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CAUSES OF CONSTRUCTION PROJECT MANAGEMENT DELAYS IN  
PUBLIC INSTITUTIONS IN GHANA:  
THE CASE OF THE SEKONDI-TAKORADI METROPOLITAN ASSEMBLY  
(STMA)

BY

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MASTER OF SCIENCE PROJECT MANAGEMENT

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**DECLARATION**

I hereby declare that this submission is my own work towards the MSc Project Management and that, to the best of my knowledge, it contains no materials 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 the text.

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## ABSTRACT

The construction industry globally suffers from various incidences which results in delay of construction projects with associated effect of increase in cost of project. The impact of construction delays is felt by all stakeholders associated with project and not the owners or beneficiaries of the project alone. Specifically, delays in construction projects affect sponsor, clients, project team members and external stakeholders and leads to such consequences as disagreement, suspicion, financial problem and claims, lawsuit, and renegotiations. Studies have shown that even though project delay is an issue that confront both private and public institutions especially in developing nations, the problem is more visible in the public sector than private sector, hence this study to investigate into delays of construction of public projects under the Sekondi-Takoradi Metropolitan Assembly (STMA). Aside the issue indicated above, another issue considered is the fact that of all the researches which have been conducted in Ghana on the subject of completion of construction project on schedule without delays, there is gap in literature when it comes to the case of construction project delivery in the Sekondi-Takoradi Metropolitan. Therefore this study seeks to examine the mechanisms that need to be put in place to ensure that the issue of construction project delays is effectively addressed with the objectives to identify the nature of delays confronting project management in the Sekondi-Takoradi Metropolitan Assembly (STMA), determine the causes of construction project delays in the Sekondi-Takoradi Metropolitan Assembly (STMA) and also probe into the critical success factors required for effective project management in the Sekondi-Takoradi Metropolitan Assembly (STMA). The study was based on the quantitative research method and focussed on the stakeholders responsible for project management in STMA as the population. The responses obtained were with the aid of questionnaires which were analysed using SPSS and presented in descriptive statistics form. Therefore, one hundred and thirty-nine (139), questionnaires were distributed while ninety-two (92) were retrieved representing a response rate of 66.19. The findings indicated that the major forms of delays in construction project management in STMA are concurrent delays. This is followed by non-excusable delays then excusable delays in order of decreasing importance. In terms of the causes of delays it the study found out that external cause of delays is the major causes of construction delays in STMA. This was followed by client related factors then contractor related factors in order of decreasing importance. In relation to the findings on the effective measures required for addressing construction delays, the study found out that in STMA has the following measures in place: effective planning and control of construction project; the use of detailed drawings for project management and also employment or engagement of qualified and experienced personnel and contractors for project execution and management. However, the organization is lagging behind when it comes to effective communication, development and implementation of standards for regulating projects, making funds available prior to the commencement of projects and risk management. It was therefore recommended that STMA should institute additional measures to improve communication among all the stakeholders involved in the management of the project under its ambit and also review its processes for decision making and implementation becomes more streamlined.

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## **DEDICATION**

I dedicate this work to God Almighty; to whom I give all credit for bringing me this far. I also dedicate this work to my family and Susan Sagde Kyorku, of blessed memory.

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

The construction industry globally suffers from various incidences which results in delay of construction projects with associated effect of increase in cost of project (Yang and Yin, 2009). The impact of construction delays is felt by all stakeholders associated with project and not the owners or beneficiaries of the project alone. Specifically, delays in construction projects affect sponsor, clients, project team members and external stakeholders and leads to such consequences as disagreement, suspicion, financial problem and claims, lawsuit, and renegotiations (Megha and Bhatt 2013).

Yang and Yin (2009) described construction delays as a complicated challenge because of the fact that they are caused by multiple factors which can be interrelated as well. The network of factors which results construction delays has made the problems of delays in construction a sensitive one that requires constant attention. Shehu *et al.* (2014) supported this assertion by indicating that delays are reoccurring incidences which affect almost all construction projects therefore effective measures must always be in place to address the issue of construction project delays.

Rashid et al (2013) indicated that several factors underline the problem of construction project delays, however they can be grouped into two as contractor related factors and stakeholder related factors. The main contractor related factor which was identified by Rashid et al (2013) was poor information and communication management while inexperience on the part of stakeholders was also

seen as one of the major stakeholder related factor which contributes to construction delays. If the factors that contribute to delays are effectively managed for construction projects to be delivered on time, it can result in various benefits to both the contractor and stakeholders. The chief among these benefits is cost savings for the clients (Rahsid *et al.* 2013).

On the part of the contractor, a successful completion of projects on time is an indication of the level of competence of the contractor. Among other things, stakeholders of project consider on-time delivery as an indicator of quality and satisfaction. Therefore contractors who are seeking to satisfy their clients and maintain relationship with for longer period must ensure that projects are completed on time (Patil *et al.* 2013).

The construction industry in Ghana is described as one of the most important contributors of the economy of the nation. The sector is responsible for 12.6% of the gross domestic product of the nation and 3% of the total number of people employed in the nation. Specifically the sector is seen as one of the most important employers of non-skilled and low-skilled work force of Ghana (Ghana Statistical Service, 2017). These statistics give the implication that an improvement in the performance of the construction sector will eventually lead to improvement in the economy and employment opportunities in the nation.

However, the performance of the construction industry in Ghana has generally been described as one that needs improvement. The sector is confronted with several challenges which are constantly derailing its efforts to improve on its performance. Frimpong et al (2013) noted that the construction industry in Ghana is suffering as a result of delayed payment for works done and delayed delivery of projects. Delayed

project delivery was described by Frimpong et al (2013) as an avoidable problem which has severe consequences on the industry therefore must be constantly avoided if the sector is to improve on its performance.

Frukar and Agyakwar-Baah (2015) stated that delays in project delivery is one of the major problems confronting the construction industry in Ghana and its implication ranges from economic to social. Frimpong and Oluwoye (2013) noted that even though the problem of delays in the Ghanaian construction industry is an issue which is visible and has been discussed at many forum, the problem still persist because of the inability of stakeholders to effectively control the forces behind these delays. This study therefore seeks to examine critical success factors that can be employed to ensure an effective construction project management in Ghana.

## **1.2 Problem statement**

The problem of construction project delays and its associated causes and effects has been researched into by several researchers the world over such as Hamzah *et al.* (2011), Dolo *et al.* (2012), with the aim of in identifying measure that can enhance timely project delivery. Even though these researches have put forth countless number of recommendations for minimizing and avoiding the problem of construction project delays, the problem still persist in the construction sector (Alnuaimi and Al Mohsin, 2013) especially in developing nations such as Ghana. This leads one to ask “why are construction project still delaying in developing nations such as Ghana?”

The studies of Gunduz *et al.* (2012) and Sheet *et al.* (2011) concluded that even though project delay is an issue that confront both private and public institutions especially in developing nations, the problem is more visible in the public sector

than private sector, hence this study to investigate into delays of construction of public projects under the Sekondi-Takoradi Metropolitan Assembly (STMA).

Aside the issue indicated above, another issue considered is the fact that of all the researches which have been conducted in Ghana on the subject of completion of construction project on schedule without delays, there is gap in literature when it comes to the case of construction project delivery in the Sekondi-Takoradi Metropolis. Various construction projects under the STMA have also encountered the problem of delays. Therefore this study seeks to examine the mechanisms that need to be put in place to ensure that the issue of construction project delays is effectively addressed.

### **1.3 Research questions**

The study seeks to address the following questions:

1. What is the nature or type of delays confronting project management in the Sekondi-Takoradi Metropolitan Assembly (STMA)?
2. What are the factors contributing construction project delays in the Sekondi-Takoradi Metropolitan Assembly (STMA)?
3. What are the critical success factors required for effective project management in the Sekondi-Takoradi Metropolitan Assembly (STMA)?

