procedure

This questionnaire was developed to answer the research questions "What are the risks facing the Road construction industry in Tamale Metropolis and their effect on the quality and timely delivery of road infrastructure projects".

The research questions were transformed into working questionnaires with the aim to answer the research question. (Blair, 2005).

Questionnaires were developed from literature review and website search of other surveys. Twenty-one (21) possible questions were developed under the following survey question headings/topics. -

Demography of respondents: five questions were constructed; the questions were related gender, age, name of organisation, years of experience with organisation, and professional background, however, these were dropped from the final list of questions posted to respondent, since gender, age and experience of respondents were found to be of less significance, upon assessing the variables list against the general plan for data analysis

***Respondents perception towards public procurement practices*:** three questions were developed under this sub-heading, the questions required respondents to specify the existence of corruption and political influence in the award of infrastructure projects, these three questions were imperative to answer the research objectives.

Factors influencing risk in road infrastructure projects procurement: one question was developed under this sub-heading, this question demanded respondents to rank factors that influence risk in road infrastructure projects procurement.

Effects of risks in road infrastructure projects procurement: there were three questions under this sub-heading; respondents were required to indicate which perceived effect actually affects projects performance in terms of completion time and quality. These factors were derived from literature review.

Delay in payment and its effects on roads infrastructure projects: three questions were developed under this sub-heading, and respondents were required to rank factors that lead to the delay in payment of ***road infrastructure projects*** and indicate the effects it has on road infrastructure project performance. It was viewed that any of these has the potential to significantly affect the outcome of road project delivery.

In all, ten (10) questions were emailed to potential participants through online survey questionnaire (survey monkey). The use of an on-line survey allowed participants to provide frank responses, ensured confidentiality and creates an environment in which they were free and comfortable to answer the questions within their private time without necessarily interfering with their busy schedule. It also reduced substantially the time that will be required to compile and analyse the survey data.

Those contacted were made aware that their individual answers would remain anonymous and, would be deleted after the study. Participants in the survey comprised of engineers, quantity surveyors, surveyors, technician engineers, administrators, planner etc.

3.8 Ethical Issues

Respondents were made aware that their individual answers would remain anonymous and, would be deleted after the study. Again, the questions posted to respondents did not include gender, age and experience, respondents' identity was concealed. Even though the questionnaires were answered and submitted on-line, the surveymonkey software makes it impossible for respondents' identity to be known since the software only accepts the responses for analysis.

3.9 Data Analysis

Data analysis involves performing related activities with the ultimate reason of storing and summarising the collected data and organising them in a way to answer the research problem or question.

This research study used a qualitative data analysis approach to analyse the data collected from the online survey. Descriptive approach was used to analyse the data so as to gain a broad overview of the results and to give an idea of what is happening.

Ghauri and Gronhaug (1995) propose that the most important ingredient in qualitative research is to understand and gain insight into occurrence and added that interpretation of the occurrence plays a major role especially in qualitative research because it is required to understand the problem under study.

SurveyMonkey software was used in the analysis of the data collected in this research as the researcher considered it the most appropriate given its versatility and considering the nature of the data collected. The data is presented in chart and tabular form. The risk and its effect with the highest percentage from the others is aggregated and interpreted as the most prevalent risk in road infrastructure projects. Similarly, the effects of the risks on road infrastructure projects are also ranked and aggregated. The correlation between the risks and their effects in road infrastructure projects delivery were also established.

Chapter 4
Presentation and Analysis of Results

4.1 Introduction

This chapter reports on data obtained from the research survey. The study reported here examines the risks in road infrastructure project procurement. The chapter is organised in relation to the three objectives set out in chapter one to answer the research question. First, it presents the results obtained from the survey. These includes the following sections, 1), factors that motivate political Influence, 2) Effects of the political influence, 3) factors that cause late payment, 4) effects of late payment. It then discusses the findings from the research survey to identify the risks in road infrastructure projects procurement and their respective effects on road infrastructural delivery. On the whole, ten questions were developed, to elicit information from project stakeholders. The results are presented in the form of tables and charts to describe features of the data in the study. See appendix 3 for results analysed in the Survey Monkey software.

4.2 Response Rate

A total of 45 online questionnaires were posted to email addresses of individuals from the Ghana Highway Authority, the Department of Urban roads, the Department of Feeder Roads, contractors, consultants and the works department of Tamale Metropolitan Assembly. Out of the 45 questionnaires sent, 30 respondents completed and returned the questionnaire. This represents a response rate of 67%, which is above average. According to Naoum (2007), an acceptable survey for studies should have a response rate of 50% and above. One can then confidently argue that the response rate of 67% for this research is therefore acceptable. Table 4.1 below shows detailed response rate.

Table 4.1: Response Rate

No. of questionnaires sent	No. of questionnaires submitted	Response rate
45	30	66.7

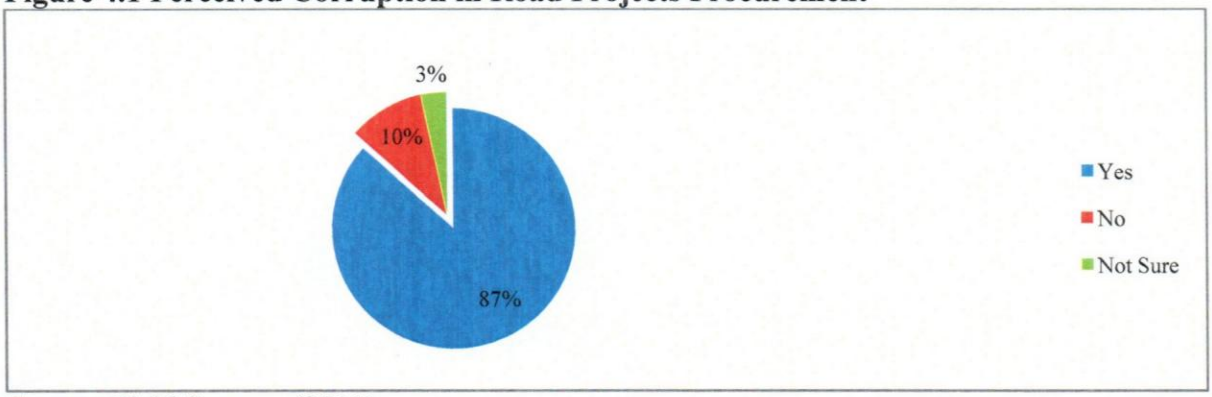
Source: Field Survey (2011)

4.3 Corruption in Road Infrastructure Project Procurement

Out of 30 respondents who were asked to indicate whether they think that corruption is a problem in road infrastructure projects procurement, the response show that 86.7% agreed,

3.3% were not sure and 10% disagreed. The results also show a very high level of awareness of corruption in road infrastructure projects procurement. Refer to appendix for result from survey monkey software.

