

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

KUMASI

COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF BUILDING TECHNOLOGY

**“A STUDY OF THE RELATIONSHIPS BETWEEN GHANAIAN BUILDING
CONTRACTORS AND MATERIAL SUPPLIERS WORKING IN KUMASI
METROPOLIS”**

BY

MENSAH RICHARD BOSCO (BSc. Hons)

**A Dissertation submitted to the Department of Building Technology in partial
fulfilment of the requirements of the degree of**

MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT

NOVEMBER, 2014

DECLARATION

I hereby declare that this submission is my own work towards the award of an MSc 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 this university or other, except where due acknowledgement has been made in the text.

Mensah Richard Bosco (PG9124613)
(Student Name and ID) Signature Date

Certified By
Prof. E. Badu
(Supervisor) Signature Date

Certified By
Prof. Joshua Ayarkwa
(Head of Department) Signature Date

DEDICATION

This work is dedicated to my wife and daughter, Maureen Benilove Aba Mensah, Eric BassahMensah, Alfred A Mensah, GiftyAfuaMensah, PricillaMensah, Victoria Paine, Agnes Mensah, for their inspiration and understanding.

KNUST



ACKNOWLEDGEMENTS

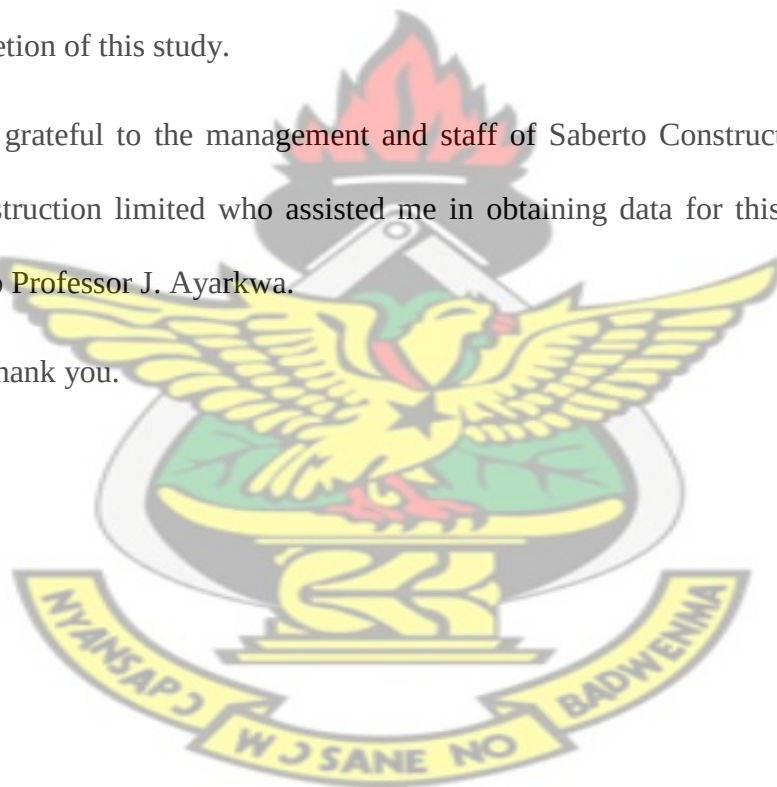
I am really pleased to a number of people who consistently urged me successfully to complete this work.

First of all I would like to thank God Almighty for His abundant grace and mercies for me throughout this course.

Professor Edward Badu, my lecturer and supervisor of the KNUST College of Architecture and Planning also deserves my profound gratitude for supervising this research work. I greatly appreciate his time, effort, constructive criticisms and guidance to the completion of this study.

I am indeed grateful to the management and staff of Saberto Construction limited and Reggio Construction limited who assisted me in obtaining data for this research work. And finally to Professor J. Ayarkwa.

To all I say thank you.