### **1.4 Aim of the study**

The aim of the study was to examine the critical success factors for construction project management in public institutions in Ghana using the case of the Sekondi-Takoradi Metropolitan Assembly (STMA).

### **1.5 Objectives**

The specific objectives are:

1. To identify the nature of delays confronting project management in the Sekondi-Takoradi Metropolitan Assembly (STMA)
2. To determine the causes of construction project delays in the Sekondi-Takoradi Metropolitan Assembly (STMA)
3. To probe into the critical success factors required for effective project management in the Sekondi-Takoradi Metropolitan Assembly (STMA)

### **1.6 Justification of the study**

As indicated above, even though the problem of delays in delivery of construction project management has been discussed and researched into by many authors, the problem still persist. This study therefore will make available information that will assist various policy making in Ghana to develop and implement effective measures that will help address the problem on a long term basis.

Specifically in STMA, this study will make available empirical evidence that can be used by the Assembly to address the issues of project delays that have existed in the Assembly.

Finally it will contribute knowledge to academia.

### **1.7 Scope**

The study focused on construction project delays in the Sekondi-Takoradi Metropolitan Assembly (STMA). Specifically it looked at projects that have been awarded and under construction in the last ten years.

### **1.8 Methodology**

The study was based on the quantitative research method that is a combination of quantitative and qualitative research methods because it sought to make a numerical presentation of its findings on the causes of construction project delays in STMA. It

adopted the descriptive survey design in order to obtain the views of respondents without altering their views.

The population consisted of the employees who are involved in construction project management in the Assembly as well as contractors who construct projects on behalf of the assembly. The study employed the simple random sampling technique to sample portions of the employees and the Krjehie and Morgan (2013) sample size determination table to determine the number of contractors that could fairly represent the entire contractors who work STMA contractors to provide the responses on the subject matter. The secondary data comprised of existing data in the Sekondi-Takoradi Metropolitan Assembly (STMA) on project management while primary data will be sort by means of questionnaires and interview guide.

The primary data from the questionnaires were analysed using SPSS and presented by means of descriptive statistics (mean and standard deviation) in tabular forms.

### **1.9 Organization of study**

The study was organised into five chapters. Chapter one covered the introduction which includes problem statement, research questions, specific objectives, significance of the project methodology and the organization of the report. Chapter two will discussed various literature review relating to the subject matter. Chapter three discussed the methodology. Chapter four presented the results and discussions or analysis of the research. While the conclusion and suggested recommendations for further work were captured in chapter five.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Historical development of project management

Project management is one of the oldest activities which have been undertaken by men throughout the history of mankind. Project development and construction has existed with men for several centuries because the existence of man is dependent on the execution of various projects such as houses, dams etc. however, the project management in its form today can be traced to the beginning of construction, defence and engineering management (Morris, 2015).

As construction evolved to embrace very large project, the need for effective management of these project led to the introduction of a structured approach of project management (Gaddis, 2009). However, Hodgson (2012) noted that the concept of project management can be attributed to the development in US defence and aerospace sectors in the late 1950s and the 1960s. The demands of these sectors in the US led to its managers resorting to innovative ways of managing the multiple project associated with their operation. These methods of managing the defence and aerospace projects were later developed and applied in other places around the world (Morris, 2015). The post-world war II complexities and demands of the defence sector also gave project management a good foundation for it development (Hodgson, 2012).

Even though management literature captured project management in the 1950s, its 'heydays' is widely seen to be in the late 1960s and early 1970s (Winch, 2012). The 1960s and 1970s were periods where researcher delved deeper and deeper into the

concept of project management and developed innovative approaches of managing projects (Gaddis, 2009).

The concept of project management was one which sought to ensure that projects are executed on time, based on the budget and within the defined scope (Morris, 2017). This objective is achieved by means of effective planning and control of variables related to the execution of the project. These variables include: resources, cost, productivity, schedule, risk, and quality (Harrison, 2011).

Cleland and King(2008) noted that the techniques of project management were employed for the management of various projects such as groundwork in US defence and aeronautics in the 1950s, the project of Manhattan, development of atomic bomb and the Apollo space programs (Harrison, 2011). However the concept has been extended to industries beyond the engineering and defence fields into sectors such as education, health, social services and the arts (Morris, 2014).

The concept of project management has now evolved from its early state of being an avenue for managing project to become a tool which can be used to forecast and determine solutions to societal problems and dangers (Denis, 2007). According to Harrison (2011) the successful application of project management in different fields is foundation of its continuous evolution throughout the years.

## **2.2 The concept of project and project management**

According to the Project Management Institute (PMI), (2008) a project is a temporal endeavour which is undertaken to produce a product, service or result. This assertion portrays projects as an endeavour which aims at meeting the needs of stakeholders.

Turner (2013) provided an expanded view of what a project is by indicating that a project an endeavour which involves an organization of human, machine financial and material resources in other to produce a service or goods within a defined scope of work, specification, times and cost.

A project therefore can be said to be an endeavour which makes use of various resources to meet an objective within a given time frame, scope of work and cost.

Project management on the other hand is the application of various management tools and approaches to plan and control the resources required for a project in other to successful execute the said project (Osien, 2011). The aim of project management is to ensure the project is managed within the parameters set for its execution and delivery.

According to Morris (2013) the concept of project management involves the application of various management techniques to ensure an integration of all the resources required for a given project from throughout it lifecycle. This description of project management portrays the idea that it's an activity that begins from the conception of the project through to its delivery and post-delivery stage. Burke (2011) also noted that the idea of project management is an activity which inculcates different management techniques to plan and control a project under a strong single point of responsibility. This assertion also highlights the fact that project management an activity must be managed by a particular person (the project manager) such that he can be held responsible for various issues that may crop up during the life cycle of the project.

Turner (2009) also indicated that the idea of project management is the management of people and resources in other to deliver a project. This definition also projects the

idea that project management is getting a project delivered by ensuring that the required resources are effectively managed.

### **2.3 Construction project management**

The term construction project management carries a different meaning under different conditions. While some researchers use the terms to explain all the activities undertaken during the life cycle of a project (that is both on and off the site) others have limited the use of the term to activities that occur at the construction site only (Walker, 2012).

Farrell (2008) noted that the construction project management is a management activity of construction projects from its conception to completion and commissioning. It involves planning, coordination and control of various resources required for the execution and delivery of the projects. The aim of construction project management is to ensure that there is a project is successfully delivered to the clients.

The construction industry is one that is based on goals and the need for continuous improvement because of the frequent variations in the resources employed by the sector. In other to ensure that projects delivered are quality and have better value, the project managers need to ensure an effective management of the resources (Dulaimi and Langford, 2009).

Ahadzie and Amoah-Mensah (2010) also noted that the construction project management is a dynamic activity which requires an effective management in other to yield the needed result. Therefore a skilled project manager is always required to achieve the objective of delivering quality project to clients. In view of this, the choice of a project manager is an activity which has gained attention in the

construction industry. While some industry stakeholders are of the view that skilled person in any field management can be made employed as a project manager, others are of the view that construction project manager must be a person who has a background in construction and project management (Ogunlana et al., 2012).

According to Edum-fotwe (2010) the construction industry has undergone tremendous changes since the 1990 with the industry having to deal with increasing intensity of competition, increasing prices of resources and clients who are reluctant to pay more for projects. This has increase the requirement for project managers who will be given the responsibility of ensuring that the resources are effectively managed to create the value needed by the client. Construction project management has therefore increased in popularity especially in developed nation with such institutions as Project Management Institute (PMI), USA and the International Project Management Association (IPMA), Europe leading the race (Austin, 2010).

Even though the development of project management professional associations has not been at the same pace in developing nations in developed nations, Ahadzie et al. (2008) stated that the trend is still significant in developing nations is expected to increase with time. This is evidenced by the increasing number of organization offering professional project management programs in developing nations such as Ghana (Odusami et al., 2013).

