

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

**An Exploratory Study into Relationship Types Between Building Contractors and  
Material Suppliers in the Ghanaian Construction Industry**

**by**

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A Thesis submitted to the Department of Building Technology,  
College of Art and Built Environment  
in partial fulfilment of the requirements for the degree of

**MASTER OF SCIENCE**

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**DECLARATION**

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

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## ABSTRACT

Buyer-supplier relationship can enhance competitive market amongst the participants and thus increasing their economic performance. Different projects may exhibit different relationships that exist between the contractors and suppliers and as such the construction field has been exposed to various challenges and conflicts resulting from misunderstandings about the roles and obligations of the players. This research study therefore focused on the exploration of relationship types that exist between building contractors and material suppliers in the Ghanaian construction industry. In order to achieve the above stipulated aim, three main objectives were carved out. This research work made use of survey questionnaires to acquire the appropriate desired data among D3K3 and D4K4 contractors in the Greater Accra Region. Adopting a purposive and convenience sampling technique a total of 60 questionnaires was distributed among the targeted population. The results of the survey showed that transactions relationship was the most often engaged relationship type with the second ranked relationship type being project collaboration. The analysis further showed that delays was a major factor influencing the selection of relationship types in the construction industry. The second most important variable influencing relationship type was trust. The findings indicate that in terms of quality, the ideal relationship type is 'project collaboration'. As project collaboration is touted to be one of the relationships considered to engender growing relationship, this type of relationship is recommended for the Ghanaian construction industry. It is recommended that further research work may explore innovative relationship types between contractors and suppliers in the Ghanaian construction industry.

**Keywords:** Relationships, Contractors, Suppliers, Types.

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## **DEDICATION**

This thesis is dedicated to my lovely children; Kekeli, Richard Jnr. and Bubune

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.0 INTRODUCTION**

The economy of Ghana has the construction industry to be one of its important sectors which contributes a percentage of 8.5 averagely to the Gross Domestic Product (Ghana Statistical Service, 2007). In 2002, about 2.3% of the working population was engaged by the construction industry economically (Amankwa, 2003). The construction industry assists in the line of manufacturing of other industries and also produces goods for its customers' consumption. The responsibility of the industry has become very key after the discovery of oil with Ghana's aspiration of becoming a middle income nation.

With the constant increase in competition in the global market, there is a pressure for most organisations to find the means of cutting down material and production costs hence making the role of suppliers in the construction industry very crucial. Both the purchasing department and the supply chain management of every firm deem it very necessary to conduct a proper evaluation for the selection of a qualified and reliable supplier in order to attain a reduction in the material and production costs. Most of contractors highly rely on their suppliers for the realization of projects and the attainment of the projects' required performance. It has been proven by most studies that about ninety percent (90%) of the turnover made in a project by the main contractors is spent on the purchasing of goods and services and this serves as opportunities for both the contractors and the suppliers (Koskela, 2000). Therefore, this emphasises on the need on managing the suppliers. Unfortunately, a lot of Contractors have the intention of building a closer and a long term relationship with their clients and the inverse with their suppliers.

The contractor-supplier relationship can be built on trust, commitment to same goals having full knowledge and in-depth understanding of the expectations and values of each other to enhance efficiency and cost effectiveness, to provide the chance for innovation increment and the constant development of quality goods and services due the significance of partnering and cooperation that exists between the main contractor and the supplier. According to Gadde and Snehota (2000), one of the key and valuable assets of every firms is relationship and its management is not significantly for procurement and transactional relationships but to ensure the realisation of different facets of business undertakings (Chen and Paulraj, 2004b).

Various studies show that embedding supplier management philosophies into procurement routes is imperative for contractors in the built environment (Hennig-Thurau et al., 2002; Berry, 1995). Among many things they critically influence a company's performance. The range of this philosophies vary and they differ from concepts of strengthening buyer-supplier relationship to the selection of the appropriate supplier (Prajogo et al., 2012). Factors that influence the right selection of any given supplier include factors such as the products under consideration, the desired standard of the material, how costly the material is to the given project goal. (Prajogo *et.al.*, 2012). Customers or buyers expect their suppliers to uphold known standards of product quality, service, distribution, promotion and partnering within that industry (Narayandas & Rangan, 2004). Subsequently, issues on supplier relationship quality (SRQ) has garnered substantial academic and industrial attention in other fields and industries. It is however interesting to note that within the context of developing countries there is a paucity of research especially within the construction industry. However, within developing countries such research is limited, particularly within the context of the construction industry (Batt & Rexha, 2000; MacDuffie, 2011; Jiang *et.al.*, 2011a). This observation may be due to the limited research due to

apparent disparities in socio-economic profiles between both developed and developing countries.

### **1.1 STATEMENT OF THE PROBLEM**

In purchasing situations, contractors encounter several difficulties which are known and these can be stabilized by balancing the relationship between contractors and suppliers and also working on the poor planning by a contractor which can result in the confusion and ignorant of what to buy. Buyer-supplier relationship can be managed so that they assist the participants in gaining a competitive market advantage and in increasing their economic performance (Ford et al., 2003). Ford et al., (2003) argue that the economic context of the buyer-supplier relationship is important. Relationships are affected by various factors, such as communication, trust, and proactive conflict resolution (Tuten and Urban, 2001). Tuten and Urban (2001) argue that the balance of power in a relationship is important to its value.

Different projects may exhibit different relationships that exist between the contractors and suppliers and with this the construction field has been exposed to various challenges and conflicts between the main contractors and subcontractors resulting from misunderstandings about their roles and obligations (Cox and Ireland, 2002). Edwards et al. (2016) explored the various antecedents of supplier relation quality in the Ghanaian Construction supply chain. In their study they showed that culture, politics, dependence and trust have a substantial impact on relationship quality in supply chain collaborations amongst purchasers and suppliers of building materials. Bosco (2014) also investigated the challenges that affect contractor supplier relationship in Ghana. Whilst various studies have been conducted in this direction extant literature shows that exploration of the various relationship types is still lacking within the

construction industry. This study therefore addresses a need for research into relationship types between contractors and suppliers in the Ghanaian construction industry.

## **1.2 AIM**

To explore the relationship types that exist between building contractors and material suppliers in the Ghanaian Construction Industry

## **1.3 OBJECTIVES**

- To identify the type of relationship that exist between building contractors and material suppliers in the Ghanaian Construction Industry
- To identify the factors that influence relationship types between building contractors and material suppliers in the Ghanaian construction industry
- To identify the impact of the identified relationship types on building contractors work output in the Ghanaian Construction Industry

## **1.4 SIGNIFICANCE OF THE STUDY**

There have been cases where the contract period of projects has to be extended due to delays in materials delivery (Saad, 2003). Other projects have halted due to long standing litigation between contractor and supplier (Jones and Saad, 2003). This can result if there is a lack of a well written contract stating each other's duties, responsibilities, time of delivery and other relevant conditions. The study will equip both contractors and suppliers with the requisite knowledge in managing the relationship that exist between them. The study will also

contribute to the growing body of knowledge on contractor supplier relationship in the construction industry.

## **1.5 METHODOLOGY**

Secondary data was collated through a desktop study to identify pertinent literature in the area of contractor supplier relationship in the construction industry. In order to acquire primary data, a well-structured and organised questionnaire was administered to various contractors. The purpose of the questionnaire was to make clear the respondents' answers by employing close ended questions and also rank the answers provided using the likert scale. A descriptive analytical tool was used for the data analysis. Suitable ranking analytical tool such as the mean score analysis was used to rank the factors that influence relationship types between contractors and suppliers and also to rank the impact of the identified types on Contractors work output.

## **1.6 SCOPE OF WORK**

This research focuses on class D3K3 and D4K4 contractors. The study focused on relationship types in the construction industries in the Greater Accra region. The selection of this region was motivated by the firstly the position of this region which is the capital city of the country and the hub of most construction firms in the country. Secondly the location was selected due to the proximity to the research which helped reduced the challenge of data collection; specifically, questionnaire retrieval.