ABSTRACT

The building construction industry plays a critical role in the socio-economic development of every country. Generally, there is interdependence between the construction sector and the economic development. Despite this strategic importance, the building construction industry in general is characterized by high fragmentation, low productivity, high cost and time overruns and conflicts and disputes among clients, contractors, surveyors, designers and suppliers. Improving the industry's supply relationship is therefore critical for the overall development of the industry as well as the country. The aim of the study was to explore the type of relationships that exist between building contractors and material suppliers in the construction industry in Ghana, with a case of the Kumasi Metropolis. The specific objectives included: to identify the best – practice contractor-supplier relationships and to identify the challenges that exist between contractors and material suppliers in the construction industry. The study adopted a case study approach. Data was mainly gathered through questionnaires administered to staffs of D1K1 firms in the industry and the data was analysed using statistical package for social scientist (SPSS) version 16 software and relative importance index (RII). The results of the study revealed that there should be proper strategies to establish long term relationship with their material suppliers in the building construction industry in Ghana since this has a lot of positive effect on both parties. The players in the industry rated such benefits to include mutual trust. Effective coordination between parties, frequent communication, Transparency and collaboration. However, the full benefits of effective relationship between material suppliers in the industry have not been recognized in the Ghanaian economy. The findings of the study showed that lack of trust poor communication, market charges, delays in responding to order and Non- conformance to specification, poor quality of supplies relationship among parties in the industry is a

major problem. It was recommended that contractors should put in strategies to establish long term relationships with their suppliers since this has a lot of positive effects on both parties to serve as a foundation to build and manage the industry

KNUST

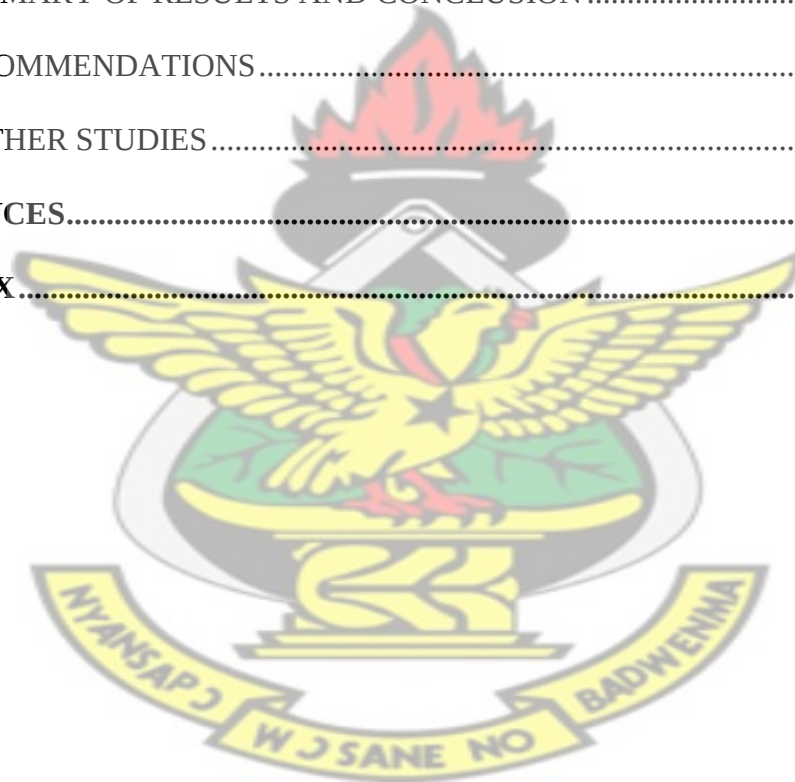


TABLE OF CONTENT

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT.....	v
TABLE OF CONTENT.....	i
LIST OF TABLES.....	iv
LIST OF FIGURES	v
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 BACKGROUND OF THE STUDY	1
1.2 STATEMENT OF THE PROBLEM.....	2
1.3 AIM AND OBJECTIVES OF THE STUDY	3
1.3.1 AIM OF THE STUDY.....	3
1.3.2 OBJECTIVES OF THE STUDY	4
1.4 RESEARCH QUESTIONS	4
1.5 JUSTIFICATION OF THE STUDY	4
1.6 METHODOLOGY AND METHODS	4
1.7 SCOPE OF THE STUDY.....	5
1.8 ORGANIZATION OF THE STUDY	5
CHAPTER TWO	6
LITERATURE REVIEW	6
2.1 INTRODUCTION	6
2.2 THE CONSTRUCTION INDUSTRY.....	6
2.3 THE GHANAIAN CONSTRUCTION INDUSTRY	8