Edum-fotwe (2010) also reiterated that the increasing demand for quality construction project in developed has raise the level of awareness regarding the significance of project management and project managers.

## **2.4 The building construction industry in Ghana**

In Ghana, building construction industry is under the Ministry of Works and Housing and its units in the districts and metropolitan assemblies in all the regions of the nations. Public works are initiated and managed on the behalf of the government by this ministry through their representative offices in the districts and metropolitan assemblies.

The building construction industry in the country has been divided into four project based on values as follows: projects worth up to \$75,000 (D4K4); projects ranging from \$75,000-250,000 (D3K4); projects worth \$250,000-500,000 (D2K2); and projects over \$500,000 (D1K1) (Frimpong and Kwasi 2013) with the largest proportion of contractors in the D4K4 and D3K4 class.

The construction sector in Ghana has been identified as one of the most important sectors which is responsible for the economic development of the nation. The sector accounts for a significant proportion of the gross domestic product of the nation. Frugar and Agyakwar-Baah (2015) noted that the construction sector accounts for about 12-15% of the GDP of Ghana annually and this is expected to increase as the sector aims at improving its performance. The sector is also credited as one of the major employers in Ghana. The construction sector accounts for a significant number of employees in the nation especially the unskilled and low skilled employees (Frimpong and Oluwoye, 2013).

In spite of its significant impact on the nation Asamoah and Decardi-Nelson (2014) noted that the construction sector is characterized by a general low performance. The construction sector in Ghana is noted to be suffering from a general ineffective planning, waste of material resources, inability to deliver project on time, delivery

poor quality projects and poor coordination between construction companies and stakeholders (Twumasi-Ampofo et al. 2013).

Djokoto et al (2014) also indicated that the construction sector in Ghana is suffering from corruption, lack of transparency and accountability, low use of consultants or specialist skills as well as unsustainable processes of construction which is has been identified to be adversely affecting the environment. Other problems of the sector in Ghana include inadequate supply of skilled labour and lack of finance.

In spite of these challenges, the building construction sector in Ghana is also expected to meet the huge housing deficits of the nation. The United Nations (2012) estimated that Ghana needs an annual housing unit of 250000 in other to be able to meet the growing housing demands. In spite of this opportunity for the building construction industry, the sector is not able to take advantage of this opportunity because of the numerous challenges confronting it (Ilamura 2013).

Even though several measures have been introduced address the problems of the construction industry in Ghana, these measures have largely not been effective because of the fact that they are not cohesive (Ofori 2012). Measures to address the challenges of the construction industry are developed separately by the individual stakeholders who make it difficult in not impossible for them to be applied cohesively.

For example in attempt to ensure that the building construction sector is able to meet the housing demands of the nation, successive governments in recent times have embarked on a quest to make available affordable houses for Ghanaians. The strategy of the government is makes use of local materials such as cements, bricks wood etc. to reduce the cost of building. This construction industry for which this

strategy has been developed for implementation has other plans. The industry's definition of affordable is significantly different from what the government is pursuing. While the building construction industry bases its decision of affordable on market forces, the government is considering the cost of input as the determinant of prices (Twumasi-Ampofo et al. 2014). Such divergent opinions have contributed greatly to the inability of government and the building sector to meet the affordable housing objective in Ghana (Ampadu-Asiamah and Ampadu-Asiamah, 2013).

### **2.5 Significance of the construction industry in Ghana**

According to UNESCO (2010) the construction sector in Ghana as in the case of other nations is a vital contributor to the economy of the nation. The construction sector plays different roles in the economic development of the nation. Fugar and Agyakwa-Baah (2010) noted that the construction sector in Ghana promotes local economies by mobilizing and utilizing local human and material resources for the construction of projects. During project construction, most companies depend on the local community for the supply of certain materials such as sand and also supply of labour. Such a demand on local communities helps stimulate the economy of the local community.

Field and Ofori (2008) also noted that construction sector in Ghana is a recognized employer in the nation. The sector employs active Ghanaians who are looking for jobs especially those without skills and those with low skills. These categories of persons are mostly marginalized by the other business sector because of the technical nature of their operations which compels them to employ trained or skilled workers.

UNESCO (2010) described the construction industry in Ghana as one of the consistent performers in the economic development of the nation. Unlike the other sectors where employment is stagnant or increases slightly over a given period the construction sector has been noted to be a sector which significantly provides employment for a high number of Ghanaians. Ahadzie (2009) noted that employment opportunity exist in the construction sector at almost any time, especially for the low and unskilled workforce.

## **2.6 Project management in the Ghanaian construction industry**

The introduction of professional project management practices in the Ghanaian construction sector is relatively new as compared to developed nations. Professional project management was first considered by the Social Security and National Insurance Trust (SSNIT) in the 1980s as part of their plans to provide houses for Ghanaians (Ahadzie & Amoah-Mensah, 2010). Prior to this period, organization such as SSNIT relied of traditional management practices to manage projects. This was seen to result in time and cost over-runs; estimated to be more than 100% of the actual cost and time. The high project cost which took too much time for it to be completed was the basis for SSNIT's decision to inculcate professional project management principles in their housing project. SSNIT therefore appointed its first project manager in the 1980s during the construction of its housing projects in Sakumono, in the capital of Ghana (Ahadzie & Amoah-Mensah, 2010).

Several years after its inception in Ghana, professional project management is yet to develop as it has in other nations. The concept of project management and hence the role of the project manager is yet to be fully embraced by stakeholders in the building construction sector in Ghana. The development in technology and

complexity of project design and management as well as reducing number of skilled labour and experts has made the role of the project manager very vital in construction project management in Ghana a very critical activity (Thomas & Winter, 2006). Increasing competition within the construction sector was also identified by (Sutherland & Maxwell, 2010) as one of the reasons why the sector in Ghana need to embrace project management techniques.

Furthermore, Goodwin (2013) stated that since the construction sector has been singled out as one of the vital contributor to the economy of the nation, it is essential that measures which will lead to an improvement in the level of performance of the sector must be embraced, hence the need for the Ghanaians sector to embrace the concept of project management.

### **2.7 Construction project delays**

According to Afshari *et al.* (2011) delays in construction is any lateness in the execution period of a construction project which is caused by the contractor, client or both contractor and client. The implication of this definition is that delays are lateness in projection periods of construction projects and such delays may be fault of the contractor or the client or both of the two parties.

Another definition of construction delays was given by Abdullah *et al.* (2010) who described construction delays as the excess time or extended time for the completion of construction projects. Even though this definition also presents delays as excess time taken to complete a project, it is silent on the source of the delay.

Motaleb and Kishk (2010) also described delays in construction project as an extension of the agreed date for completing portions or the complete project. This

definition also gives the indication that construction delay is not necessarily a delay in the completion of the entire project but delays in completing portions of it as well.

Abdullah *et al.* (2010) noted that delays in construction project delivery is a widely recognized in the sector as one of the major threat that affect the performance of the construction section globally. The tendency for a project to be delayed by the fault of the contractor or client or even both parties is very high. This is because of the fact that the factors which causes of construction delays varied. The cause of construction delays ranges from basic causes which can hinder the project for a few days to complex issues which have the potential to hinder the progress of the project for several years (Tawil *et al.* 2014).

Basic causes of construction delays can be poor site arrangement, simple adjustment requested by clients and poor weather conditions. These can take a few days or weeks to overcome. Complex causes delays on the other hand are as result of such issues as disagreement on contractual clauses, lack of funds to pay contractor, wastefulness and consistence interruption by stakeholders. These issues may take several months and years to get resolved (Na Ayudhya 2011).