## **1.7 OUTLINE OF STUDY**

The study was organised in five chapters, with chapter one constituting the background of the study, problem statement, aim and objectives and the scope of the study. Chapter two will undertake an extensive Literature review which explains the concept of contractor/supplier relationship and their obligations to contract. Research methodology and its philosophical positions, the research approach, sampling frame and the instrument, design and administration will be established in Chapter Three. Chapter Four will spell out the Analysis and Discussion of Result and the final chapter will be the Conclusion and Recommendation which will review objectives and findings and point out some directions for future research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

Stakeholders of the construction industry such as architects, government, consultants, contractors and subcontractors, supplies, etc, have responsibilities to perform. With regards to construction, suppliers are inevitable. Under pressure in the globalized markets are companies which have the responsibility of reducing production and material cost and thus a competent supplier is better positioned in cutting down the cost of materials and production. Supplier's selection and evaluation plays an important role in supply chain management and purchasing department of a company. According to Beach et al. (2005), for a supplier to be selected and evaluated means to find suppliers who are able to provide the right quality products or services at the appropriate cost, at the quantities specified and at the appointed time. Suppliers evaluation and selection is a quantitative and qualitative multiple criteria involving multiple criteria decision making (MCDM) and thus the procedure for selecting a supplier involves systematic, formal and rational selection model.

Three distinct groups namely: overheads, labor and materials are the divisions a project will break down its cost (Bemelmans et al., 2012). Accounted for only materials in the entire construction cost is around (40-45) % and that for the cost of labor is premised on the available employees within the project's environs. Greatest flexibility in lowering the construction cost is provided by solely materials. This proves the essence of suppliers in the successful completion of projects. Wood and Ellis (2005) posited that connections between general contractors (GCs) and suppliers as a result of biasness and misunderstanding the needs of each other are prone to petty squabbles. This is in line with Fah (2006) statement

that suppliers and contractors relationship are sometimes challenging. This implies that especially during the project's execution, teamwork must be established between GCs and suppliers so as to contribute their quota towards the project's completion.

## **2.1 CONSTRUCTION SUPPLY CHAIN**

Construction is generally seen as an industry producing one-off projects where repetitiveness is minimal. Several initiatives have been taken in order to increase efficiency, effectiveness and productivity in the supply chain aiming at integration of design and production (Love et al., 2004), investigating the relationship between the client and its suppliers (Cox and Townsend, 1998) and the relationship between the construction site and the supply chain (Vrijhoef and Koskela, 2000). Furthermore, Akintoye and Main (2007) investigated the UK contractors' perceptions of relationship in general in construction and showed that these relations most often are customer driven and that there is little consideration of suppliers and subcontractors in these relations.

Even though supply chain management within construction in many cases is synonymous with partnering (Fernie and Thorpe, 2007), supply chains downstream from the contractors should be targeted in order to effectively reduce the overall construction cost (Proverbs and Holt, 2000). Accordingly, Dainty et al. (2001) address contractors' need to make efforts in building partnerships and long-term relations not only with clients but also suppliers, even though these organisations might be smaller than the contractors' organisations. However, the integration and establishment of long-term relations with these small and medium sized companies may not be easy, and several barriers have been identified.

Dubois and Gadde (2000) stated that by building relationship between contractor and supplier especially at a duration longer than a single project serves as a foundation for

learning and mutual experiences required at the construction site. Even though the contractors have the ability to realise the accompanying benefits if they were able to achieve a more regular workflow, the collaborative relationships remain small within construction (Green et al., 2005). Long-term relationships are not the general answer to every problem within project handling, but rather the relations should be adapted to the context (Fernie and Thorpe, 2007). Green et al. (2005) articulate that few of the papers within construction research include context in the comparisons with other industries, while pointing out that power relations between companies and also market conditions might interfere. Nevertheless, Errasti et al. (2007) indicate that significant improvements may be possible if contractors concentrate their purchasing to fewer suppliers and work more closely with their suppliers. In a study of 448 contractor-supplier relations, Kamann et al. (2006) show that historical collaboration and expected future collaboration lead to higher efficiency and better results in the relationship; however, they saw a stronger link if the relationships are individual rather than organizational.

## **2.2 BUYER-SUPPLIER RELATIONS**

While Dubois and Gadde (2000) strive for an understanding of the system of supply, analysis of relations of supply chain must be done at a dyadic level (Bäckstrand, 2007). Gadde and Snehota (2000) averred that a key role played in association choices are based on prerequisites and context aside that no general best type of relationship exists. They reversed that how a relationship should be involving should be reviewed as circumstances modify and never be a lasting choice. Long-term relations are most interesting for a buying firm if the supplier is categorized as strategic according to Kumaraswamy et al., (2000). The purchased

product also needs to be of high volume and of critical nature (Monczka et al., 2011).

Studies of buyer-supplier relations often have the perspective of the buyer. Several criteria have been pointed out as essential in order to build sustainable relations, such as trust and coordination, commitment, effective communication, top management commitment and expectation of relationship continuity. Based on their survey of 141 buyer-supplier practitioners, Ryu et al. (2009) argued for a division of these criteria into a strategic and operational level, where the strategic level, such as strategic fit and interdependence affects commitment and the operational level, such as operational compatibility and communication affects trust. Furthermore, both commitment and trust affect the collaboration between the parties, which in turn contributes to better supply chain performance.

Kumaraswamy et al., (2000) claimed that organization doing the buying would like to see some evidence that the supplier is committed to the buying organization and the association, and that commitment be fostered by the supplier through the organization doing the buying's engagement in the supplier's complications. The supplier's commitment to a lasting viewpoint of the relationship and the buying organization is premised on the purchaser handling these difficulties with urgency. Ellegaard and Ritter (2006) posit that during the lifecycle of the relationship attraction is necessary between the parties besides it is claimed to increase the added value of the supplier-buyer connection. Attractiveness implies that interest is created by the customer from the supplier with benefits like greater commitment to the customer (Ellegaard et al., 2003).

Trust, friendliness and co-operative features of long-term relationships will, however, not guarantee greater satisfaction and understanding (Harland, 1996). Through a comparison of companies in the automotive aftermarket in Spain and the UK, Harland (1996) showed that

the satisfaction was the same both in the close and in the distant relations that were studied and argued that the circumstances decide what kind of relationship is the most appropriate.

Harland emphasized these surprising results since the more common assumption is that closer relationships lead to greater satisfaction and understanding. Another prerequisite for developing an effective long-term relationship is a small supply base (Sarkar and Mohapatra, 2009). Although some companies have thousands of suppliers, a few products often constitute the major parts of the companies' purchasing costs; purchasing of these products is furthermore often concentrated to a limited number of suppliers (Gadde and Snehota, 2000).

## **2.3 SUPPLIER SELECTION**

### **2.3.1 Supplier's Process of Selection**

Selection of a supplier refers to the procedure whereby organizations find and have an agreement with suppliers. A huge amount of an organization's resources are deployed in the selection of suppliers. Firms therefore want high value for money spent in recruiting suppliers. This section describes the stages of selecting supplier: finding suppliers, lobbying information from suppliers, contract terms setting, negotiating with suppliers, and evaluating suppliers.

A buyer's job is not only of essence but ambiguous. Procurement assessments are to be performed accordingly by buyers defining what "best worth" means for the buying organization. Within the buyer's firm, the buyer must liaise with technical, operations, and legal specialists so as to find the optimum worth. These difficulties make the selection of supplier a befitting topic for disciplines such as that of operations and management science.

To begin with, competent probable suppliers must be identified by the buyer. Secondly, these suppliers must be evaluated by the buyer in that the buyer must officially gather information from suppliers. Based on the requested information, suppliers reply by providing “offers” for the contract, stipulating a proposition on the contract terms, such as lead time, price, quality, and so on. Negotiation procedures are deliberated as offers by suppliers change once negotiation is initiated with the buyer. The buyer determines which supplier(s) wins the contract and therefore pays closer look at the supplier in the contract period to enhance selecting supplier in the near future.

For consistency in this section “buyers” are referred to, nonetheless in practice procurement manager, procurement agent, or contracts manager perform the roles described. Focused on this part are the intricacies and roughness involved in selecting supplier (verifying that providers use performance of supplier from history in awarding contracts and are indeed qualified). For most products as well as services such intricacies exist in the procedure of choosing suppliers. Commodity markets present trading of raw materials and act as exclusion to the difficulties encountered in selecting suppliers. These market institutes standardized terms of contract by way of liquid markets to determining prices and assuring trade terms by clearing houses in a bid to evade the intricacies posed by supplier selection. Buyers suffer dearly at the non-performance of supplier.