Figure 4.1 Perceived Corruption in Road Projects Procurement

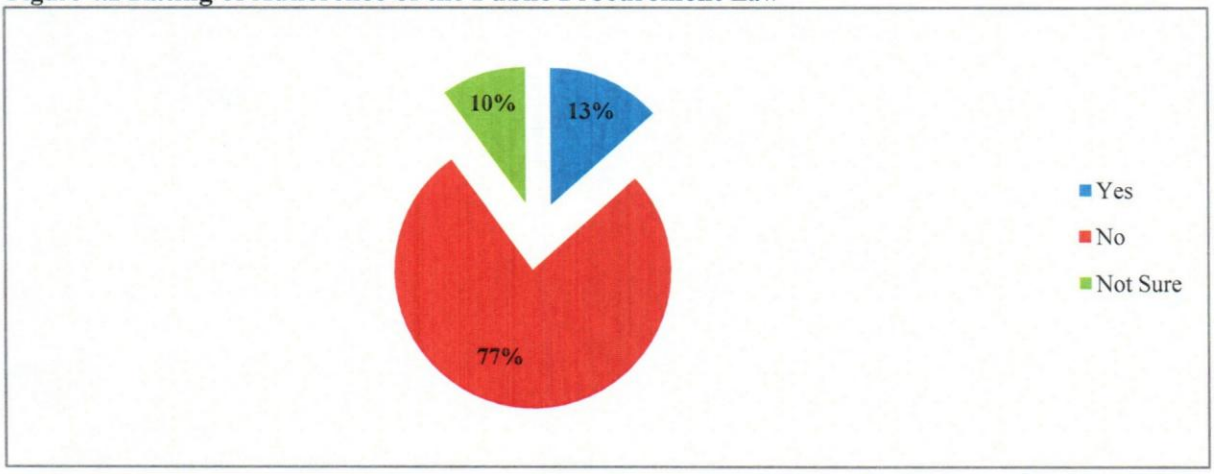


Source: Field Survey, (2011)

4.4 Adherence to Public Procurement Law in Road Infrastructure

Respondents were asked to state the compliance of the procurement law in road infrastructure. The results show that 13.3% of respondents agreed that the public procurement law is strictly adhered to in road infrastructure projects procurement in Ghana, 76.7% thought it was not adhered to and 10% were not sure. There is a general believe from the results that the public procurement law is not strictly adhered to in road infrastructure projects procurement in Ghana. Refer to appendix for result from surveymonkey software.

Figure 4.2 Rating of Adherence of the Public Procurement Law



Source: Field Survey, (2011)

4.5 Political interference in road infrastructure project Procurement, causes and effects.

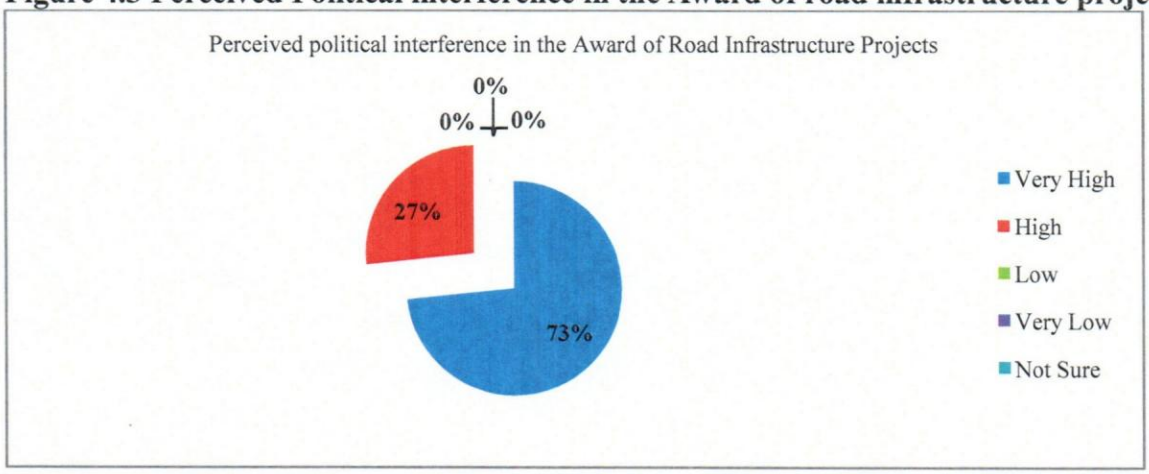
Respondents' views of Political interference in the award of Road Infrastructure Projects were sought and further asked to either rank or rate how the Political interference affects road infrastructural Projects Quality and Timely delivery using a rating scale of 1-5, in ascending order.

4.5.1 Perception of political influence in the Award of contracts

When respondents' were asked to rate their perception of political interference in the award of Road Infrastructure Projects, the results showed that 73% respondents agreed that political interference was very high in the sector, 27% thought it was high and none thought it was Low, Very low or Not sure. Overall, 100% of respondents agreed that political interference was a problem in the award of Road Infrastructure Projects in Ghana and none disagreed. This result also shows a Very high level of awareness of political interference in the award of Road Infrastructure Projects. Refer to appendix for result from surveymonkey software.

Figure 4.3 below show details of respondents' perception regarding Political interference in the award of Road Infrastructure Projects.

Figure 4.3 Perceived Political interference in the Award of road infrastructure project



Source: Field Survey (2011)

4.5.2 Factors accounting for political interference in the award of contacts.

The factors include Political leaders on the procurement Board, lack of transparency/accountability, Excessive power by the politician and Lack of enforcement of regulations.

Respondents were asked to rank these factors in ascending order based on a scale ranging from 1-4, with 4 being the highest rating of 4 points, and the lowest rating of 1. The results were analysed using the SurveyMonkey software and presented as "Average Ratings". They were subsequently converted into percentages, ranked and present in tabular format.

The results showed that factors accounting for political interference in the award of contacts;Politicians on procurement Board, Excessive power by the politician, lack of transparency/accountability and Lack of enforcement of regulations account for about 23.7%, 24.9%, 24.5% and 26.9% respectively. Refer to appendix for result from surveymonkey software.

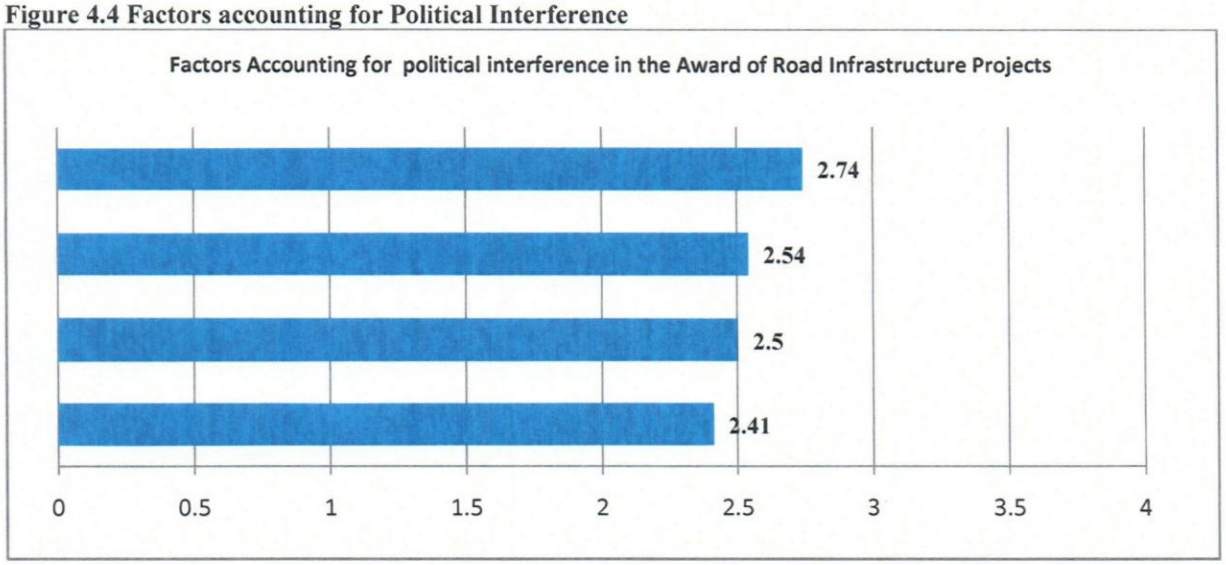
Table 4.2 and Figure 4.4 show details of respondents' perceptions regarding Factors Accounting for Political Interference in road infrastructural projects procurement.