2.4 CLASSIFICATION OF BUILDING CONSTRUCTION INDUSTRY IN GHANA	9
2.5 CONSTRUCTION SUPPLY CHAIN	11
2.6 CONTRACTOR – MATERIAL SUPPLIER RELATIONSHIP	15
2.7 BEST-PRACTICES IN CONTRACTOR – SUPPLIER RELATIONSHIPS	18
2.8 CHALLENGES IN ENSURING A CONTINUOUS CONTRACTOR – SUPPLIER RELATIONSHIPS.....	22
CHAPTER THREE	32
RESEARCH METHODOLOGY AND METHODS	32
3.1 INTRODUCTION	32
3.2 SOURCES OF DATA	33
3.2.1 PRIMARY DATA	33
3.2.2 SECONDARY INFORMATION	33
3.3 RESEARCH DESIGN	34
3.4 STUDY AREA AND THE TARGET GROUP.....	34
3.5 SAMPLING TECHNIQUE	34
3.6 DATA COLLECTION INSTRUMENTS	35
3.6.1 A STRUCTURED QUESTIONNAIRE	35
3.6.2 OBSERVATIONS	36
3.7 DATA ANALYSIS PROCEDURE.....	36
CHAPTER FOUR.....	37
RESULTS AND DISCUSSION	37
4.1 INTRODUCTION	37
4.2 GENERAL PARTICULARS OF RESPONDENTS	37

4.3 NATURE OF THE CURRENT CONTRACTOR – SUPPLIER RELATIONSHIPS	39
4.4 BEST-PRACTICE CONTRACTOR-SUPPLIER RELATIONSHIPS.	41
4.5 CHALLENGES WHICH AFFECT BUILDING CONTRACTOR-SUPPLIER RELATIONSHIPS.....	44
CHAPTER FIVE	47
CONCLUSION AND RECOMMENDATIONS	47
5.1INTRODUCTION	47
5.2 SUMMARY OF RESULTS AND CONCLUSION	47
5.2 RECOMMENDATIONS.....	48
5.3FURTHER STUDIES	48
REFERENCES	49
APPENDIX	58



LIST OF TABLES

Table 2.1: Operational financial ceiling (Cedi Equivalent of Dollars).....	10
Table 4.1: General particulars of Respondents	38
Table 4.2: Nature of the current Contractor-supplier relationship.....	39
Table 4.3: Best-Practice contractor-Supplier relationships	43
Table 4.4: Challenges which affect Building Contractor-Supplier Relationships	45

KNUST



LIST OF FIGURES

Figure 2.1: The Supplier relationship in the Construction Industry	14
Figure 4.1: Type of relationship between contractors and suppliers	40
Figure 4.2: Durations Contractors have related with their suppliers	40
Figure 4.3: Importance of Contractor supplier relationships in the construction Industry	41
Figure 4.4: Ranking of the best practice contractor-supplier relationship	44
Figure 4.5: Ranking of the challenges which affect Building Contractor-Supplier Relationships.....	46



CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The construction industry plays a crucial role in the socio-economic development of an economy. The industry accounts for a large portion of the economic development of a country. The interdependence between the construction sector and economic development has been addressed by various writers and in all cases, there is evidence indicating a direct link between investment in construction and economic growth (Wells, 1985, De Haan and Sturm, 2000). For instance, in an extensive study by Lops (1998), it was revealed that countries that invest in building construction are likely to grow faster with a growth rate of 4-5% of their Gross Domestic Product (GDP).

The delivery of housing has been contributed to the GDP of most developing countries including Ghana. For instance since, 2008 to 2009, the industry has consistently provided an average GDP growth of about 5.8% from 2010 to 2012. This remarkable consistent growth increased to 6.1% in 2006. In 2007, it had increased to 6.2% and it was 7.3% in 2008 (International Monetary Fund, 2011). This shows that the industry has a huge potential of contributing to the economies of developing countries such as Ghana if well exploited.

However, despite this strategic importance, the building construction industry in general is characterized with high fragmentation, low productivity, cost and time overruns and conflicts and disputes compared with other manufacturing industries (Xue *et al.*, 2007, Albaloushi and Skitmore, 2008, Howes, 2000). These characteristics also are major causes of performance-related problems facing the industry (Xue *et al.*, 2007). All these problems in general are supply relationships problems.

The construction industry has been engaged in a continuing search for improved business methods. Several issues such as, heightened expectation, new techniques and high-risk investments have required new business strategies, with an emphasis on cost effectiveness, risk management and total customer satisfaction(Ahuja *et al.*, 1994, Bubshait, 2001). In this situation, a vehicle for improvement in the business environment is required to create a collaborative attitude among all team players.