Owolabiet *al.* (2014) and Jagboro (2006) noted even though the problem of construction delays is a global issue, the problem is more visible in developing nations such as Ghana. Construction projects in developing nations have been identified to take longer periods to complete and deliver than same projects in developed nations. Aibinu and Odeyinka (2006) noted that this situation is as a result of poor time and cost claim management within the construction sector in developing nations. Such poor time and cost claim management lead to various conflicts which also causes additional delays of their own.

Aziz (2013) noted even though that the issue of construction delays is widely recognized in the construction industry globally, it has not been given the needed attention but has always been addressed through emergency measures which resolve the problem in a long lasting manner. Shehu *et al.* (2015) and Al-Hazim and Salem (2015) noted that the main approaches which have been resorted to ensure that project delays are avoided is contractual agreement and subsequently court disputes and settlements. Even though measures are widely employed, they are ineffective considering the fact that they time substantial amounts of times to go through.

### **2.8 Causes of construction delays**

Hampton *et al.* (2012) indicated that the problem of construction delays is caused by diverse factors. Complexity of the project, environmental factors as well as size and scope of the project were identified by Hampton *et al.* (2012) as the main causes of project delays.

Lowsley and Linnett (2006) also found unfavourable climatic conditions, poor nature of the ground or soil, inadequate resources and also incomplete project details as the factors which are contributing to project delays.

Fugar and Agyakwah-Baah (2010) also noted that the problem of construction delays has become a difficult issue for contractors and clients to resolve because some of the causal factors may be out of their control. Fugar and Agyakwah-Baah (2010) cited difficulty and delays in obtaining permission from regulatory authorities as a major factor which causes project delays. Other factors also include changes in prices of materials, complex bank transactions and conditions as well as poor estimation in project costs.

Ayman (2010) also identified poor designs, logistics constraints, bad weather and changes in the quantity of materials needed to execute the project as the factors which result in project delays. Other factors recognized to be contributing to project delays include: lack of coordination, poor motivated employees as well as poor communication between team members and external stakeholders.

Lo *et al.* (2016) in their study classified construction project delays as follows: concurrent delays, excusable delays and non-excusable delays.

### **2.8.1 Concurrent Delay**

According to Long (2015), concurrent delays are caused by different delays which combine to result in a delayed project. This form of delay can be as a result of a poor judgment of the part of a stakeholder which causes the contractor to make an erroneous decision that may results in a major delay which would not have occurred if not the those two decisions.

Hamzah *et al* (2011) also described concurrent delays as delays which are caused by more than one cause of delays working together to create the same effect. Concurrent delay is therefore the results of a couple of factors which are combining to produce a single effect. The problem of concurrent delay is difficult to manage because of the fact that when a single factor is delaying a project, it is easier to manage its effects but a delay caused by multiple factors requires management of these different factors at the same time, hence the difficulty in managing concurrent delays.

### **2.8.2 Excusable Delay**

Excusable delays are delays which are accepted as outside the control of the contractor (Hampton *et al.* 2012). Not all factors which cause project delays can be effectively management or controlled by the contractor. While some are deemed to

be under the control of the contractor or are as result of the contractors activities, others are beyond the control of the contractor. The latter causes of delays in construction project management are therefore described as excusable. Some of the excusable delays in construction project management include: acts of God, unplanned changes in designs of the project as well as fire outbreaks which is not fault of the contractor (Alaghbari 2015).

Alaghbari *et al.* (2017) classified excusable delays as compensable or non-compensable. In compensable delays, the contractor deemed to be entitled to compensation for the suffering the effect of the delays. Excusable delays such as sudden changes in project design which demand that the contractor has to extend the project construction time are associated with certain level of compensation for the contractor (Bramble and Callahan 2011).

Gardezi *et al.* (2014) described non-compensable delays as those delays whose effects are expected to be completely borne the contractor. Contractors who suffer effects such delays are not compensated. Non-compensable are mostly caused by acts of God such as several days of rain which prevent the contractor from working over period of time (Dinakar 2014).

### **2.8.3 Non-excusable Delays**

Hampton *et al.* (2012) described non-excusable delays as delays which are caused by the decisions of the contractor or his agents. Project management requires contractors to make certain decisions. While some of these decisions may be favourable to the project, other decision may not favour the project and hence result in project delays. Such delays which could have been avoided or are under the control of the contractor are described as non-excusable delays. This form of delays

include: strike action by the employees of the contractor, poor quality work by subcontractors engaged by the main contractor as well as poor decision by contractor's employees. Gardezi *et al.* (2014) stated that for non-excusable delays, the contractors is not compensated for and is expected to complete the project within an agreed time period.

Enshassi *et al.* (2009) also classified construction delay as: contractor-related factors, client-related factors and external factors.

#### **2.8.4 Contractors' related factors**

Enshassi *et al.* (2009) noted that some of the causes of construction project delays are as a result of the actions contractors. Certain decisions by contractors, their employees and agents result in delayed projects and their associated consequences. The burden of such delays rest solely on the head of the contractor therefore the clients will still expect the project to be delivered as agreed.

Some of the causes of contractor related delays include: poor cash flow from the contractor for operations at the construction site, inadequate employees, poor site management, material shortage, equipment shortage as well as poor quality services and supplies by sub-contractors working the behalf of the main contractor (Gardezi *et al.* 2014).

Odeh and Battaineh (2012) also cited poor project planning, lack of experience on the part of the contractor and unsuitable construction techniques as some of the contractor related issues which causes delays in project delivery.

### **2.8.5 Clients' related factors**

According to Enshassi *et al.* (2009) clients or owners have the tendency to make certain decision which will eventually delay the projects. These decisions may be either in consultation with the contractor or not. Whether the clients' consulted the contractor or not in the making of such decision, the burden of its effects is on the client alone.

According to Long *et al.* (2014) some of the client related factors which causes delay in project delivery include: lack of funds, voluntary suspension of work by clients, delayed decision making, poor coordination between clients and contractor, sudden changes in project design and materials and also contract modifications.

Odeh and Battaineh (2012) also client related factors which cause delays into financial and non-financial factors. Financial related factors include: inadequate funds to support the project, delayed payment for completed project phases as well as complex bank transactions. Non-financial related factors which cause delays in project delivery include: reviewing of contract, changes in project design by client, suspension of project by clients.

Financial related factors were identified as the major client related factors which cause delay in project construction and delivery in developing nation such as Ghana. This is as a result of poor economic situation in most developing countries and high inflation rates which characterize the economic conditions of the developing nations.

### **2.8.6 External related factors**

Enshassi *et al.* (2009) described external related factors which cause project delays as those that are out of the control of both clients and contractors. These factors have the tendency to occur irrespective of the measures put in place by both the client and

contractor to prevent its occurrence. Alaghbari *et al.* (2017) grouped external factors which cause delays into two namely: political and non-political. Political factors consist of regulations and other governmental measures put in place to govern construction projects in a nation. Examples of political factors which contribute to delays include: local content regulations, EPA requirements and labour regulations which put restrictions on the period within which work can be undertaken. Non-political factors include market situation which influences the availability and supply of materials, poor weather conditions and lack of skilled labour.

## **2.9 Critical success factors for effective construction project management**

Ashley *et al.* (2017) noted that different measures need to be applied in order to ensure that construction delays are avoided. These measures can be either planned or unplanned and are needed from the inception of the project to its completion and delivery stage. The reason behind the use of different measures to address the problem of construction project delays is as a result of the varied nature of the factors which result in these delays.

Rockart (1982) cited by Ashley *et al.* (2017) defined critical success factors as those factors which influence the success of the project. These are measures inculcated in the project management process as a means of ensuring that any issue which may adversely affect the progression of the project can be prevented. Critical success factors in project management eventually lead to quality projects and customer satisfaction. The section below discusses the factors which contribute to the success of a project.