Table 4.2 Factors accounting for Political Interference

Item	Factors	Rating Average (Surveymonkey) software	Rating (%)	Ranking	No of Respondents
1	Political leaders on the procurement Board	2.41	23.7	4th	22
2	Lack of transparency/Accountability	2.50	24.5	3rd	22
3	Excessive power by the politician	2.54	24.9	2nd	24
4	Lack of enforcement of regulations	2.74	26.9	1st	25
	Total	**10.19**			

Source: Field Survey, (2011)

Figure 4.4 Factors accounting for Political Interference



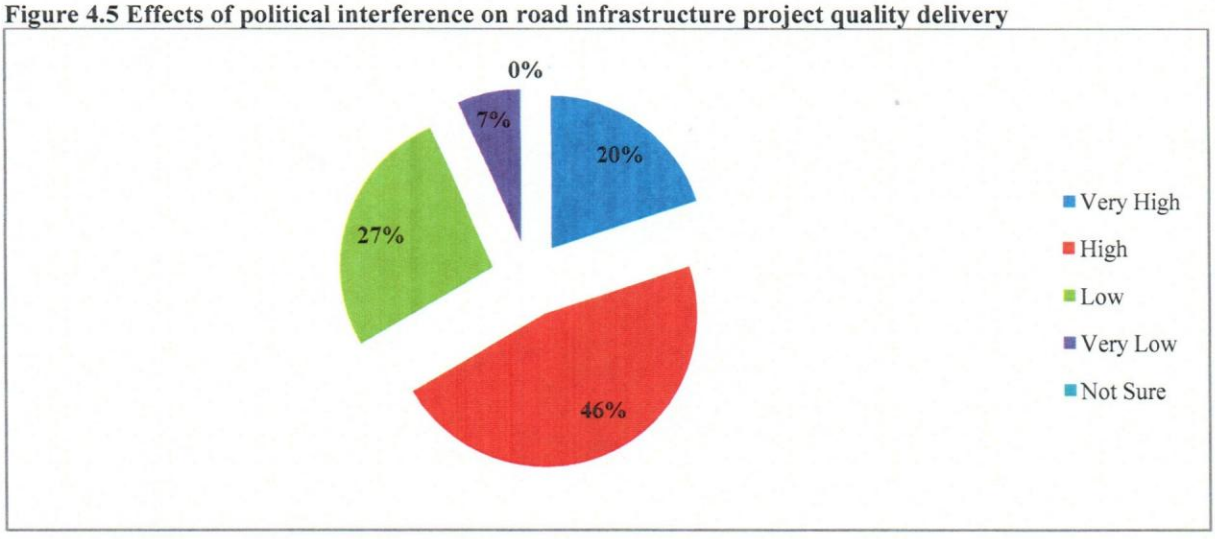
Source: Field Survey, (2011)

4.5.3 Effects of political interference in the award of contacts on project quality delivery.

To establish respondents' perception about the effects (Negative) Political interference in the award of Road Infrastructure Projects in Ghana on Road Infrastructure Projects quality delivery, respondents were asked to rate the effects of political interference in the award of Road Infrastructure Projects on project quality delivery. The results show that 20% of respondents agreed that the effects was very high on projects quality delivery, 46.7% thought the effects was high, 26.7% thought the effects was Low, 6.7% thought the effects was very Low and none Not sure. On the whole, 100% of respondents agreed that political interference have negative effects on Road Infrastructure Projects quality delivery in Ghana and none disagreed. This result also confirms high effects on Road Infrastructure Projects quality delivery. Refer to appendix 3 for result from surveymonkey software.

Figure 4.5 shows details of the results.

Figure 4.5 Effects of political interference on road infrastructure project quality delivery

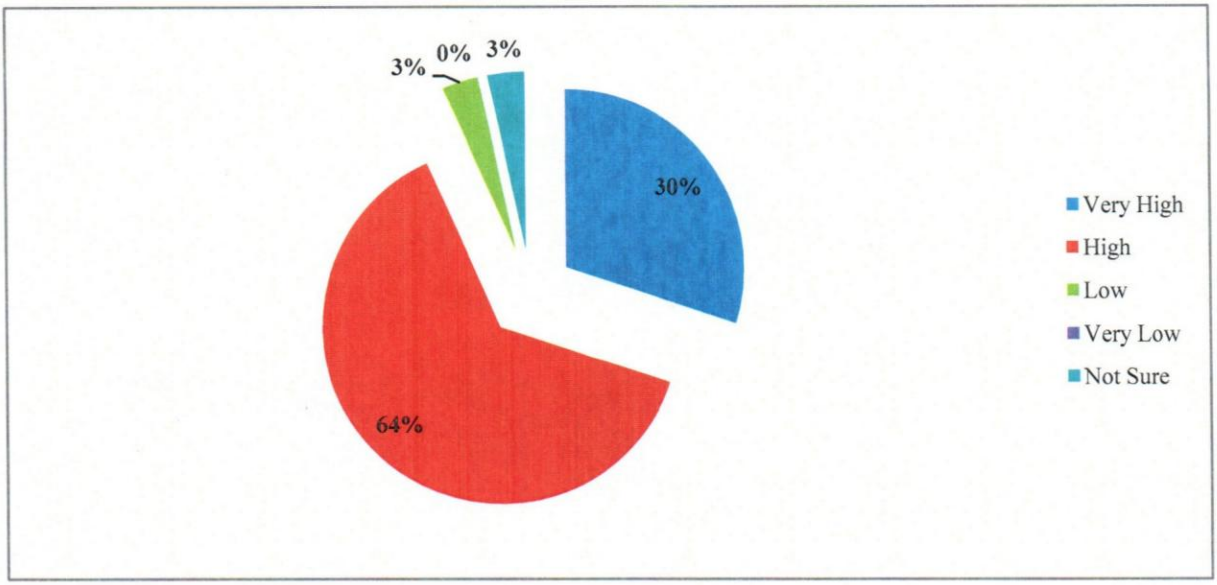


Source: Field Survey, (2011)

4.5.4 Effects of political interference in the award of contracts on project timely delivery.

Respondents' perception about the effects (Negative) of political interference in the award of Road Infrastructure Projects in Ghana on Road Infrastructure Projects timely delivery was sought. Respondents were asked to rate the effects of political interference in the award of Road Infrastructure Projects on project timely delivery. The results show that 30% respondents agreed that the effects was very high on projects quality delivery, 64% thought the effects was high, 3% thought the effects was Low, none thought the effects was very Low and 3% Not sure. Generally, 94% of respondents agreed that political interference have negative effects on Road Infrastructure Projects timely delivery in Ghana and none disagreed. This result also confirms high effects on of Road Infrastructure Projects timely delivery. Refer to appendix 3 for result from surveymonkey software.Figure 4.6 shows details of the results.