## **2.4 DIFFICULTIES AND CONFLICTS**

Relationships problems may develop between the supplier and main contractor as a result of delay in payment, bad communication, poor systems of management, and deprivation of information on site. According to Othman (2007), suffered as results of these conflicts are

poor management, late project delivery, low quality products, and as a result the main contractor and supplier as well as clients become discontent.

Only few suppliers have the same perception of the main contractor-supplier relationship (Hinze and Tracey, 1994). Team work or partnership builds the relationship whereas for others lack of communication and distrust makes the relationship more confrontational in nature.

There exist many subcontracts won without which any official dialogue took place between the supplier and main contractor which is likely to increase conflict after commencement of a project. Also, arisen as a result of these problems are as follows: poor quality of product, conflicts scheduling, progress payments delay. Identified below are some interface problems:

#### **2.4.1 Poor construction work quality**

After winning a construction contract, the principal contractor performs his portion of the project whereas the needed materials are provided by supplier(s). Of the two parties, suppose anyone does not work to standard in line with the construction work, the other party's work standards are compromised and hence will result in interface problem between these parties. Conversely, fewer mistakes are bound to occur if the contractor is more experienced in this field.

Most of the interface problems are initiated by lack of experiences resulting in rigidity in adapting to a new atmosphere (Huang et al., 2008).

#### **2.4.2 Contractor's financial problems**

Delayed payments by clients, poor management, or poor cost estimates are some of the financial difficulties contractors face. This according to Al-Hammad (1993), delays the

progress of payment paid to the supply. In order to build a better lasting connection between the contractor and his supplier, payment on time is considered as a pressing issue worth dealing with. Trust issues exist between both parties and are caution in all business endeavors. Mostly, relationships are complicated as contractors are thought to be poor paymaster (Othman, 2007).

### **2.4.3 Non-adherence to the schedule of construction**

The duration of a construction project is known upon winning a contract. In order to meet the identified period of the project, schedule of the construction activities are done by the winning contractor and covers that of his supplier(s). On the other hand any delays in the execution of this scheduled activities by any party will cause delay in the project's progress especially by the other party (Al-Hammad, 1993; Sambasivan and Soon, 2007).

Upon reaching agreement between the client and the contractor, included in the contract will be the time for project completion. Suppliers and subcontractors will be held responsible for the contractor's inability to meet the expected project duration especially during the construction phase of the project or vice versa and thus this could lead to conflict between the contractor and his suppliers.

### **2.4.4 Improper communication**

For a project to be completed successfully, good communication between the contractor and supplier is of essence. Verbal communication such as phone calls or face to-face exists as well as written communication such as normal mail or other means exist among parties in construction. Work progress will be delayed due to improper communication. When directives given by clients are not plainly transmitted to or shared with the contractor and consequently to the supplier, information tends to be poorly communicated as in the form of

milestones, project objectives, and urgency of the project. Most often than not information is communicated at the later end of its due date. Suppliers find themselves in tight corners when orders are sent late and thus not enough time is left for preparing and executing the project. This leads to compromised products in terms of quality, or product delaying. Incorrect pricing results from improper communication between the contractor and the supplier. In order to reduce prices the contractor mounts pressure on the supplier while withholding essential information, affecting proper pricing (Othman, 2007). According to Huang et al (2008) communication glitches have the tendency to result in grave inefficiency, like “improper management system informing new information” and “poor planning and scheduling”. He further stressed that coordination is very important to project’s quality.

#### **2.4.5 Variations in material costs**

In any construction project, the cost of both the material and labour characterize the principal elements. The contractor or his supplier suffer a loss in the event of the contractor making a blunder in the estimation of cost as well as pricing for both labour and material, or if the prices of either the material or labour exceeding the expected prices. Cost revision difficulties will develop between the contractor and his supplier if his reviewed estimation costs are not accepted by the client (Dubois and Gadde, 2000).

#### 2.4.6 Delay in shop drawings and sample material approval

Shop drawings or sample materials conferring to the contractual terms must be submitted to the contractor by the supplier for his endorsement. The approval of the materials submitted may be overdue as a result of poor management efficiency by the contractor. This culminates into a difficulty arising between the contractor and the suppliers about the delays in the

carrying out of the project. Huang et al (2008) acknowledged that uncertain facts in the drawing results in interface problems between supplier and contractor.

#### **2.4.7 Shortage of construction materials**

Construction materials cannot be ruled out as an essential element in the project's continuation. Conflict arises between the two parties should there be shortage of construction material in the market and hence delays the progress of the work. Enshassi et al. (2007) and Alinaitwe et al. (2007) specified that material shortage, affects output leading to problem creation between main contractor and subcontractor.

#### **2.4.8 Termination and interruptions of work**

The contractor is most likely to terminate the supplier's contract in the case where the supplier offers inferior materials or infringes on the contract agreement between the supplier and the contractor. Contractor can be sued in court if the supplier agrees not with the action presented by the contractor. Therefore, litigation will develop and result in conflict between the two parties.

#### **2.4.9 Legal disputes**

Legal disputes are common among the parties involved in the construction project, such as between the contractor and his subcontractors, between the client and the contractor, or among the subcontractors. Conflict created between the two parties as a result of disputes may affect performance of the contractor or the supplier (Al-Hammad, 1993).

#### **2.4.10 Contractual issues**

Problems are created between the contractor and the supplier when poor project management by the main contractor leads to loss in material and labour costs (Al-Hammad, 1993).

Confusion is created on site due to the supplier not carrying out his specified duties and proper records of work (Othman, 2007). Huang et al., 2008 posited that in the execution of contract numerous contracting problems come to bear, like “unfinished contract”, “uncertain details in the drawing”, “design modification”, etc. Lack of formal discussion taking place between the contractor and the supplier deprives most subcontracts taken place.

#### **2.4.11 Non-adherence to the conditions of the contract**

Some conditions of the agreed contract are neglected by the supplier. This therefore leads to dispute arising between him and the supplier in case the contractor becomes aware of this neglect.

### **2.5 RELATIONSHIP MANAGEMENT**

#### **2.5.1 Defining Relationship Management**

Pala et al. (2012) averred that two conceptual fields of study exist; Supply Chain Management (SCM) and Industrial Network Approach (INA) that provides industrial and theoretical information on inter-company relationships. It has been argued that in managing supply chain relationships no single-unified theory exists and suggestions have been advanced concerning blending both INA and SCM concepts that will complement each other's soft spots in a bid to come out with a framework from a multi-theory viewpoint (Halldorsson et al., 2007). Usually, relationships have a multi-faceted relationship structure where relationship's type, intensity, form, and duration are shaped by element. According to Gummesson (2008), essential conceptions of relationship management are defined as relationships, networks and communication.

Ford et al. (2003) postulates that, concluded in both the SCM and INA studies are that relationships as in content, involvement, and dynamics, are exceptional to every transaction. Management of relationships is a complex process in that every single relationship requires a dissimilar style to its management (Briscoe and Dainty, 2005).

### **2.5.2 Relationship Management in the AEC Industry**

In supply chain management, management of relationship plays a vital role in executing logistics and purchasing aspects of any construction work (Maqsood and Akintoye, 2002). Nevertheless, Pala et al., (2012) argue that it is not entirely true. Construction specific SRM (cSRM) refers to “company-wide firm tactic used to manage its unified, dynamic and multi-faceted connections by utilising the firm’s resources and its interaction with other companies”. This therefore ensures development of cordial relationships throughout the streams of supply chains. This definition is adopted for this study

Looked at in an extant literature on construction supply chain relationships are two main viewpoints of the subject. The first perspective argues cSRM from a Transaction Cost Economics perspective where obtaining and sourcing of suppliers is the principal role of cSRM (Frödell, 2011). This view highlights a cost reduction outlook to management as well as preventing a wider look at relational units implanted within the interaction procedure (Vrijhoef and Koskela, 2000). On the other hand Pryke and Smyth (2006), considers cSRM to be administration of relationships by way of human, social capital, and structure of organizations. Conversely, the research on SRM is contrasting and an emphasis is placed on relationship kinds assumed by construction companies within their network of supply (Meng et al., 2011; Meng, 2010). A clear understanding of managing, coordinating and controlling

different types of relationships in the best way will ensure better workflow processes as well as all ranks in the supply chains will benefit from healthier relationships.