### **2.9.1 Determinants of Construction Project Success**

Ashley et al. (2017) indicated that different project requires different success measures. From their review of literature, Ashley et al. (2017) indicated the collectively there are over 2000 factors which can be employed to ensure a success completion and delivery of construction projects. However these factors were grouped into five broad categories as: management factors environmental factors, economic factors, political factors, and technical factors. A successful management of these sets of factors according to Ashley et al. (2017) and Alaghbari *et al.* (2017) will ensure a successful project completion and delivery.

Management factors include: planning and control, communication among team members and with external stakeholders and other similar activities which need to be made effective in other to ensure that a project succeeds.

Environmental control also bothers on issues which relate to the environment within which the project is been executed. These include soil conditions and weather conditions.

Economic factors also bother on availability and management of funds and other financial related issues.

Political factors involve regulations and other conditions which project manager need to know and adhere to during construction of project while technical factors look at the project drawings and other details of the project such as material requirement and labour requirements (Ashley et al. 2017).

Iyer *et al.* (2008) also put forth 11 factors which have been identified to contribute the success of projects. These include: effective planning; experience project

manager, motivated project team, well defined project scope, effective safety management measures; effective management control systems, design interface management, risk identification and management, management of technical aspects of the project; ability to address legal and political environment.

Nguyen et al (2014) also listed the following as the measures needed to ensure that construction projects are successfully completed and delivered: effective design and planning efforts, well defined scope of work; effective project supervision; goal oriented and motivated project team; experienced project manager; safety management measures and management control measures.

## **2.10 Empirical review**

Reiss (2015) in his study on comparative analysis of factors which affect project management in developed and developing nations indicated that most project are characterized by problem solving, tackling new grounds, managing employees and achieving set goals and objectives in other to successfully deliver a project. Even though these activities are challenging for project managers, Reiss (2015) concluded that project management in developed nations is more efficient than that of developing nations.

Rwelamila, (2014) also noted that project management in the public sector in most developing nations is poorly undertaken. The factors which were identified as the causes of such a poor performance is as a result of the poor performance of public sector regulatory agencies. Rwelamila, (2014) noted that most public sector institutions in developed nations are poorly resourced and do not have adequate capacity to play the role of project managers and consultants. In spite of the inadequate resourcing of these public organizations, they still play the role of project

consultants and managers hence the poor performance of the construction sector in these nations. It was therefore recommended that public sector organization which have been mandated to supervise various projects need to be resourced.

Nwachukwu et al., (2010) in a study on project management in Nigeria also noted that most public projects in Nigeria exceed their set times of completion or are not completed at all because of the diverse forms of challenges that confronts project construction in the nation. These challenges were grouped as avoidable and non-avoidable. Nwachukwu et al., (2010) noted that avoided challenges were the main factors that affect project delays and completion. The study therefore concluded that public projects can be completed on time if public organizations responsible for the management of these projects will be effective in their operations.

Al-Moumani (2010) also noted that most public projects are associated with poor working relationships among project participants, low productivity and poor quality projects as a result of the diverse challenges which confront public project management. Al-Moumani (2010) noted that unless public sector organizations which are responsible for managing public projects improve their performance, the situation of poor project performance will persist.

Didibhuku and Mvubu, (2008) also indicated that project management in developing nations is poor because constructions businesses in these nations lack the capacity to compete with their counterparts in developed nations. Didibhuku and Mvubu, (2008) stated that construction companies in developing nations lacked the required technical know-how, equipment, financial and governmental support which their counterparts in developed nations have, hence their inability to successfully compete.

Professional project management was described to be in its infancy stage in most developing nations, hence its inability to affect project delivery in these nations (El-Saaba, 2011). The level of awareness and acceptance of project management techniques in developing nations is relatively low as compared to its level in developed nations. This factor was described as a major contributor to the low level of project performance in most developing nations which is evidenced by delayed and uncompleted projects.

Furthermore Loo, (2012) also noted that the construction industry is confronted with diverse challenges. The main types of challenges identified to be contributing to project delays include: poor leadership and organizational culture, lack of adequate trained personnel (experts), individual versus team compensation, unrealistic time limits for project delivery as well as poor project management measures.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

In this chapter the methodology of research is presented. The areas captured in this chapter are the research design, source of data, population of the study, the sample size used for the study, the sample techniques used in selecting the respondents, the data collection tools and the data analysis techniques.

#### 3.1 Research methods

According to Creswell (2007) the main methods for undertaken are empirical study is quantitative, qualitative and mixed methods.

Qualitative studies employ non-numerical means of making presentations on its findings. This method of research depends mainly on such instrument as interviews and focus group to obtain non-numerical responses on a given phenomenon under investigation and makes a descriptive presentation of the findings obtained from it (Saunders et al, 2008). In addition, qualitative researches involve a subjective assessment of the views of the respondents

Quantitative research on the other hand is based on a numerical or statistical approach of presenting its findings. It mostly employs instrument such questionnaires to obtain the views of respondents in a quantitative manner. In this research method the views of respondent on the subject matter are assigned specific numbers which forms the basis of analysis (Creswell 2007).

Unlike the qualitative researches, quantitative research is makes generalisations regarding the phenomenon under study as well as future predictions on it.

In view of the above discussions, the study employed the quantitative approach to investigate the critical success factors for project management in public institutions

### **3.2 Population of the study**

The population considered by this study comprised of all employees, management and stakeholders of the Sekondi-Takoradi Metropolitan Assembly who are involved in the management of construction projects. Construction project management in the Sekondi-Takoradi Metropolitan Assembly is based on the collective effort of the following departments: metro works department, town and country planning; quantity surveyor department and finance. Therefore the employees and managers of these departments of the Sekondi-Takoradi Metropolitan Assembly were selected as part of the population of the study.

The other stakeholders of construction project management considered as part of this study were the contractors and assembly members. The contractors execute the project on behalf of the assembly while the assembly members represent the various communities with the Sekondi-Takoradi Metropolitan Assembly. Specifically, the assembly has a project committee who ensure that the interest of the assembly is factored into the management of construction projects. The population of the study as obtained from STMA (2018), is presented in table 3.1 below:

**Table 3.1: Population of the study**

<b>Population</b>	<b>Number</b>
Works department	25
Quantity survey	12
Town and country planning	22
Finance	8
Project committee	6
Contractors	80
<b>Total</b>	<b>153</b>

*(Source: STMA, 2018)*

### **3.3 Sample size and sampling technique**

Israel (1992) noted that there are several approaches for determining the sample size of a study. These include census, the use of published tables and also formula. Census is employed to include all the members of a population in the sample size of a study. This usually occurs when the population is considered to be small enough to be fully covered. Tables and formula on the other hand are employed to determine a proportion of a large population which can be used to fairly represent the entire population. This study employed both census and the use of published tables to determine its sample size.

The census survey was used for the employees of STMA as well as the project committee members as part of the census survey. The Krjehie and Morgan (2013)

sample size determination table was employed to determine the number of contractors that can fairly represent the entire contractors who work STMA. From Krjehie and Morgan’s table, a population of 80 can be fairly represented by 66 contractors. The total sample size is therefore represented in table 3.2 below:

**Table 3.2: Sample size of the study**

<b>Population</b>	<b>Sample size</b>
Works department	25
Quantity survey	12
Town and country planning	22
Finance	8
Project committee	6
Contractors	66
<b>Total</b>	<b>139</b>

*(Source: author, 2018)*

Using the sample frame, the simple random sampling technique was employed to sample 66 contractors out the total number of 80. This approach of sampling was employed to ensure that all contractors had equal opportunity of been selected.

### **3.4 Data collection instrument**

The study made use of questionnaires as the instrument for data collection. A questionnaire is an instrument which comprise of a series of questions used to solicit for the views of respondents on a given subject matter. The study required

employees and other stakeholders responsible for project management in STMA to indicate their views of various issues relating to how project can be successfully managed to avoid delays. Another factor which influenced the study's choice of questionnaires as the instrument for data collection is the fact that the sample size chosen was too large for interviews.