Figure 4.6 Effects of political interference in the award of contacts on project timely delivery



Source: Field Survey, (2011)

4.5.5 Effects of political interference in the award of contacts on project triple constraints.

There exist a relationship between perceived Political Interference in road infrastructure projects procurement and its possible effects on road infrastructure projects delivery were determined.

The possible effects or risks it possess to road infrastructure projects delivery include Poor Quality of Work, Undue Project delay, Project Abandonment, Minimal control by Supervisors and High cost of work.

Respondents were asked to rank how political interference in the award of contracts affects the factors above in ascending order based on a scale ranging from 1-5, with 5 being the highest rating of 5 points, and the lowest rating of 1. The results were analysed using the SurveyMonkey software and presented as "Average Ratings". They were subsequently converted into percentages, ranked and present in tabular format.

The results show that risk factors that could lead to poor quality of work (Minimal control by Supervisors and Poor Quality Work) account for 41.2%, and risk of project delay (Undue Project delay and Project Abandonment) also account for 38.8% whilst risk factors that could

lead to high cost of project (High cost of work) account for 19.9%, with the risk of poor quality project delivery coming first followed by Minimal control by project Supervisors and project delay in that order. Refer to appendix 3 for result from surveymonkey software.

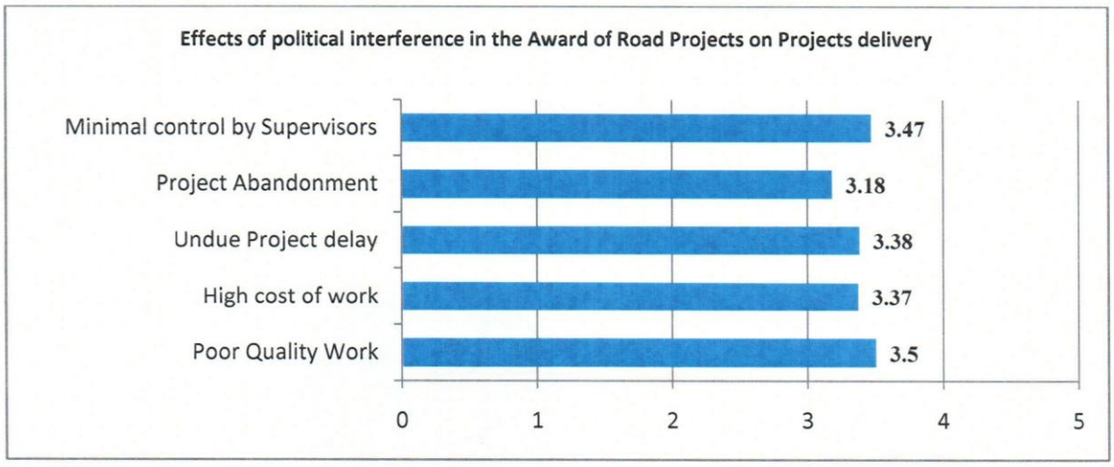
Table 4.3 and Figure 4.7 show details of respondents' perceptions regarding the perceived Political Interference in road infrastructural projects procurement and its effects on project

Table4.3: Effects of Political Interference on project delivery.

Item	Factors	Rating Average (Surveymonkey) software	Rating (%)	Ranking	No. of Respondents
1	Poor Quality Work	3.50	20.7	1st	30
2	Undue Project delay	3.38	20.0	3rd	30
3	Project Abandonment	3.18	18.8	5th	29
4	Minimal control by Supervisors	3.47	20.5	2nd	30
5	High cost of work	3.37	19.9	4th	30
	Total	**16.90**			

Source: Field Survey, (2011)

Figure 4.7Effects of political interference in the Award of Road Projects on Projects delivery



Source: Field Survey, (2011)

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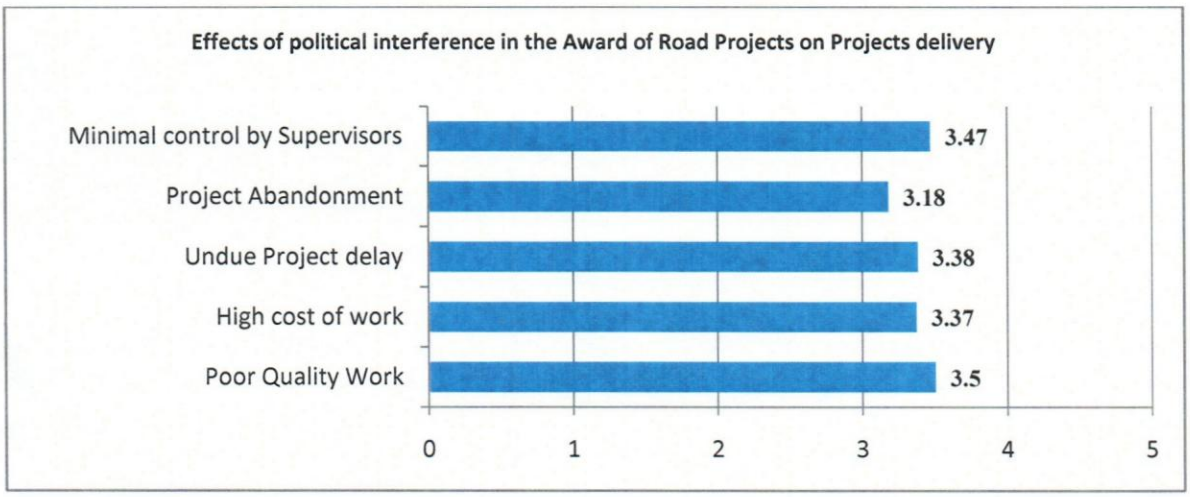


Source: Field Survey, (2011)

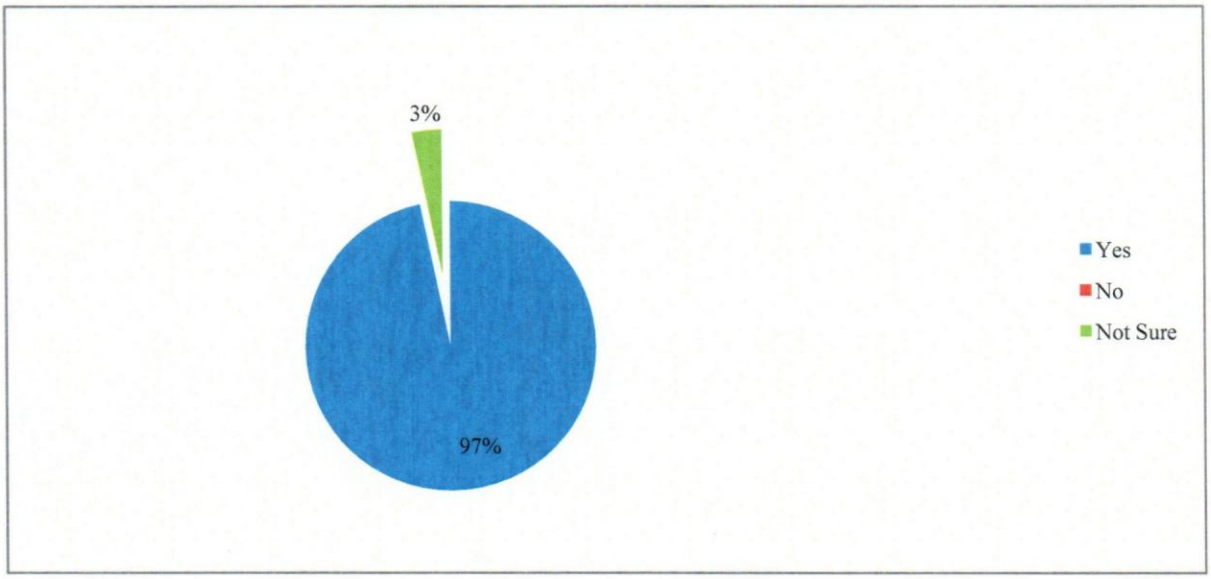
4.6 Delay in payment of road contracts by the GRF, causes and effects.