### **2.5.3 Classification of Relationships in the Construction Industry**

Many actors are related together through dynamic, multiple and context specific relationship strata such as contractual relationships, product/information/material flows, information exchange networks, monetary relationships, and social networks in any construction project supply chain (Pryke, 2004). The features of the project defined by size, period, procurement route, intricacy, and patrons determine the length of the supply chain or difficulty of the network within the project setting.

Within the cSRM, literature relationships present two perspectives: procurement relationships and firm-firm relationships. Most of research regarding supply chain interactions is unfair towards one precise form of relationship since they analysed the partnering connection and characterized dissimilar stages of partnering within their studies. Again, the insufficient handling of crucial relationship features for each relationship class presents the main flaws in almost all of these researches.

Pala et al. (2012) identified four categories of relationships from the literature review on supply chain management in construction. The classes mentioned here are categorised as transactional relationships, project collaboration, long-term strategic, and series of transactions partnerships. They distinguished these categories by the ensuing basic features: counter-productive, collaborative, compliant, and cooperative respectively. Nonetheless these relationships in terms of their multi-level, multi-faceted and dynamic relational elements are not evidently distinguished. The relationship types are discussed in more detail.

### **2.5.3.1 Transactional Relationships**

Transactional relationship is the easiest form of relationships that transpires between an organisation and its suppliers as well as the purchasers. Since the construction projects are commonly known as a combination of several firms, this is usually familiar (Dubois and Gadde, 2000). Within a transactional relationship, there is normally an interaction between two parties in the chain and this is brief, simple and just for commercial purposes. However, this can be referred to as low engagement relationships with the benefit of transfer of knowledge to the parties which can serve as a protection against adverse situations, creating very delicate processes, providing alternatives for innovation and diversity and also expressing the willingness for a continuous relationship (Dubois and Gadde, 2002). Therefore, it is much easier employing transactions relations in smaller sectors due to the fact that there is less commitment of resources as well as the reduction in its level of risk which favours issues of doubt and difficulties in the project (Dubois and Gadde, 2002; and Gadde and Dubois, 2010).

Unfortunately, the inability for perpetuation of relationships in transaction is its sole challenge (Cox et al., 2006). According to Dubois and Gadde (2000), this form of exchange impedes the existence of other relationships whether permanent or temporary. With this, it is being characterised as very brief and occurs for the moment's transaction among companies. For instance, all exchanges are forms of interactions that initiate relationships rendering this form less suitable.

Moreover, contractors or firms choose to work with suppliers with respect to this form of relationship because it is mostly cheap and also provide the conditions of contract. Various studies have proven that the transaction form of exchange is challenged with certain things

such as no sense of devotion, disorganisation of values, aims, visions and objectives between parties, seizure of transfer of skills and knowledge to other projects and some long-term cost based on issues in transaction (Wood and Ellis, 2005); which in its course leads to opportunism and mistrust.

### **2.5.3.2 Series of Transactions**

Transactional series is another form of relationship where there is an advance point of contact with the customer who usually buys or contractor who deeply and constantly in contact with his/her suppliers (Cox et al., 2006). This can also be referred to as 'parallel sourcing' in which preference is given to certain listed providers (suppliers) in the distribution of goods or rendering of services to the client (Homlund, 2004). For instance, in recent times, a lot of contractors and customers have some agreed principles with certain listed distributors which enables the ease in the flow of exchange of goods and services but at times varies from the transactional relationship.

Series of transaction is proud of having the ability to raise connections in advanced relationships. Measures of exchange are very different from the previous form of relationship, hence it allows cooperation and also based on how strong and powerful the organisations being dealt with is (eg: volume of transaction, frequency of interaction, degree of strategic importance, level of actors involved in the relationship and so forth) (London, 2004).

This form of relation is similar to the transactional relationship when it comes to their disadvantages that is less communication outside exchange and comes with a fully documented conditions of contract. According to Dubois and Gadde (2000), the first point is

due to the lack of interdependence, standardisation and adaptations between parties which hinders forming of sustainable long-term relationships.

### **2.5.3.3 Project Collaboration**

Project collaboration is another of relationship which exists between firms and constitutes closer relational arrangement among those organisations. For instance, this is the alternative forms of procurement to source suppliers as well as alternative forms of contracts between project firms (Kumaraswamy et al., 2000). It may have come about as a result of either of the two previous relationships or being adopted by firms for strategic purposes with a supplier (Gadde and Dubois, 2010).

At this point, the contractor and the client's interactions can be termed as cooperative which can create certain partnering arrangement. This is also one of most frequently used methods of growing relationships. At this point of interaction, relationships are mainly depending on the duration of the project which will eventually affect the length of the relationship (Humphreys et al., 2003). Other known features are integration of facilities/infrastructure (such as sharing project offices which enhances team building); predetermined risk/benefit sharing mechanisms (framework agreements); early engagement in the projects; focus on the project and client requirements; and, focus on logistics and economic efficiency and performance.

### **2.5.3.4 Long-Term Strategic Partnerships**

This is the utmost point of a relationship. These are high level, strategic and long-term orientated relationships between two parties in the supply chains (Gadde and Dubois, 2010). With the LTSP relationships, a few number of firms come together since it involves much

devotions of both time and other resources from the parties. Most studies have proven that much focus is placed the building of the contractor-client relationship, forgoing that of the supplier, so the level of relationship management is restricted to immediate tier of the partnering firm.

The easiest term that can apply to this form of interaction is ‘collaboration’ within the context of Integrated Supply Chain Management (ISCM) literature. The term ‘collaboration’ can be adopted in different ways in the literature, hence at this point of relationship collaboration is termed as a hybrid business operation in the sense that it has a goal of forming a combined effect by securing vertical and virtual integration between the two parties (Gadde and Dubois, 2010). Gadde and Dubois (2010) described the key features of this kind of relationship as longevity, interdependence, relationship atmosphere, previous interaction, mutual orientation and adaptations in the relationship. The extent of the relationship can easily be determined by a critical look at the relationship features. LTSP interactions have clearly depicted that they welcome all other forms of relationships as an important entity. However, the realisation of this form of relationship in practice is very tedious according to most literature but can be proven the best if all the other elements of relationships are combined in a business (Khalfan et al., 2008).

With every relationship been different and context specific, a new system of management is required in each of the relationship level mentioned above (Cox and Ireland, 2002). As a result, *what* the management should pursue should be considered paramount rather than to define *how* each relationship level should be managed. Paying closer look at relationship, effective and efficient will relationship management scheme be. Monitoring relationship instead of managing the connections and performers in that relationship seems to be the goal

of relationship management especially for transactional relationships as a result of several diverse entities that forms transactional relationship with short and temporary interaction. Cox and Ireland (2002), posit that observing the connections and defining the principal features of the relationship would allow a beleaguered management scheme to be applied to that relationship and this represents the supplier selection process.

In order to control series of relationships especially for SRM a vigorous administration process is made use of. Considered to be more stable and recognizable are the essentials that give form to a series of transaction relationship. When relationships tend to be more organised and planned, the relations and actors in that relationship are not flexible and noticeable making relationship management comparatively relaxed. Companies can look at management of relationship with emphasis on the relationship elements like power symmetry, interdependence, trust, degree of strategic importance and continuity. Vrijhoef and Koskela (2000), revealed that to reduce costs related to inventory, logistics and lead-time on project supply chains, relationship management should concern itself with checking and regulating of actors and procedures.

With the proportions of connections growing, relationships become more concentrated and tougher to regulate. Relationships in project collaboration constitute synchronized interpersonal bodies having distance over a longer duration and more physical make-up. The impact of the relationship management plan goes further than the first tier supply chain companies to include project phases such as: inception stage, construction, practical completion, as a number of project and organisational procedures are attached to relational bodies. Typically determined, organized and entrenched into the project-wide procedures are the key functions of diverse actors, the means, the associations between the actors and

various principal features of cooperative relationships. Reference for future transactions premise on past interactions gotten through records of historical relations. Therefore, in a pre-emptive manner the project partnership relationships must be regulated and synchronized for instance: moving events from the site to the supply chain's previous phases.