The questionnaire in this study was a semi-structured questionnaire and consisted of both open and close ended questions. The close ended questions were based on a likert scale which ranges from strongly agree to strongly disagree.

### **3.5 Data collection process**

As part of the data collection process, the researcher first sought permission from the administrator of STMA. This was done by means of an introductory letter and face to face meeting which enabled the researcher to explain the purpose of the researcher as well as its requirement from the employees and other stakeholders.

Afterwards, the researcher proceeded to administer the questionnaire to all the contractors, employees and project committee members. While some of the contractors were met at the premises of STMA, others were reached in their offices for them to provide their views of on the subject matter. Therefore, one hundred and thirty-nine (139), questionnaires were distributed while ninety-two (92) were retrieved representing a response rate of 66.19%

### **3.6 Sources of data**

The study employed both primary and secondary data. Primary data in this study consisted of information provided by the respondents through the questionnaire while secondary data was obtained through a review of existing literature on the subject of construction project management in articles, books and other similar publications.

### **3.6 Data analysis**

The results of the analyses of the data obtained from the respondents were presented as descriptive statistics (mean and standard deviation) in tables. The study also determined the relative importance index of some of responses as means of expression the magnitude of their contribution to the problem under investigation.

### **3.7 Ethical considerations**

The consent of the management of STMA was sought for prior to the administration of the questionnaires to the respondents. The consent of the management was deemed to be important because it was the only means by which the researcher could formally have access to the employees and other respondents.

The study also ensured that the identities of the respondents were protected by avoiding questions that will make them give personal details. The respondents were also assured of confidentiality and the responses they provided.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.0 Introduction**

This chapter of the study presents a detailed discussion on the responses obtained from the questionnaires. The analysis of the responses was done in sections based on the objectives. The study settled on a sample size of one hundred and thirty-nine (139) but nine-two (92) responses were received for analysis. Thus, one hundred and thirty-nine (139), questionnaires were distributed while ninety-two (92) were retrieved representing a response rate of 66.19%

As indicated in the methodology, the data obtained were quantitatively analysed and presented in tables.

#### **4.1 Background on respondents**

##### **4.1.1 Gender of respondents**

The presentation in table 4.1 below, indicates that the largest proportion of the respondents were males. These were ninety-five percent (95%) or eighty seven (87) in number. The proportion of females was therefore five percent (5%).

**Table 4.1 Gender of respondents**

		Frequency	Valid Percent (%)	Cumulative Percent (%)
Valid	Males	87	94.6	94.6
	Females	5	5.4	100.0
	Total	92	100.0	

*(Source: field survey, 2018)*

#### **4.1.2 Educational background of respondents**

The responses presented in table 4.2 on the educational background of the respondents also indicated that, the majority of the respondents had completed their first degree. These were fifty-two (52) in number or 56%. The remaining forty (40) were had diploma in various fields. These also represented 44%.

**Table 4.2: Educational background of respondents**

		Frequency	Valid Percentage (%)	Cumulative Percentage (%)
Valid	diploma	40	43.5	43.5
	degree	52	56.5	100.0
	Total	92	100.0	

*(Source: field survey, 2018)*

#### **4.1.3 Number of working years**

The responses on the number of years each respondent had spent working with/in STMA also indicated that the entire respondents had spent at least 10 years working with or in STMA. Specifically, the majority has been with the organization for 10-14

years. These were fifty-five in number or 60% while the remaining thirty-seven (37) or 40% had been with the company for over 14 years. The responses on the number of working years of respondents are presented in table 4.2

**Table 4.3 Number of working years**

		Frequency	Valid Percentage (%)	Cumulative Percentage (%)
Valid	10-14 years	55	59.8	59.8
	over 14 years	37	40.2	100.0
	Total	92	100.0	

*(Source: field survey, 2018)*

#### **4.2 Nature of construction project delays in Sekondi-Takoradi Metropolitan Assembly**

The respondents were requested to express their view in relation to the various forms of delays confronting project construction and delivery in STMA. The responses given were analysed and presented in descriptive statistics formats (mean and standard deviation). The interpretation of the finding was based on the following criteria:

Mean responses between 1-2 indicates that the respondents strongly disagree

Mean response between 2-3 indicates that the respondents disagree

Mean response between 3-4 indicates that the respondents agree

Mean responses of 4-5 indicates that the respondents strongly agree

**Table 4.4 gives a presentation of the findings obtained thereof.**

**Table 4.4 Nature of construction project delays in STMA**

<b>Descriptive Statistics</b>			
	N	Mean	Std. Deviation
<b>Concurrent delays</b>			
In STMA funds for project delay	92	3.86	.408
In STMA processes required for projects to commence are time consuming	92	3.79	.407
In STMA processes required for handing over of project are time consuming	92	4.32	.467
In STMA decisions on project by stakeholders takes a long time be made	92	3.74	.466
<b>Average score</b>		3.93	
<b>Excusable delays</b>			
In STMA construction projects are affected frequently by acts of nature/God	92	2.03	.346
In STMA stakeholders frequently make modifications that delay project	92	3.83	.483
In STMA change in management and stakeholders affect project delays	92	3.73	.447
<b>Average score</b>		3.20	
<b>Non-excusable delays</b>			

In STMA contractors ensure that they work according to the agreed schedule	92	3.90	.421
In STMA contractors ensure a timely communication of their decisions to the assembly	92	1.88	.571
In STMA contractors consult the assembly on modifications in the project.	92	4.21	.460
<b>Average score</b>		3.33	

*(Source: field survey, 2018)*

Lo et al (2016) classified construction delays into three as: concurrent delays, excusable delays and non-excusable delays.

According to Long (2015), concurrent delays are caused by different delays which combine to result in a delayed project. Hamzah *et al* (2011) also described concurrent delays as delays which are caused by more than one cause of delays working together to create the same effect. Concurrent delays are therefore delays which have their sources in multiple factors. From the findings on the presence of concurrent delays are encountered with project management in STMA, the respondents agreed that: delays funds (mean response of 3.86); cumbersome processes for commencement of projects (mean response of 3.79) and cumbersome handing over processes (means response of 3.74) contribute to delayed projects in STMA. They also strongly agreed with mean responses of 4.32 that delayed decisions by stakeholders also contribute to project delays.

An average response of 3.93 was obtained in this regard to indicate that the respondents generally agree or confirm that concurrent delays are major form of

construction project delay in STMA. This outcome confirms the assertions of Lo et al (2016), Long (2015) and Hamzah *et al* (2011).

Excusable delays are delays which are accepted as outside the control of the contractor (Hampton *et al.* 2012). The implication of this description is that such delays may occur irrespective the measures the contractor or other stakeholders put in place to prevent contractors from delaying in the delivery of the project.

From the findings on the presence of excusable construction project delays in STMA, the respondents disagreed with a mean response of 2.03 that acts of God frequently contribute to project delays. However, the respondents agreed that frequent modifications on projects causes delays (mean response with 3.83) and changes in management and stakeholders also causes delays which are beyond the control contractors (mean response of 3.73).

An average response of 3.20 was also obtained in this regard to confirm that delivery construction projects are affected by excusable delays. This assertion also confirms those of Hampton *et al.* (2012) and Alaghbari (2015) who also noted that construction project are associated with excusable delays.

Hampton *et al.* (2012) described non-excusable delays as delays which are caused by the decisions of the contractor or his agents. Gardezi *et al.* (2014) stated that for non-excusable delays, the contractor is not compensated for and is expected to bear the responsibility and complete the project within an agreed time period.

With respect to non-excusable delays associated with construction project management in STMA, the respondent agreed with a mean response of 3.90 that contractors are able to work according to agreed schedule. They also strongly agreed

with a mean response of 4.21 that there is always a consultation between contractors and stakeholders anytime there is the need for contractors to make modifications on the project. However, the respondents opposed the assertion that contractors of STMA ensure timely communications of their decision on projects.