Respondents' perception of delay in payment of road projects by the Ghana Road Fund were sought and respondent were further asked to rank the possible factors causing the payment delay by the Ghana road Fund and how it affects road infrastructural Projects Quality and Timely delivery using a rating scale of 1-5, in ascending order.

4.6.1 Perception of delay in payment of road projects by GRF.

The perception of delay in payment of road projects by the Ghana Road Fund was investigated. Respondents were asked to indicate whether the assertion of delay in payment of road projects by the Ghana Road Fund was true. The response shows that 97% agreed, 3.3% were not sure and none disagreed. This result demonstrates a very high level of awareness of delay in payment of road projects by the Ghana Road Fund Refer to appendix 3 for result from surveymonkey software.

Figure 4.8: perception of delay payment by GRF



Source: Field Survey, (2011)

4.6.2 Causes of delay in payment of road projects by GRF.

The possible causes of the delay in payment by the Ghana Road Fund include, Inadequate funds by GRF, Road Agencies overspending their Budgets, Delay in the preparation of payment certificates and Submission of wrong account details.

Respondents were asked to rank the causes of the delay in payment by the Ghana Road Fund in ascending order based on a scale ranging from 1-5, with 5 being the highest rating of points, and the lowest rating of 1. The results were analysed using the SurveyMonkey software and presented as "Average Ratings". They were consequently converted into percentages, ranked and present in tabular format.

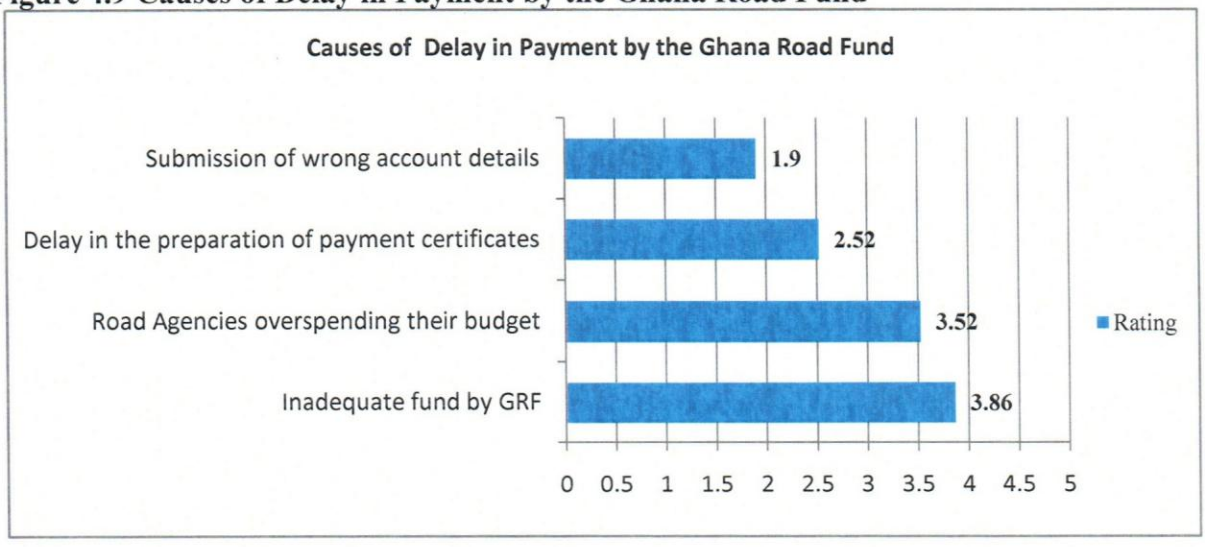
The result show that, Inadequate fundsin the GRF contributes most to the delay in payment to contractors and accounts for 32.7%, followed by Road Agencies overspending their Budgets (29.8%), whilst delay in the preparation of payment was third with 21.4% and "Submission of wrong account details" having the least effect on payment with 16.1 percentage points. Refer to appendix 3 for result from surveymonkey software.

Table 4.4 Causes of delay payment by GRF

Item	Cause of Delay	Rating Average (SurveyMonkey software)	Rating (%)	Ranking	No. of Respondents
1	Inadequate fund by GRF	3.86	32.7	1st	28
2	Road Agencies overspending their budget	3.52	29.8	2nd	29
3	Delay in the preparation of payment certificates	2.52	21.4	3rd	29
4	Submission of wrong account details	1.9	16.1	4th	29
	Total	**11.8**			

Source: Field Survey, (2011)

Figure 4.9 Causes of Delay in Payment by the Ghana Road Fund



Source: Field Survey, (2011)

4.6.3 Effects of delay in payment of road projects by GRF.

The possible risks, delay in Payment by the Ghana Road Fund possess to road infrastructure projects delivery include; Poor Quality of Work, Undue Project delay, Project Abandonment, Minimal control by Supervisors and High cost of work.

Respondents were asked to rank how delay in Payment by the Ghana Road affects the factors above in ascending order based on a scale ranging from 1-5, with 5 being the highest rating of points, and the lowest rating is 1. The results were analysed using the SurveyMonkey software and presented as "Average Ratings". They were afterwards converted into percentages, graded and present in tabular format.

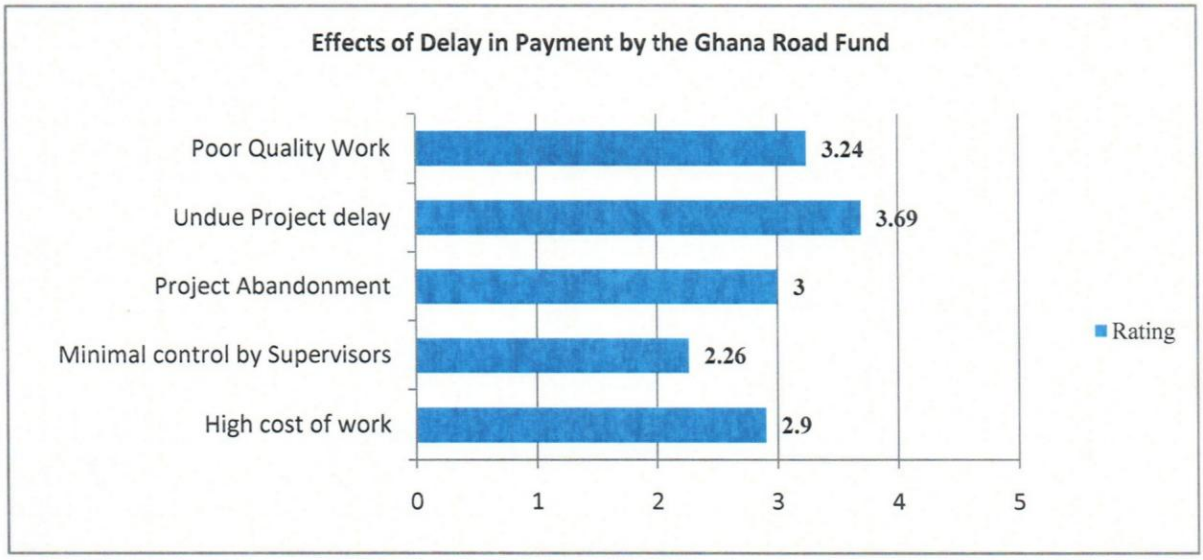
The results show that risks factors that could affect project quality delivery (Minimal control by Supervisors and Poor Quality of Work) accounted for 36.5%, and risk factors that could affect project's early completion (Undue Project delay and Project Abandonment) also accounted for 44.4% whilst risk factors that could lead to high cost of project (High cost of work) accounted for 19.2%. The results also show a high level of risk for delay in project completion time with the tendency of project cost increasing more than average. Refer to appendix 3 for result from surveymonkey software.