Total relationship management style is required in the management strategy for the LTSP relationships where there is management of all the subtleties of the relationship. The role played by contractors in handling their supply chain relationships depicts that integrated management of the supply chains is adopted with the emphasis on refining supply chain as well as the site production (Vrijhoef and Koskela, 2000). Hence absolute relationship management encompass managing, monitoring, coordinating, and controlling all relational phases of the connections at various scopes like project, organisation-individual and organisational level.

## **2.6 MANAGING CONSTRUCTION SUPPLY CHAINS**

According to Latham (1994), the UK construction sector needs to cut down costs by 30% which cannot be realized should companies behave solely. Developments are paramount in supply chain companies. Suggested by Harland (1996), is that in improving the supply chain to meet client wants one needs to alter the nature of relationships thus behaviours, attitudes of people, and company beliefs and compares supply chain to a simulated firm whose only presence is for designing, manufacturing products and engineering to meet the client's needs. For its realization, it is imperative for simulating companies to be endowed and focused at achieving the end objectives same with how company objectives are realized at the

departmental levels. The finest phases for the coming together of thoughts of construction supply chain partakers are the design and conceptual phases so as to improve quality, decrease lead times, reduce variations during construction, lower costs and for commencing the partnering process as well as obtaining the commitment of all parties. Goucha and O'Connor (1996) in their research on the issuance of vendor-data during the design phase of industrialized piping established the prominence of the supplier-designer interface. Acknowledged were several difficulties in vendor data distribution which encompassed late, misplaced or imprecise information in vendor documents when their presence were necessary to complement engineering designs. Difficulties in subsequent procedures were created, leading to: misfabrication of components; remodel of piping interfaces and changeovers; rework at the manufacture shop; onsite piping redirecting and rework on site all as a result of indecision culminating from absent information and documents which was incorporated into design documents. Due to the problems inherent in incorporation of construction and design, quick integration will not be of essence and in some cases unproductive. Puddicombe (1997), emphasize that efforts directed towards integration are essential and must continue as a result of growing intricacies as well as competitive forces in the construction setting.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 INTRODUCTION**

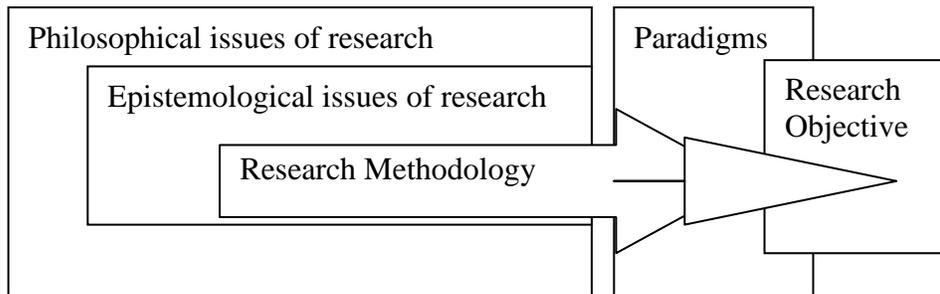
This chapter spells out the methodology employed in the study. It also explains the processes and regulations on which data collection is based and interprets the findings. In the course of the discussion, the following terms with respect to this study will be explained; methodology, epistemology and methods used and continue with the comments on the instruments used for the research design. The chapter also outlines the data collections processes. Other important issues such as information on the sampling frame and size, capable respondents and the field work are also discussed, finalising on how the collected data was be analysed.

#### **3.1 RESEARCH PARADIGM**

Philosophical design and methodological approach are issues that must be dealt with in every study. Research design may be influenced by some philosophical questions based on knowledge, existence and value (Tashakkori and Teddlie, 1998). Therefore, some philosophical positions like ontology, axiology, epistemology and methodology can fully and clearly be demonstrated in order to assist in deciding on the research instrument (Tashakkori and Teddlie, 1998).

Research procedures can be examined and elaborated based on the knowledge in epistemology (Smyth and Morris, 2007). Also, methodology can be a subset of research procedures in philosophy (Smyth and Morris, 2007) and can also be said to constitute certain assumptions and values which becomes the reason or aim of the study involving some procedures in analysing data and its conclusion. Hence, the various techniques conducted in a

study can be described as methods. Figure 3.1 depicts a typical explanation of how epistemology, methodology and methods are applied in a study agenda.



**Figure 1. Application of Epistemological, Methodology and Methods.**

**Source: Smyth and Morris (2007)**

As shown in Figure 3.1, this can be mathematically be represented as the philosophical positions of research being the universal set (U) and both the epistemological issues and research methodology being in the universal set but with methodology as a subset of epistemological positions of the study. With the combination of these three, the most suitable paradigm can be established as well as the research methods based on the context of the study. Specifically, the choice of paradigm will assist in the determining the methodology of the study.

Positivism deals with the correspondence with the natural laws and can quantitatively be analysed. Inversely, the interpretivism suggest that the natural laws are explained according to a person's understanding or conviction of realism surrounding the phenomenon (Walliman, 2011); the two main paradigms in social sciences research. Therefore, the

epistemological positions of a study are responsible for pointing out the best suited paradigm to prevail.

Questions about the natural existence of things can be explained using ontology. It can also be described as the situation where the existence of the “actual” world which is free from the control of human knowledge is being doubted, that is the theory of being. Ontology can be imagined in two different ways, which is either reality or idealism (Johnson and Duberly, 2000). Axiology is another option with two different approaches to reality; thus whether “value driven” or “value free”.

This research is motivated by a positivist paradigm, which suggests that knowledge can be discovered in measurable terms (Saunders et al., 2012). This requires that all constructs (such as relationship types; transactional relationships, series of transactions etc) are well-defined and measured using established statistical measurements in order to gain empirical knowledge about the proposed relationship between the constructs. Through the literature review the various relationship types were identified. Literature shows that these relationship types can be categorised and thus can be measured by identifying whether they take place or not. This behaviour is not too complex as it is very discrete and can easily be identified. Past studies adopted for this study have adopted a quantitative analysis. Few have adopted the qualitative approach. In order to achieve the validity of the study positivism paradigm was chosen. The technique of survey adopted as most suitable research method based on the earlier discussions on data collection for the finalisation.

The research was conducted among D3K3 and D4K4 contractors in the Greater Accra Region. The survey is conducted exploring the relationship types that exist between these

contractors and their suppliers. This was structure objectively and measured statistically in the study. A structured and statistically controlled research analysing method was also used in analysing the data. The axiological position adopted for this research was pragmatism. The decisions made about what to study or how to study could be closely inspected by mainly objective procedures as influenced by the research paradigm. The values of the researcher played no role in determining what were recognized as facts in the interpretations made to establish the various extant relationship types between the targeted contractors and the suppliers. The study used a quantitative research method for an accurate measurement and description of the various relationship types engaged by the contractors and suppliers.

### **3.2 SOURCES OF DATA**

For the purpose of this, primary source of data was collated by employing questionnaires. The data collated assisted in obtaining the existing relationship types, the factors that influence these relationships and the corresponding effect of the adopted relationship on the contractors' output.

### **3.3 UNIT OF ANALYSIS**

The unit of analysis is described as the main object that is being analysed within a particular study. Typical units of analysis vary from individuals in most social science research to groups and social organisations. The unit of analysis is determined by the research question in view. For this study the unit of analyses are D3K3 and D4K4 contractors operating within the Greater Accra Region.

### **3.4 POPULATION**

According to Saunders et. al. (2012), an absolute set of elements or member from which a portion can be taken as a sample can be described as population. Since the research was limited to the building and civil contractors the total population for the study was all D3K3 and D4K4 building and civil contractors working in the Greater Accra Region. Looking at the vastness of the population compelled with inadequate resources, data collection was going to be extremely tedious, hence the need for a sample size to undertake the research.

### **3.5 SAMPLING SIZE**

Sampling can be referred to as a situation where a part is chosen to represent the total number. For this reason, census usually not undertaken since it can be extremely costly.