An average response of 3.33 was also obtained in relation to excusable delays to give the indication that the respondents confirm the presence of this form of delay in project management. This assertion also confirms that of Hampton *et al.* (2012) and Gardezi *et al.* (2014) who also noted that construction projects are associated with excusable delays.

### **4.3 Causes of project delays in Sekondi-Takoradi Metropolitan Assembly**

Enshassi *et al.* (2009) classified the causes of construction delay as: contractor-related factors, client-related factors and external factors. The respondents were also requested to give their opinions on the causes of projects delays in STMA. Mean responses between 1-2 indicates that the respondents strongly disagree

Mean response between 2-3 indicates that the respondents disagree

Mean response between 3-4 indicates that the respondents agree

Mean responses of 4-5 indicates that the respondents strongly agree

The findings are presented in table 4.5.

Enshassi *et al.* (2009) described contractor related causes as causes of construction project delays are as a result of the actions contractors. Contractor related factors are as a result of decisions by contractors, their employees and agents result in delayed projects and their associated consequences. The respondents were requested to

express their individual opinions in relation to the fact that contractor related causes contributes of delays projects in STMA. From the findings obtained, the respondents strongly disagreed with a mean response of 1.67 that contractor have poor site management abilities. the however agreed with a mean response of 3.76 that poor cash flow on the side of contractors as well as inadequacy of the contractor's equipment (mean response of 3.54) causes project delays in STMA. The respondents went further to strongly agree (mean response of 4.36) that poor performance of subcontractors employed by STMA's contractors are causes of delay in project delivery.

An average response of 3.33 was obtained in view of contractor related causes of project delay in STMA to indicate that the respondents confirms the assertion that projects in STMA are affected by contractor related factors. This finding confirms the assertions of Gardezi *et al.* (2014) and Odeh and Battaineh (2012) that project delays are cause by certain contractor related causes or factors.

Enshassi *et al.* (2009) noted that clients or owners have the tendency to make certain decision which will eventually delay the projects. These decisions may be either in consultation with the contractor or not. Whether the clients' consulted the contractor or not in the making of such decision, the burden of its effects is on the client alone.

The respondents in views of clients related causes of project delays strongly disagreed with a means response of 1.77 that management of STMA often make modifications on projects after it has been commenced. they however agreed that management decisions on projects in STMA delays (mean responses of 3.87) and also strongly agreed that STMA do not have adequate funds to support their project (means response of 4.39). In relation to communication on the part of the

stakeholders, the respondents agreed that management's ability to communication decision to contractors is poor (mean response of 3.42). Another issue which was confirmed with a mean response of 3.88 was the fact that delayed payment affects project schedule.

An average response of 3.47 was obtained in relation to client related factors to indicate that the respondent recognize the fact that clients behaviour and attitude also contributes to project delays. This finding also confirm the assertion of Odeh and Battaineh (2012) and Enshassi *et al.* (2009) who also noted that client related factors are major sources of project delays.

Enshassi *et al.* (2009) described external related factors which cause project delays as that are out of the control of both clients and contractors. These factors have the tendency to occur irrespective of the measures put in place by both the client and contractor to prevent it occurrence. The responses on external factors the respondents strongly agreed that sudden changes in government policies affect project schedule (mean response of 4.51). They also agreed (mean response of 3.68) that political interference in the management of project in STMA also causes projects to delay and also inadequate equipment in STMA for project and project management affect project delivery periods. The respondents however disagreed that weather and ground conditions affect project delivery schedule (mean response of 2.00)

An average response of 3.51 was obtained in relation to external causes of project management also indicated that the respondents agreed that external causes of delays affect project delivery in STMA.

**Table 4.5: Causes of project delays in Sekondi-Takoradi Metropolitan Assembly**

<b>Descriptive Statistics</b>			
<b>Causes of project delays in Sekondi-Takoradi Metropolitan Assembly</b>	N	Mean	Std. Deviation
<b>Contractors' related factors</b>			
In STMA contractors poorly management their site	92	1.67	.537
Poor cash flow of contractors	92	3.76	.542
Contractors do not have adequate equipment for project execution	92	3.54	.717
The sub-contractors and suppliers of contractors STMA perform poorly.	92	4.36	.482
<b>Average score</b>		<b>3.33</b>	
<b>Client factors</b>			
Management of STMA and stakeholders often make modification to projects under execution	92	1.77	.422
Management of STMA delay in decision	92	3.87	.425
STMA does not adequate funds for project	92	4.39	.491
Management of STMA poorly communicate decisions to contractors	92	3.42	.963
Management of STMA delay payment of contractors	92	3.88	.488
<b>Average score</b>		<b>3.47</b>	
<b>External</b>			

Sudden changes in government policies affect project delays	92	4.51	.503
Political interference causes delays in project execution in STMA	92	3.68	.512
Inadequate supply/lack of supply of required materials	92	3.86	.990
Poor ground and weather condition	92	2.00	.663
<b>Average score</b>		<b>3.51</b>	

*(Source: field survey, 2018)*

#### **4.4 Critical success factors for construction project management in STMA**

The final part of this chapter of the study covered analysis of the critical success factors required to improve construction project management in STMA. The respondents were therefore requested to indicate the extent to which they agree to the implementation of certain measures by STMA. The findings obtained are presented in table 4.6 below.

**Table 4.6: Critical success factors for construction project management in STMA**

<b>Critical success factors for construction project management in STMA</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
In STMA there is effective planning and control of construction project management	92	3.95	.635
There is effective communication between contractors and stakeholders	92	2.02	.491
Regulations for contract management in STMA is effective	92	2.21	.734
There is effective and detailed design of projects in STMA	92	3.84	.730

STMA ensures that there is availability of funds before projects are executed.	92	1.33	.471
Project risk management is effectively undertaken in STMA.	92	1.77	.915
STMA ensures that qualified and experienced contractors are employed to construct their projects.	92	4.34	.651
STMA ensure that contractors employ qualified employees for their projects	92	2.47	.670
Employees of STMA's contractors are motivated to perform	92	2.33	.915
STMA ensures a strict supervision of projects awarded to contractors	92	2.49	.749

*(Source: field survey, 2018)*

Ashley et al. (2017) asserted that in other for organizations ensure an effective management of their construction projects there is the need for planning and control. the views of respondents on planning and control in relation to construction projects in STMA led to a mean response of 3.95 which was as indication of a confirmation by the respondents that there is effective planning and control of project in STMA.

Alaghbari *et al.* (2017) also noted that organizations need to ensure effective communication among all the stakeholders in other to effectively manage its construction projects. The responses provided in this regard led to a mean score of 2.02. This meant that the respondents disagreed that communication in STMA with regards to project management is effective.

Effective policies or regulation on contract management was also identified by Ashley et al. (2017) as one of the most important factors for successful project management. When asked to express their views in relation to the level of effectiveness of the contract management policies in STMA, a mean response of 2.12 was also obtained which indicated that the respondents disagreed that the regulation were effective.

According to Iyer *et al.* (2008) another factor that needs to be considered during project management is detailed designs and drawing. In other for the project to be satisfactorily executed, there is the need for the contractor to be furnished a detailed design of the project. The views shared led to a mean response of 3.84. This meant that the respondents agreed that STMA furnishes it contractors with detailed designs of project to be executed.

According to Alaghbari *et al.* (2017) there is the need for organization to have available funds prior to the commencement of projects. Even though it is obvious that funds are vital for a successful project delivery, the finding of the study revealed that, in STMA fund are sometimes unavailable prior to the commencement of projects. A mean response of 1.33 was obtained in this regard.

Effective project risk mechanisms are also expected to be in place as part of the measures for effective project management (Iyer *et al.* 2008). The respondents with regards to this strongly disagreed that STMA has effective risk management measures in place to ensure an effective project management. A mean response of 1.33 was obtained in this regard.