Table 4.5 :Effects of Payment Delay

Item	Risk Factors	Rating Average (Surveymonkey) software	Rating (%)	Ranking	No. of Respondents
1	Poor Quality Work	3.24	21.5	2nd	30
2	Undue Project delay	3.69	24.5	1st	30
3	Project Abandonment	3.00	19.9	3rd	29
4	Minimal control by Supervisors	2.26	15.0	5th	30
5	High cost of work	2.90	19.2	4th	30
	Total	**15.09**			

Source: Field Survey, (2011)

Figure 4.10: Effects of Payment Delay.



Source: Field Survey, (2011)

4.7 Summary of Financial Risk (Payment Delay)

The research shows a very high perception of delay in payment by the Ghana Road Fund in Ghana with 97 percentage points confirmation rating.

The study also indicate amongst other factors that inadequate Funds by the Ghana Road Fund and the Road agencies (GHA, DFR and DUR) overspending their Budget as the top two factors accounting for the delay in payment of road infrastructural projects by the Ghana Road Fund (GRF).

The study point out that projects most likely suffer delay as a result of delay in payment of certified works by the Ghana Road Fund (GRF), since contractors will not have adequate funds to complete the works on time, followed by poor quality of work. The results also indicate delay in payment of certified works could affect the Quality of the work and delay the project's completion time.

The findings affirm the assertion by (Baffour, 2011),that "selected contractors do not in many cases have the resources (financial, equipment, experience and personnel) to undertake the said road works, leading to poor quality work and undue delay of projects. Roads that are supposed to last for fifteen years start deteriorating after two years in Ghana."

4.8 Analysis of Results

This section discusses the results from the research study, which intend to investigate the risks of political influence in road infrastructure project procurement, the risks of delay in payment of road infrastructure projects by the Ghana Road Fund and appraise their effects on road infrastructure projects delivery in Ghana.

The survey shows that respondents were convinced that corruption is a major problem and is widespread in the road infrastructure projects procurement (see figure 4.1 and 4.2). These findings confirm research studies by Transparency International and the American Society for Civil Engineers' survey on perceptions of corruption in the industrial sector (Kenny, 2009, shabbir and Anwar, 2008). It is also consistent withMensah et al.(2003) survey on corruption in Ghanaian economy.

The research also shows a very high level of awareness of the perception of political interference in the award of road infrastructure projects and indicated amidst other factors

that lack of enforcement of regulations and/or laws and Excessive powers granted the politicians as the top two factors accounting for the political interference or influence in the award of road infrastructural projects in Ghana.

A summative rating of the negative effects of political interferenceshows, project quality delivery as the most likely affected by the political interference or influence in the award of road infrastructural projects, followed by project delay. The results also show that, where political interference is involved, Project supervisors could have part of their authority on the project usurped and the project cost is most likely to be higher.

The findings affirm assertion by (Baffour, 2011),that "selected contractors do not in many cases have the resources (financial, equipment, experience and personnel) to undertake the said road works, leading to poor quality work and undue delay of projects, Roads that are supposed to last for fifteen years start deteriorating after two years in Ghana."

Respondent show a very high perception of delay in payment by the Ghana Road Fund with 97 percentage points approval rating.

Results in this research suggest that projects most likely suffer delay as a result of delay in payment of certified works by the Ghana Road Fund (GRF), since contractors will not have continuous cash flow to complete the works on time, followed by poor quality of work. The results also indicate delay in payment of certified works could affect the Quality of the work done and delay the project's completion time, thus delay in payment affects the project triple constraints (time, quality and cost).

Respondent indicated amongst other factors that inadequate Funds by the Ghana Road Fund and the Road agencies (GHA, DFR and DUR) overspending their Budget as the top two factors accounting for the delay in payment of road infrastructural projects by the Ghana Road Fund (GRF).

Overall, respondents see close correlations between political interference or influence in the award of road infrastructural projects and project quality delivery, they also saw a close connection between the delay in payment of certified works by the Ghana Road Fund (GRF) and Quality of the work done and project completion time delay.

CHAPTER 5
SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter presents an overall summary of the entire research finding in each chapter and how the study aims and objectives set-out were achieved. This section also presents limitations inherent in the research project, recommendations and suggestions for further research.

5.1 Summary

The main objectives of this research study was to investigate the risks associated with road construction industry and determine the effects these risk have on the road construction projects delivery in the Tamale metropolis.

The research aimed at furnishing the governments, donor agencies and other project stakeholders on the risks and their effects on road infrastructure projects delivery. The research problem was investigated using three objectives.

The review of existing literature revealed empirical evidence of risks in the road infrastructure projects delivery. It also shows that, road infrastructure plays an essential role in the quest to alleviate poverty and achieve sustainable economic growth for development and socially augment the interaction necessary for the maintenance of the Ghanaian culture and family system. These risks could impede road project delivery. It was obvious from the literature review that, these risks significantly affects road projects delivery in Ghana, contributing to the high road infrastructure deficit in the sub-Saharan Africa including Ghana, this accordingly impede per capita economic growth and reduce productivity.

The study has shown that the process leading to the selection of contractors during project procurement and the delay in payment of road projects by the Ghana Roads Fund (GRF) account for high level of risk and have significant impact on projects outcome.

A qualitative research approach, using online survey questionnaire (surveymonkey) with closed ended questions were used to study the research problem. Ten questions were posted to Forty-five people comprising staff from three road agencies and other organisations with

interest in procurement issues in the Northern Region of Ghana, particularly Tamale metropolis, and thirty responded.

The findings from the survey indicate that, political interference in the award of road infrastructure projects and the delay in payment of works done by the Ghana Road Fund are major risks factors bedeviling the road construction projects procurement and project delivery. Major factors, which account for political interference, in the award of road infrastructure projects, include but not limited to: lack of enforcement of procurement regulations and/or laws; Excessive powers granted the politicians; Lack of transparency/accountability as the top three factors accounting for the political interference or influence in the award of road infrastructural projects in Ghana. Similarly, Inadequate funds in the GRF, Road Agencies overspending, Delay in the preparation of payment certificates are the top three factors accounting for the delay in payment of road projects by the Ghana Road Fund.

The conclusion of the survey suggests two major risk factors:

1), political interference in the award of road infrastructure projects with 73% approval rating by respondents, It was also deduced from the findings that Lack of enforcement of regulations and Excessive power by the politician, greatly influenced the political interference in the award of road infrastructure projects. 2), Delay in the payment of works done to contractors by the Ghana Road Fund with 97% approval rating by respondents. It was also deduced from the findings that inadequate funds in the GRF and Road Agencies overspending theirbudgetaryallocations, significantly influenced the Delay in payment of works done.