### **3.6 THE SAMPLING TECHNIQUE**

The techniques for sampling employed in this research for choosing of the respondents were purposive and convenient types. The respondents were purposively selected because specific data and information were needed by the researcher to measure the involvement level of the respondents. The study's population consisted of D3K4 and D4K4 building and civil contractors. The construction industry supply chain in Ghana is dominated by small and medium sized enterprises (SME) (Ayarkwa et al., 2010; Bondinuba, 2012) and in particular, suppliers within the materials supply sub-sector are spread throughout the country. However, the Association of Building and Civil Engineering Contractors of Ghana hold inadequate up-to-date on the total number of D3K3 and D4K4 contractors - hence, the exact population of D3K3 and D4K4 building and civil contractors was difficult to determine. Therefore, a

convenient sample of 60 D3K3 and D4K4 building contractors was utilized using opportunity (or ‘convenience’) sampling which is a non-probability sampling method where participants are selected based on naturally occurring groups. In order to collect high quality data that reflects both suppliers’ and buyers’ opinions and improve sample representativeness, a perception questionnaire survey was distributed within the central business districts of Accra, Ghana. This city includes the majority of building material suppliers and SME construction firms in Ghana (Ahadzie, 2007; Badu and Owusu-Manu, 2010).

### **3.7 DATA COLLECTION INSTRUMENT**

Questionnaire was prepared to aid in the data collection. The questionnaire was designed specifically to solicit responses from consultants that have been engaged on feeder road projects in the Greater Accra Region. Questionnaires were self-administered by people of officer status (at least 1st degree).

The questionnaire was developed in accordance to the objectives of the study, in relation to the comprehensive literature review conducted on the topic. The questionnaire was divided into four main sections, sections ‘A’, ‘B’, ‘C’ and ‘D’. Section ‘A’ comprised questions seeking basic information such as profession of respondents and the period of existence of their firms to help understand their profile as this generates confidence in the credibility of the data collected and hence the research work. Section ‘B’ sought to measure the frequency with which the contractors engage in the identified relationships from literature review. Section ‘C’ enquired of the factors that influence relationship types between contractors and suppliers. The last section sought to identify the level of impact the identified relationship

types have on Contractors work output. Sections 'B', 'C' and 'D' employed a five point Likert scale where respondents were asked to rate various statements. A copy of the questionnaire has been placed in the appendix.

### **3.8 DATA ANALYSIS**

According to Saunders et. al., (2007), data analysis can be categorised into three simultaneous activities: data reduction, data display and conclusion drawing/verification. Therefore, these were applied in this study. Data was analysed using both descriptive data and adopting the relative importance index to find the ranking factor among all the factors articulated from the literature review. For the purpose of avoiding incorrect answers, issues on reality and validity were taken into much consideration. The needed data was presented in the form of a questionnaire derived from the extensive literature conducted in relation to perceptions, attitude and behaviour of customers in relation to store image, involvement and brand equity studies.

### **3.9 SUMMARY**

This chapter exposes different methodologies available to research with the rationale behind the adoption of the methodology employed in this study. Other areas like the approach for the research and the method for collecting data have been discussed. Finally, this chapter closes with discussions on the research process.

## CHAPTER FOUR

### ANALYSIS AND DISCUSSION OF RESULTS

#### 4.0 INTRODUCTION

This chapter entail details of how data derived from the field were organised, analysed and discussed. Out of the sixty (60) questionnaires distributed to D3K3 and D4K4 contractors, forty (40) of them were retrieved which represents a response rate of 67%.

**Table 4.1 Presentation of demographic data of respondents**

<b>Profession of Respondents</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Cumulative Percentage</b>
Project Manager	17	42.5	42.5
Architect	9	22.5	65.0
Quantity Surveyors	4	10.0	75.0
Civil Engineer	5	12.5	87.5
Contract Manager	5	12.5	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	
<b>Length of existence of firms</b>			
Less than 5 years	3	7.5	7.5
6-10 years	3	7.5	15.0
11-20 years	5	12.5	27.5
21-30 years	13	32.5	60.0
Over 30 years	16	40.0	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	
<b>Respondent's years of experience</b>			
Less than 5 years	2	5.0	5.0
6-10 years	3	7.5	12.5
11-15 years	7	17.5	30.0
16-20 years	15	37.5	67.5
Above 20 years	13	32.5	100.0
<b>Total</b>	<b>40</b>	<b>100.0</b>	

**Source: Field survey, 2016**

## **4.1 ANALYSIS OF THE DEMOGRAPHIC DATA OF RESPONDENT**

### **4.1.1 Profession of Respondents**

The main reason behind this question was to ensure that the right people answers the questionnaire and to identify the various professions to which the respondents belong. It can be seen from table 4.1 that out of the 40 respondents, 17 of them are project managers which represent a percentage of 42.5%. Nine (9) of the respondents are architects representing 22.5% of the respondents, four (4) were quantity surveyors, five (5) were civil engineers and the remaining five (5) were contract managers. It can therefore be deduced that majority of the respondents are project managers.

### **4.1.2 Length of existence of firms**

The main intention of this question was to find out the experience of contracting firms in the Accra Metropolis. Form table 4.1, 3 out of the 40 contractors have been in existence for less than 5 years, representing 7.5% of the respondents with 3 also being in existence for 6-10years, representing 7.5% of the respondents. Firms that have been in existence for 11-20 years were 5 and 13 firms have been in existence for between 21-30 years, representing 12.5% and 32.5% respectively. Firms that have been in existence for over 30years were 16 recording the highest percentage of 40%. It is therefore apparent that majority of the contractors in the Accra Metropolis have been on existence for over 30 years.

### **4.1.3 Respondents' years of experience**

This question sought to find out the personal experience of the people that answered the questionnaire as this would influence the quality of the information derived. From table 4.1, it is evident that contractors with experience between 16-20 years recorded the highest

frequency of 15, representing a percentage of 37.5%. This is followed by contractors that have been in existence for over 20years recording a frequency of 13 and a percentage of 32.5%

#### **4.2 ANALYSIS AND DISCUSSION OF RELATIONSHIPS THAT EXIST BETWEEN CONTRACTORS AND SUPPLIERS IN THE CONSTRUCTION INDUSTRY**

As part of the objective of this study, respondents were asked to rate how often their organisations involve themselves in some identified relationships with suppliers. They were asked to rate on a scale of 1 to 5, where 1 represents Not at all, 2 represents Rarely (Less than 20% of the time), 3 represents Sometimes (about 50% of the time), 4 represents Frequently (about 80% of the time) and 5 represents Every time. The results are shown on table 4.2. The various relationships were ranked using their mean and standard deviation.

**Table 4.2 Descriptive statistics on the relationships that exist between contractors and suppliers**

<b>RELATIONSHIPS</b>	<b>N</b>	<b>MEAN</b>	<b>STD. DEVIATION</b>	<b>RANK</b>
Transactional relationship	40	3.88	1.114	<b>1ST</b>
Series of transactions	40	3.25	0.927	<b>3RD</b>
Project collaboration	40	3.58	1.010	<b>2ND</b>
Long term strategic partnership	40	1.73	0.716	<b>4TH</b>

**Source: Field survey, 2016**

#### **4.2.1 Discussion of Results**

From table 4.2, it is apparent that the relationship that was ranked first is ‘transactional relationship’ which recorded a mean value of 3.88 which is skewed towards 4. This means that contractors frequently involve themselves in ‘transactional relationship’ with suppliers. The second ranked factor is ‘project collaboration’ with a mean value of 3.58 also skewed towards 4. ‘Series of transactions’ was ranked third with a mean value of 3.25, which is skewed towards 3. This means, contractors sometimes (about 50% of the time) involve themselves in ‘Series of transactions’ with suppliers. The least ranked relationship is ‘long term strategic partnership’. It recorded a mean value of 1.73, skewed towards 2. This means that contractors rarely involve themselves in ‘long term strategic partnership’ with suppliers.

#### **4.3 ANALYSIS AND DISCUSSION OF FACTORS THAT INFLUENCE RELATIONSHIP TYPES BETWEEN CONTRACTORS AND SUPPLIERS IN THE CONSTRUCTION INDUSTRY**

As part of the objective of this study, respondents were asked to rate the extent of the influence of some factors identified through literature on the identified relationships types. They were asked to rate on a scale of 1 to 5, where 1 represents Not at all Influential, 2 represents Slightly Influential, 3 represents Moderately Influential, 4 Very Influential and 5 represents Extremely Influential. The results are shown on table 4.3 below. The various factors were ranked using their mean and standard deviation. Where the mean values are the same, the factor with the lesser standard deviation is ranked above the one with a high standard deviation.