The respondents however strongly agreed with a mean response of 4.34 that the contractors who are employed by STMA for their projects are experienced and

qualified. this assertion agrees with the findings of Nguyen et al (2014) who noted that experienced and qualified teams are need to ensure a satisfactory project.

Even though the contractors engaged to construct project for STMA are seen as qualified and experienced, the same cannot be said about their employees. The responses on the employees led to a mean response of 2.47 which was an indication of a disagreement to the assertion. This situation contradicts the call of Nguyen et al (2014) for an experience team to ensure an effective project management.

Motivation of contractors and their employees as well as strict supervision of project under execution were identified by Iyer *et al.* (2008) and Nguyen et al (2014) as factors worth considering for an effective project management. The respondent disagreed that both variables existed in STMA's project management practices. The respective mean response obtained were motivated project team (2.33) and strict supervision of project team (2.49).

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Introduction**

The study sought to examine the views of respondents on causes of delays in construction projects in STMA and the critical success factors which can be employed to address the problem of construction delays. Various findings were obtained and discussed in detail in the fourth chapter. This chapter of the study presents the conclusions drawn from these findings and recommendations for improving construction project management in STMA. It also presents suggestions for further studies.

#### **5.1 Conclusions**

##### **5.1.1 Nature of construction project delays in STMA**

The literature reviewed revealed that construction project delays can be broadly classified as concurrent delays, excusable delays and non-excusable delays. The findings in relation to nature of construction delays revealed that all the three classes of construction delays are associated with construction project management in STMA. Specifically, a mean response of 3.93 was obtained in relation to concurrent delays to indicate the majority of the respondents confirm the presence concurrent in construction project management in STMA. A mean response of 3.20 was also obtained to confirm that excusable delays also affect construction project management in STMA. The mean response for excusable delays was 3.33 which also an indication that this form of delay exist in construction project management in STMA.

An examination of the mean responses indicated that the major forms of delays in construction project management in STMA are concurrent delays. This is followed by non-excusable delays then excusable delays in order of decreasing importance.

### **5.1.2 Causes of project delays in Sekondi-Takoradi Metropolitan Assembly**

The causes of construction delays were also broadly classified as contractor related causes, client related causes and also external causes. The responses also indicated that all three causes of delays are affecting construction project management in STMA. Specifically, a mean response of 3.33 was obtained in relation to contractor related factors to indicate that project delays are affected by certain decisions by contractors. A mean response of 3.47 was also obtained in relation to client related factors to also confirm that construction project delays are affected by certain decisions by STMA. The mean response for external factors was 3.51 which also an indication of the fact that external factors are contributing construction project delays in STMA.

The findings indicated that external causes of delays are the major causes of construction delays in STMA. This was followed by client related factors then contractor related factors in order of decreasing importance.

### **5.1.3 Critical success factors for construction project management in STMA**

The findings on the critical success factors for effective construction project management also revealed that STMA has the following measures in place: effective planning and control of construction project; the use of detailed drawings for project management and also employment or engagement of qualified and experienced personnel and contractors for project execution and management. However the

organization is lagging behind when it comes to effective communication, development and implementation of standards for regulating projects, making funds available prior to the commencement of projects and risk management.

## **5.2 Recommendations**

The findings of the study revealed that construction project related communication is generally ineffective. Considering the significance of communication in effective project management, the study recommends that STMA should institute additional measures to improve communication among all the stakeholders involved in the management of the project under its ambit.

The findings also revealed that concurrent delays are the main form delays associated with construction project management in STMA. This is as result of effective decision making processes that exist in STMA. It is therefore recommended that STMA should review it processes for decision making and implementation becomes more streamlined.

Contractor related causes were also identified by this study as one of the major factors contributing to construction project delays in STMA. It is therefore recommended that periodic consultative meetings and seminars must be organized between STMA and its contractors in other to enable STMA identify some of the challenges of its contractors and asset them to address them.

## **5.3 suggestions for future studies**

It is suggested that a study into the role of stakeholders in construction project management should be conducted as means of in identifying strategies that can be employed to enhance the interrelationship among all of these stakeholders.

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## APPENDIX A (SURVEY QUESTIONNAIRE)

This questionnaire is designed to elicit for information that will enable the researcher to examine the critical success factors for construction project management in the public sector in Ghana. You are assured that all the data/information you provide would be treated with utmost confidentiality. Thank you for your participation.

### SECTION A – BACKGROUND INFORMATION

Please answer the following demographic questions by ticking the appropriate option.

1. Gender: Male ( ) Female ( )
2. Qualification : SSSCE/WASSCE ( ) Diploma (HND) ( ) Degree ( )  
Masters ( ) PhD ( )
3. How long have you been in/with STMA?  

<input type="checkbox"/> (1-2 years)	<input type="checkbox"/> (3-4 years)
<input type="checkbox"/> (5-6 years)	<input type="checkbox"/> (7-8 years)
<input type="checkbox"/> (9-10 years)	<input type="checkbox"/> (11 years and over)

This section of the questionnaire requires you to indicate you views on the assertions stated under the various sub headings based on the following scale:

- |                     |                  |           |
|---------------------|------------------|-----------|
| 1=strongly disagree | 2 = agree        | 3=neutral |
| 4= agree            | 5=strongly agree |           |

**NATURE OF CONSTRUCTION PROJECT DELAYS IN SEKONDI-TAKORADI METROPOLITAN ASSEMBLY**

NATURE OF CONSTRUCTION PROJECT DELAYS IN STMA	1	2	3	4	5
Concurrent delays					
4. In STMA, funds for projects delay					
5. In STMA, processes required for projects to commence are time consuming					
6. In STMA, processes required for handing over of project are time consuming					
7. In STMA, decisions on projects by stakeholders take a long time to be made					
Excusable delays					
8. In STMA, construction projects are affected frequently by acts of nature/God					
9. In STMA, stakeholders frequently make modifications that delay projects					
10. In STMA, change in management and stakeholders affect project delays					
Non-excusable delays					
11. In STMA, contractors ensure that they work according to the agreed schedule					
12. In STMA, contractors ensure a timely communication of their decisions to the assembly					
13. In STMA, contractors consult the assembly on modifications in projects.					

**CAUSES OF PROJECT DELAYS IN SEKONDI-TAKORADI METROPOLITAN ASSEMBLYS**

CAUSES OF PROJECT DELAYS IN STMA	1	2	3	4	5
Contractors' related factors					
14. In STMA, contractors poorly manage their site					
15. Poor cash flow of contractors					
16. Contractors do not have adequate equipment for project execution					
17. The sub-contractors and suppliers of contractors STMA perform poorly.					
Client related factors					
19. Management of STMA and stakeholders often make modification to projects under execution					
20. Management of STMA delay in decision-making					
21. STMA does not have adequate funds for projects					
22. Management of STMA poorly communicates decisions to contractors					
23. Management of STMA delay payment of contractors					
External factors					
24. Sudden changes in government policies affect project delays					
2.5 Political interference causes delays in project execution in STMA					
26 Inadequate supply/lack of supply of required materials					
27. Poor ground and weather condition					

**CRITICAL SUCCESS FACTORS FOR CONSTRUCTION PROJECT  
MANAGEMENT IN STMA**

Critical success factors for project construction management	1	2	3	4	5
28. In STMA, there is effective planning and control of construction project management					
29. There is effective communication between contractors and stakeholders					
30. Regulations for contract management in STMA is effective					
31. There is effective and detailed design of projects in STMA					
32. STMA ensures that there is availability of funds before projects are executed					
33. Project risk management is effectively undertaken in STMA					
34. STMA ensures that qualified and experienced contractors are employed to construct their projects.					
35. STMA ensures that contractors employ qualified employees for their projects					
36. Employees of STMA's contractors are motivated to perform					
37. STMA ensures a strict supervision of projects awarded to contractors					