The conclusion of the survey suggests three major effects of the risks discussed above 1), poor quality of works, 2), undue project delay and 3), Minimal control by Supervisors. The study indicates that projects triple constraint (Cost, time and Quality) is most affected.Thetriple constraint are factors known to work in tandem, hence any factor that affects one also affects the rest.

5.2 Conclusion

Conclusion of the research study showed that corruption is a major problem and widespread in the road infrastructure projects procurement.

The research also shows a very high level (97%) of political interference in the award of road infrastructure projects and indicated amidst other factors that lack of enforcement of regulations and/or laws and excessive powers granted the politicians as the top two factors accounting for the political interference or influence in the award of road infrastructural projects in Ghana.

A summative rating of the negative effects of political interference in the award of road infrastructural projects shows project quality delivery as the most likely affected, followed by project delay. The results also show that, where political interference is involved, Project supervisors could have part of their authority on the project usurped and the project cost is most likely to be higher.

The study also affirms delay in payment by the Ghana Road Fund as a major risk factor in the delivery of road infrastructure in Tamale.Projects most likely suffer delay as a result of delay in payment of certified works by the Ghana Road Fund, since contractors do not get continuous cash flow to complete the works on time, followed by poor quality of work. The results also indicate that the delay in payment of certified works could also affect the Quality of the work done and delay the project's completion time, thus delay in payment affects the project triple constraints (time, quality and cost).

Another significant finding of the study is the inadequate Funds by the Ghana Road Fund to meet road infrastructure maintenance requirement, which is worsenedby the Road sector Agencies (GHA, DFR and DUR) overspending their Budget, thus stressing the GRF the more.

Overall, the research saw close correlations between political interference or influence in the award of road infrastructural projects and project quality delivery and between the delay in payment of certified works by the GRF and Quality of the work done and project scheduled completion time (duration).

5.3 Recommendations

Procurement agencies, funders and major stakeholders need to agitate for increased transparency and good corporate governance in the road construction sector. It is also necessary for project stakeholders and especially clients to be aware of the various elements and activities that affect the project quality delivery as well as timely delivery.

The road agencies and all other project stakeholders in the construction industry and the road sector in particular, should strive to undertake projects with the aim of achieving the required outcome and meeting the needs and expectations of both the communities in which the projects are being carried out and the wider public.

To attain these goals, firstly, the politician should ensure that Project procurement processes are strictly adhered to by the procurement authorities to in all processes, and should aim to meet all statutory and contractual obligations, especially on issues related to the selection of competent and qualified contractors for effective implementation of projects, officials should also ensure transparency and free flow of information to all project stakeholders and to the public.

All the road agencies (GHA, DFR and DUR) should strictly spend within their approved budget and ensure the appropriate clearance or approval is sought before committing projects outside the approved budgets to reduce the pressure on the Ghana Roads Fund.

The Ministry of Roads and Highways, should also consider alternative funding source for the Ghana Road Fund to increase the revenue base of the fund to enable it meet the increasing road maintenance demand

Training and other carrier development strategies should be seen as a way of improving professional integrity and making staff aware of the risks and their consequences in the sector. This should be directed not only at staff in the road sector, but to other essential players in the industry.

Further research in academic and research institutions should be carried out in the other ten regions of Ghana to examine the risk in road construction project and its effect on projects.

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APPENDIX 1

Survey Questionnaire

1. Do you think corruption is a problem in road infrastructure projects procurement?

- Yes ☐
- No ☐
- Not sure ☐

2. Do you think the public procurement law is strictly adhered to in road infrastructure projects procurement in Ghana?

- Yes ☐
- No ☐
- Not sure ☐

3. How would you rate the perception of Political interference in the award of Road Infrastructure projects

- Very High ☐
- High ☐
- Low ☐
- Very Low ☐
- Not Sure ☐

4. What do you think accounts for the perceived Political interference in the award of contracts in the road sector;

	1	2	3	4	N/A
Political leaders on the procurement Board	☐	☐	☐	☐☐	
Lack of transparency/Accountability	☐	☐	☐	☐☐	
Excessive power by the politician	☐	☐	☐	☐☐	
Lack of enforcement of regulations	☐	☐	☐☐☐		

5. Please in accordance to your perception regarding this interference on road projects procurement, how will you rate it effects on project quality delivery

Very High ☐

High ☐

Low ☐

Very Low ☐

Not Sure ☐

6. Please how does the choice of a contractor **affects** the timely delivery of the project works

- Very High ☐
- High ☐
- Low ☐
- Very Low ☐
- Not Sure ☐

7. Rank how political interference in the award of contracts affects the following (5 being the highest score)

	1	2	3	4	5
Poor Quality Work	☐	☐	☐	☐	☐
Undue project delay	☐	☐	☐	☐	☐
Project Abandonment	☐	☐	☐	☐	☐
Minimal control by Supervisors	☐	☐	☐	☐	☐
High Cost of work	☐	☐	☐	☐	☐

Other (please specify) ☐

8. There is a general perception of delay in payment of road projects by the Ghana Road Fund; in your assertion is this perception true

- Yes ☐
- No ☐
- Not sure ☐

9. If your answer in above question is "Yes", then please rank the following in accordance to your perception regarding the causes of the delay in payment (5 being the highest score)

	1	**2**	**3**	**4**	**5**
Inadequate fund by GRF	☐	☐	☐	☐	☐
Road Agencies overspending their Budgets	☐	☐	☐	☐	☐
Delay in the preparation of payment certificates	☐	☐	☐	☐	☐
Submission of wrong account details	☐	☐	☐	☐	☐

10. Please Rank the following regarding project delivery in your perception, where delay in payment is more likely to influence

	1	2	3	4	5	N/A
Poor Quality Work	☐	☐	☐	☐	☐	☐
Undue project delay	☐	☐	☐	☐	☐	☐
Project Abandonment	☐	☐	☐	☐	☐	☐
Minimal control by Supervisors	☐	☐	☐	☐	☐	☐
High Cost of work	☐	☐	☐	☐	☐	☐

Other (please specify) ☐

APPENDIX 2

Q1 Edit Question ▼ Add Question Logic Move Copy Delete

1. Do you think corruption is a problem in road infrastructure projects procurement?

- ○ Yes
- ○ No
- ○ Not Sure

Q2 Edit Question ▼ Add Question Logic Move Copy Delete

2. Do you think the public procurement law is strictly adhered to in road infrastructure projects procurement in Ghana?

- ○ Yes
- ○ No
- ○ Not Sure

Q3 Edit Question ▼ Add Question Logic Move Copy Delete

3. How would you rate the perception of Political interference in the award of Road Infrastructure projects

- ○ Very High
- ○ High
- ○ Low
- ○ Very Low
- ○ Not Sure

Q4 Edit Question ▼ Move Copy Delete

*** 4. What do you think accounts for the perceived Political interference in the award of contracts in the road sector;**

	1	2	3	4	N/A
Political leaders on the procurement Board	○	○	○	○	○
Lack of transparency/Accountability	○	○	○	○	○
Excessive power by the politician	○	○	○	○	○
Lack of enforcement of regulations	○	○	○	○	○

Other (please specify)

Q5 Edit Question ▼ Add Question Logic Move Copy Delete

5. Please in accordance to your perception regarding this interference on road projects, how will you rate it effects on project quality delivery