**Table 4.3 Descriptive statistics on the factors that influence relationship types**

<b>FACTORS</b>	<b>N</b>	<b>MEAN</b>	<b>STD. DEVIATION</b>	<b>RANK</b>
Supply quality	40	4.08	0.971	<b>3RD</b>
Contractor's financial status	40	2.73	0.933	<b>13TH</b>
Suppliers financial status	40	3.38	1.170	<b>10TH</b>
Communication	40	3.88	1.067	<b>5TH</b>
Conditions of contract	40	3.28	0.987	<b>11TH</b>
Trust	40	4.15	0.770	<b>2ND</b>
Conflicts	40	3.93	0.797	<b>4TH</b>
One-off nature of contracts	40	3.73	1.109	<b>7TH</b>
Mutual understanding	40	3.78	1.050	<b>6TH</b>
Market charges	40	3.55	1.154	<b>8TH</b>
Contractual arrangements	40	3.23	1.165	<b>12TH</b>
Interruptions and termination of work	40	3.55	1.176	<b>9TH</b>
Delays	40	4.53	0.640	<b>1ST</b>

**Source: Field survey, 2016**

#### **4.3.1 Discussion of Results**

From table 4.3, it can be seen that 'delays' recorded the highest mean value of 4.53 which is skewed towards 5. 'Delays' was ranked first which means this factor extremely influences the relationship type between contractors and suppliers. Other factors such as 'trust', 'supply quality', 'conflicts', 'communication', 'mutual understanding', 'one-off nature of contracts', 'market charges' and 'interruptions and termination of work' all recorded a mean value skewed towards 4. This means, these aforementioned factors are very influential in determining the relationship type between contractors and suppliers.

'Suppliers financial status', 'conditions of contract', 'contractual arrangements' and 'contractor's financial status' are factors that moderately influences relationship types

between contractors and suppliers in the construction industry. This is because they all recorded mean values skewed towards 3 as rated by D1K1 and D2K2 contractors in the Accra Metropolis.

#### **4.4 ANALYSIS AND DISCUSSION OF THE LEVEL OF IMPACT THE IDENTIFIED RELATIONSHIP TYPES HAVE ON CONTRACTORS WORK OUTPUT**

As part of the objective of this study, respondents were asked to rate the level of impact the identified relationships types have on contractors work output. They were asked to rate on a scale of 1 to 5, where 1 represents Not at all Efficient, 2 represents Slightly Efficient, 3 represents Moderately Efficient, 4 Very Efficient and 5 represents Extremely Efficient. The results are shown on table 4.4 below. The various factors were ranked using their mean and standard deviation. Where the mean values are the same, the factor with the lesser standard Deviation is ranked above the one with a high standard deviation.

**Table 4.4 Descriptive statistics on the impact of the relationship types on work output**

<b>IMPACT OF RELATIONSHIP TYPES</b>	<b>N</b>	<b>MEAN</b>	<b>STD. DEVIATION</b>	<b>RANK</b>
<b>Cost (Ensuring economy)</b>				
<b>Transactional relationship</b>	<b>40</b>	<b>2.65</b>	<b>1.001</b>	<b>4<sup>TH</sup></b>
<b>Series of transactions</b>	<b>40</b>	<b>4.00</b>	<b>1.062</b>	<b>1<sup>ST</sup></b>
<b>Project collaboration</b>	<b>40</b>	<b>2.88</b>	<b>1.090</b>	<b>3<sup>RD</sup></b>
<b>Long term strategic partnership</b>	<b>40</b>	<b>2.98</b>	<b>1.000</b>	<b>2<sup>ND</sup></b>
<b>Quality</b>				
<b>Transactional relationship</b>	<b>40</b>	<b>1.80</b>	<b>0.992</b>	<b>4<sup>TH</sup></b>
<b>Series of transactions</b>	<b>40</b>	<b>2.03</b>	<b>0.920</b>	<b>3<sup>RD</sup></b>
<b>Project collaboration</b>	<b>40</b>	<b>4.43</b>	<b>0.549</b>	<b>1<sup>ST</sup></b>
<b>Long term strategic partnership</b>	<b>40</b>	<b>3.30</b>	<b>1.091</b>	<b>2<sup>ND</sup></b>
<b>Time (Speed)</b>				
<b>Transactional relationship</b>	<b>40</b>	<b>4.10</b>	<b>0.928</b>	<b>1<sup>ST</sup></b>
<b>Series of transactions</b>	<b>40</b>	<b>2.93</b>	<b>0.971</b>	<b>4<sup>TH</sup></b>
<b>Project collaboration</b>	<b>40</b>	<b>3.08</b>	<b>1.071</b>	<b>3<sup>RD</sup></b>
<b>Long term strategic partnership</b>	<b>40</b>	<b>3.98</b>	<b>1.050</b>	<b>2<sup>ND</sup></b>

Source: Field survey, 2016

#### **4.4.1 Discussion of Results**

From table 4.4, it is apparent that, the relationship type that ensures economy is ‘series of transactions’. This relationship type recorded a mean value of 4 which means it is very efficient in ensuring economy in the construction industry. ‘Transactional relationship’ is the least among the identified relationship types in ensuring economy. This relationship type recorded a mean value of 2.65.

In terms of quality, the ideal relationship type is ‘project collaboration’. This relationship type is the highest ranked among the identified relationship types with a mean value of 4.43. This means ‘project collaboration’ is very efficient in ensuring economy in the construction industry. The least ranked relationship in terms of quality is ‘transactional relationship’ with a mean value of 1.80, meaning this relationship type is slightly efficient in ensuring quality.

This notwithstanding, ‘transactional relationship’ is the most efficient in terms of time, thus eliminating delays in project delivery. This relationship type recorded the highest mean value of 4.10 which means, it is very efficient in ensuring speed in the project delivery in the construction industry. This is followed by ‘long term strategic partnership’ with a mean value of 3.98. The least ranked relationship type is ‘series of transactions’ recording a mean value of 2.93.

#### **4.5 CHAPTER SUMMARY**

This chapter has detailed out the results and discussion of primary data derived from the field survey. First, the demographic characteristics of respondents were analysed and discussed.

All the dependent variables were subsequently analysed and discussed using mean Score Ranking.

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 INTRODUCTION**

This research study focused on the exploration of relationship types that exist between contractors and suppliers in the Ghanaian construction industry. The study was divided into five independent but interrelated chapters. Chapter one covered the main introduction to the study. The subsequent chapter which is chapter two discussed into detail existing literary works relating to this research topic. Chapter two's discussion was inclusive of, but not limited to; an overview of relationship types factors, factors motivating these relationship types between contractors and suppliers and lastly an overview of the impact of this relationship types on the construction industry. Chapter three presented the research methodology adopted for the study. This research work made use of survey questionnaires to acquire the appropriate desired data. In chapter four, analysis of the data collected were presented and issuing discussions that followed were elicited. This concluding chapter presents an overview of the study conducted and highlights on the main points of the study and major recommendation arising from the study are also presented. A review of the research objectives is presented below.

#### **5.1 CONCLUSIONS**

This research commenced with the primary aim of exploring the relationship types that exist between building contractors and material suppliers in the Ghanaian construction industry. In

order to achieve the above stipulated aim, three main objectives were carved out. These objectives, their respective processes of achievement and the extent to which they were attained aided by the various stages of this research is further established in the succeeding subsections.

### **5.1.1 REVIEW OF OBJECTIVE ONE**

The first research objective for this study was: **To identify the type of relationship that exist between building contractors and material suppliers in the Ghanaian Construction Industry.** This research study is on the exploration of the relationship types that exist between contractors and suppliers in the construction industry and as such it is imperative that the relationship types should first be identified. To commence with this a review of extant literature was conducted. The motivation for this was to properly position the study in its appropriate backdrop and showing gnawing gaps in the existing literature. Through the literature review it was established that there were four main relationship types that can exist. Other relationship types were also identified howbeit it was realized that these types. The research methodology adopted provided for the use of questionnaire survey to be distributed to the unit of analysis identified for the study. The review of literature aided in the development of questionnaire that were used to carry out a survey from which interesting results were gotten and analyzed. The results of the survey showed that transactions relationship recorded a mean of 3.8 with the second ranked relationship type being project collaboration. This showed that most contractors engaged more in the transactional relationship than other relationship type. The relationship type that they hardly engaged themselves in was the long term strategic partnership. Reasons alluded to this was the nature of Ghanaian construction industry which is largely characterized by political influence with

most government projects. This demotivated parties from entering into long term partnership as the certainty concerning the future is not guaranteed.

### **5.1.2 REVIEW OF OBJECTIVE TWO**

The second research objective for this study was: **To identify factors that influence relationship types between building contractors and material suppliers in the Ghanaian Construction Industry.** Following the set objective various literature on the theme was studied and reviewed. The review led to the identification of 13 factors that influence relationship types in the construction industry. Having identified this from the literature survey, the positivist paradigm adopted for the study led to the issue of questionnaires to the targeted individuals. The results from the survey was subsequently analysed using the mean score ranking. The analysis showed that delays was a major factor influencing the selection of relationship types in the construction industry. The second most important variable influencing relationship type was trust. The least variable influencing relationship type in the industry was contractor's financial status. It is interesting to observe that the findings reflect the perspective of contractors in the industry and this may be the reason why the contractor's financial status was ranked least.

### **5.1.3 REVIEW OF OBJECTIVE THREE**

The third research objective for this study was: **To identify the impact of the identified relationship types on building contractors work output in the Ghanaian Construction Industry.** To further explore the relationship types existing between contractors and suppliers there was the need to identify the impact of the relationship types on contractors work output. To this end, a section of the questionnaire was drafted to allow the respondents indicate the extent to which the relationship types affect contractor's work output in terms of

cost, quality and speed. The results of the survey were subject to mean score ranking. The findings indicate that in terms of quality, the ideal relationship type is 'project collaboration'. This relationship type is the highest ranked among the identified relationship types with a mean value of 4.43. The interpretation of this finding led to the conclusion that 'project collaboration' is very efficient in ensuring economy in the construction industry. The least ranked relationship in terms of quality is 'transactional relationship' with a mean value of 1.80, meaning this relationship type is slightly efficient in ensuring quality.

## **5.2 RECOMMENDATIONS**

Bullen and Rockart (1981) explained that for most managers, the path to success is to invest or direct his most scarce resource, which is time, to the imperative things that will truly define the company's success or failure. Literature shows that long term strategic partnerships have a lot of benefits to the two main parties in this study who are engaged in the supply chain. Nevertheless, the various obstacles and challenges inherent in the industry points to the use of the project collaboration in achieving success. As project collaboration is touted to be one of the relationships considered to engender growing relationship, this type of relationship is most suited for the Ghanaian construction industry. Humphreys et al. (2003) aver that in this type of relationship the contractor and the supplier can be termed as cooperative which can create certain partnering arrangement. However, it should be noted that the project collaboration relationship succeeds a previous relationship. This in effect creates the platform for successful relationship.

### **5.3 LIMITATIONS OF THE RESEARCH**

Most survey based research are bound to face limitations. Similarly, this research was subject to certain constraints which need to be acknowledged. It is important to acknowledge the relatively small sample size used for the study. This was mostly as a result of the difficulty in getting participation from the relevant firms either due to firms not wanting to provide the necessary information or as a result of their very busy schedules. This made the distribution and retrieval of questionnaire quite difficult. In addition, there was also the issue of some missing answers because some of the respondents left some of the questions unanswered. More so, this research had to face some time constraint owing to the fact that this research is for academic purposes and hence, some deadlines were set.

Regardless of the small sample size, the demographic profile of the respondents suggest that they have adequate experience as relates to the research topic which should generate some credibility in the responses received. Also, to reduce the effects of these limitations, the researcher had to book an appointment with some of the firms at the respondents own convenience and assisted in filling out the questionnaires.

### **5.4 RECOMMENDATIONS FOR FUTURE RESEARCH**

There are several research avenues for future studies as a result of this work. Certain issues were raised in the course of this study and may therefore be taken into account when conducting further studies relating to the areas covered by this research topic. The following are recommended directions by which further research work may be undertaken in the future:

- Exploring relationship types that exist between contractors and suppliers from the perspective of suppliers in the Ghanaian construction industry.
- A comparative study between the perspectives of suppliers and contractors on relationship types that exist between them in Ghanaian construction industry.
- Exploring the effect of long term strategic partnership on suppliers and contractors in the Ghanaian construction industry.
- Development of a framework to manage contractor supplier relationship in the Ghanaian construction industry.
- Exploring innovative relationship types between contractors and suppliers in the Ghanaian construction industry.

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## APPENDIX

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI  
COLLEGE OF ART AND BUILT ENVIRONMENT**

### **DEPARTMENT OF BUILDING TECHNOLOGY**

#### **QUESTIONNAIRE**

##### TOPIC

#### **An Exploratory Study into Relationships Types Between Building Contractors and Material Suppliers in the Ghanaian Construction Industry**

The questionnaire is set up to explore the relationship types that exist between contractors and material suppliers in the Ghanaian Construction Industry. The set objectives of the study are; to identify the type of relationship that exist between contractors and material suppliers; to identify the factors that influence relationship types between contractors and material suppliers and to identify the impact of the identified relationship types on Contractors work output.

Your participation in the survey is voluntary and your answer will be kept strictly confidential and used only for academic purposes.

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#### **Dr. De-Graft Owusu-Manu**

(Research Supervisor, Department of Building Technology, KNUST)

**SECTION A: DEMOGRAPHIC DATA**

Please tick one (✓) of the options in each of the questions under this section

1. Please kindly indicate your profession.

Project Manager

Architect

Quantity Surveyor

Civil Engineer

Contract Manager

Other (Please specify).....

2. How long has your firm been in existence?

less than 5 years

6 – 10 years

11 – 20 years

21 – 30 years

over 30 years

3. What is your total years of experience in the construction industry?

less than 5 years

6 to 10 years

11 to 15 years

16 to 20 years

Over 20 years

**SECTION B: RELATIONSHIPS THAT EXIST BETWEEN CONTRACTORS AND SUPPLIERS IN THE CONSTRUCTION INDUSTRY**

How often does your organisation involve itself in the under-listed relationships with suppliers? Please rate on a scale of one to five (1-5)

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not at all</b>	<b>Rarely (Less than 20% of the time)</b>	<b>Sometimes (about 50% of the time)</b>	<b>Frequently (about 80% of the time)</b>	<b>Every time</b>

		<i>Please tick one (✓).</i>				
<b>RELATIONSHIPS</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	Transactional relationship					

2	Series of transactions					
3	Project collaboration					
4	Long term strategic partnership					
	<b>Other (please specify)</b>					

**SECTION C: FACTORS THAT INFLUENCE RELATIONSHIP TYPES BETWEEN CONTRACTORS AND SUPPLIERS IN THE CONSTRUCTION INDUSTRY**

To what extent does the following factors influence relationship types between contractors and suppliers? Please rate on a scale of one to five (1-5)

1	2	3	4	5
Not at all Influential	Slightly Influential	Moderately Influential	Very Influential	Extremely Influential

	RELATIONSHIPS	<i>Please tick one (✓).</i>				
		1	2	3	4	5
1	Supply quality					
2	Contractor's financial status					
3	Suppliers financial status					
4	Communication					
5	Conditions of contract					
6	Trust					

7	Conflicts					
8	One-off nature of contracts					
9	Mutual understanding					
10	Market charges					
11	Contractual arrangements					
12	Interruptions and termination of work					
13	Delays					
	<b>Other (please specify)</b>					

**SECTION D: RELATIONSHIPS THAT EXIST BETWEEN CONTRACTORS AND SUPPLIERS IN THE CONSTRUCTION INDUSTRY**

**What is the level of impact the identified relationship types have on Contractors work output?** Please rate on a scale of one to five (1-5)

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not at all Efficient</b>	<b>Slightly Efficient</b>	<b>Moderately Efficient</b>	<b>Very Efficient</b>	<b>Extremely Efficient</b>

	<b>RELATIONSHIPS</b>	<i>Please tick one (√).</i>				
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	<b>Cost (Ensuring economy)</b>					
	Transactional relationship					
	Series of transactions					
	Project collaboration					
	Long term strategic partnership					
	<b>Quality</b>					
	Transactional relationship					
	Series of transactions					
	Project collaboration					
	Long term strategic partnership					
	<b>Time (Speed)</b>					
	Transactional relationship					
	Series of transactions					

	Project collaboration					
	Long term strategic partnership					