- ○ Very High
- ○ High
- ○ Low
- ○ Very Low
- ○ Not Sure

Q6 Edit Question ▼ Add Question Logic Move Copy Delete

6. Please how does the choice of a contractor affects the timely delivery of the project

- ○ Very High
- ○ High
- ○ Low
- ○ Very Low
- ○ Not Sure

Q7 Edit Question ▼ Move Copy Delete

***7. Rank how political interference in the award of contracts affects the following(5 being the highest score)**

	1	2	3	4	5	N/A
Poor Quality Work	○	○	○	○	○	○
Undue project delay	○	○	○	○	○	○
Project Abandonment	○	○	○	○	○	○
Minimal control by Supervisors	○	○	○	○	○	○
High Cost of work	○	○	○	○	○	○

Other (please specify)

Q8 Edit Question ▼ Add Question Logic Move Copy Delete

8. There is a general perception of delay in payment of road projects by the Ghana Road Fund; in your assertion is this perception true

- ○ Yes
- ○ No
- ○ Not Sure

Q9 Edit Question ▼ Move Copy Delete

***9. If your answer in above question is "Yes", then please rank the following in accordance to your perception regarding the causes of the delay in payment (5 being the highest score)**

	1	2	3	4	5
Inadequate fund by GRF	○	○	○	○	○
Road Agencies overspending their Budgets	○	○	○	○	○
Delay in the preparation of payment certificates	○	○	○	○	○
Submission of wrong account details	○	○	○	○	○

Q10 Edit Question ▼ Move Copy Delete

***10. Please Rank the following regarding project delivery in your perception, where delay in payment is more likely to influence**

	1	2	3	4	5	N/A
Poor Quality Work	○	○	○	○	○	○
Undue project delay	○	○	○	○	○	○
Project Abandonment	○	○	○	○	○	○
Minimal control by Supervisors	○	○	○	○	○	○
High Cost of work	○	○	○	○	○	○

Other (please specify)

APPENDIX 3

1. Do you think corruption is a problem in road infrastructure projects procurement? Create Chart Download

	Response Percent	Response Count
Yes	86.7%	26
No	10.0%	3
Not Sure	3.3%	1
answered question		30
skipped question		0

2. Do you think the public procurement law is strictly adhered to in road infrastructure projects procurement in Ghana? Create Chart Download

	Response Percent	Response Count
Yes	13.3%	4
No	76.7%	23
Not Sure	10.0%	3
answered question		30
skipped question		0

3. How would you rate the perception of Political interference in the award of Road Infrastructure projects Create Chart Download

	Response Percent	Response Count
Very High	73.3%	22
High	26.7%	8
Low	0.0%	0
Very Low	0.0%	0
Not Sure	0.0%	0
answered question		30
skipped question		0

4. What do you think accounts for the perceived Political interference in the award of contracts in the road sector; Create Chart Download

	1	2	3	4	N/A	Rating Average	Response Count
Political leaders on the procurement Board	**27.3% (6)**	**27.3% (6)**	22.7% (5)	22.7% (5)	0.0% (0)	2.41	22
Lack of transparency/Accountability	22.7% (5)	22.7% (5)	**36.4% (8)**	18.2% (4)	0.0% (0)	2.50	22
Excessive power by the politician	29.2% (7)	20.8% (5)	16.7% (4)	**33.3% (8)**	0.0% (0)	2.54	24
Lack of enforcement of regulations	16.0% (4)	20.0% (5)	**28.0% (7)**	**28.0% (7)**	8.0% (2)	2.74	25
					Other (please specify) Show Responses		1
					answered question		**30**
					skipped question		**0**

5. Please in accordance to your perception regarding this interference on road projects, how will you rate it effects on project quality delivery Create Chart Download

	Response Percent	Response Count
Very High	20.0%	6
High	**46.7%**	**14**
Low	26.7%	8
Very Low	6.7%	2
Not Sure	0.0%	0
	answered question	**30**
	skipped question	**0**

6. Please how does the choice of a contractor affects the timely delivery of the project Create Chart Download

	Response Percent	Response Count
Very High	30.0%	9
High	63.3%	19
Low	3.3%	1
Very Low	0.0%	0
Not Sure	3.3%	1
answered question		30
skipped question		0

7. Rank how political interference in the award of contracts affects the following(5 being the highest score) Create Chart Download

	1	2	3	4	5	N/A	Rating Average	Response Count
Poor Quality Work	6.7% (2)	16.7% (5)	26.7% (8)	20.0% (6)	**30.0% (9)**	0.0% (0)	3.50	30
Undue project delay	10.0% (3)	6.7% (2)	26.7% (8)	**43.3% (13)**	10.0% (3)	3.3% (1)	3.38	30
Project Abandonment	3.4% (1)	17.2% (5)	**44.8% (13)**	20.7% (6)	10.3% (3)	3.4% (1)	3.18	29
Minimal control by Supervisors	6.7% (2)	20.0% (6)	20.0% (6)	**26.7% (8)**	**26.7% (8)**	0.0% (0)	3.47	30
High Cost of work	6.7% (2)	20.0% (6)	23.3% (7)	**30.0% (9)**	20.0% (6)	0.0% (0)	3.37	30
Other (please specify)								0
answered question								30
skipped question								0

8. There is a general perception of delay in payment of road projects by the Ghana Road Fund; in your assertion is this perception true Create Chart Download

	Response Percent	Response Count
Yes	96.7%	29
No	0.0%	0
Not Sure	3.3%	1
answered question		30
skipped question		0

9. If your answer in above question is "Yes", then please rank the following in accordance to your perception regarding the causes of the delay in payment (5 being the highest score) Create Chart Download

	1	2	3	4	5	Rating Average	Response Count
Inadequate fund by GRF	14.3% (4)	3.6% (1)	10.7% (3)	25.0% (7)	**46.4% (13)**	3.86	28
Road Agencies overspending their Budgets	3.4% (1)	17.2% (5)	20.7% (6)	**41.4% (12)**	17.2% (5)	3.52	29
Delay in the preparation of payment certificates	10.3% (3)	**41.4% (12)**	37.9% (11)	6.9% (2)	3.4% (1)	2.52	29
Submission of wrong account details	**44.8% (13)**	34.5% (10)	6.9% (2)	13.8% (4)	0.0% (0)	1.90	29
answered question							30
skipped question							0

10. Please Rank the following regarding project delivery in your perception, where delay in payment is more likely to influence Create Chart Download

	1	2	3	4	5	N/A	Rating Average	Response Count
Poor Quality Work	10.3% (3)	6.9% (2)	**48.3% (14)**	17.2% (5)	17.2% (5)	0.0% (0)	3.24	29
Undue project delay	10.3% (3)	17.2% (5)	6.9% (2)	24.1% (7)	**41.4% (12)**	0.0% (0)	3.69	29
Project Abandonment	11.1% (3)	**25.9% (7)**	**25.9% (7)**	**25.9% (7)**	11.1% (3)	0.0% (0)	3.00	27
Minimal control by Supervisors	**34.5% (10)**	31.0% (9)	10.3% (3)	3.4% (1)	13.8% (4)	6.9% (2)	2.26	29
High Cost of work	20.0% (6)	23.3% (7)	13.3% (4)	**33.3% (10)**	10.0% (3)	0.0% (0)	2.90	30
Other (please specify)								0
answered question								30
skipped question								0