The relationship among suppliers and contractors or firms, often termed as supply relationship Ackerman.(2007) is a major cause for concern. The nature of relationships that exists among suppliers and contractors is influenced by the existence of high trust and high communication (Ackerman and Van Bodegraven, 2007, Camacho, 2011). However, a well-developed supply relationship arguably encourages a joint approach to problem solving and leads to reduction in cost, improvements in quality and the imports of new and critical knowledge(Teece, 2009, Hargreaves and Shaw, 2007, Dyer and Hatch, 2006).

1.2 STATEMENT OF THE PROBLEM

The potential gains in the development of a good relationship with suppliers as well as their importance have been widely studied over the past decades (Kraljic, 1983, Walter et al., 2003, Dyer and Hatch, 2006). Although these studies were mainly conducted within the manufacturing industry the tendencies are very clear (Kalsaas 2010).

It was revealed by Carr and Pearson (1999) through a cross-industry study that long-term relationships with key suppliers influence the buying organisations financial performance positively. Furthermore, Johnsson and Meiling (2009)indicated 31 recommendations for increasing productivity in construction. Included in the recommendations was striving for long-term contractor-supplier relationship and supporting main suppliers in their

development(Kalsaas, 2010, Johnsson and Meiling, 2009). Johnsson and Meiling (2009)however, explained that although contractor organisations are generally striving for long-term relationships with other actors in the industry, particularly clients, they have not yet realized the potential gains involved in long-term contractor-supplier relationship and the development of these relationships(Kalsaas, 2010).

Frödell (2009) indicated that within the construction industry, contractors purchase over 70 percent of their turn over from suppliers, however the essence of a long term relationship between contractors and suppliers as not been fully explored. This assertion by Frödell (2009) is not different within the Ghanaian Construction Industry (GCI). Very often contractors within the Ghanaian Construction Industry strive to establish good relationships with their clients but have failed to appreciate the significance of establishing a long term relationship with their suppliers. As the GCI is characterized with delays in payments and one off contracts, it is important to fully understand how contractors manage their relationship with their material suppliers and its impact on their level of productivity.

In this regard, this study seeks to explore and understand the relationship between contractors and their material suppliers working in Kumasi Metropolis and how these relationships can be improved for improved productivity.

1.3 AIM AND OBJECTIVES OF THE STUDY

1.3.1 AIM OF THE STUDY

The aim of the study was to explorethe type ofrelationships that exist between Ghanaian building contractors and material suppliers working in Kumasi metropolis.

1.3.2 OBJECTIVES OF THE STUDY

In order to achieve the aim of the study the following specific objectives were pursued:

- ❖ To identify best-practice contractor-supplier relationships; and
- ❖ To identify challenges which affect building contractor-supplier relationships in Ghana

1.4 RESEARCH QUESTIONS

The research questions to be answered at the end of study are as follows:

- i. What are the best-practices in contractor- supplier relationships?
- ii. What are the key challenges which affect building contractor-supplier relationships

1.5 JUSTIFICATION OF THE STUDY

The construction industry in general is highly disjointed with significant destructive impacts – low productivity, cost and time overrun, conflicts and disputes, resulting in claims and time-consuming litigation. This has been recognised as the major cause of performance-related problems facing the industry. Even though research within construction has focused on relations between different actors, mostly client and contractor, this paper widens the perspective and takes a grasp of the relationship between contractor and material suppliers in the construction industry.

1.6 METHODOLOGY AND METHODS

In this research, structured questionnaires were used to source the views of the key personnel and major suppliers of raw materials to the D1K1 classified contractors in the building construction industry. The data collected was analysed and discussed by

employing the descriptive statistical tools such as tables and charts. In addition; computer data analysis software such as Microsoft office Excel 2006 was used in the data analysis.

1.7 SCOPE OF THE STUDY

The study focused on construction companies with D1K1 certificates issued by the Ministry of Water Resource, Works and housing and their suppliers. The research study concentrated on those contractors with D1K1licences currently working in Kumasi Metropolis in the Ashanti Region of Ghana.

1.8 ORGANIZATION OF THE STUDY

The study was organized into five chapters. Chapter one was introduction to the project. This included background of the study, problem statement, and the objectives of the study, the research questions, and justification of the study, the research methodology and the scope of the study, limitations as well as organization of chapters. Chapter two was literature review of the topic under study. Chapters three involved methodology. Chapter four was the analysis of data collected whiles Chapter five contained major findings, conclusions and recommendations which help improve the supply relationship between building contractors and their key suppliers in Ghanaian building construction.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter of the research reviews current knowledge, a brief overview of the state-of-the-art on the subject matter from general perspective. It is organized under the following sub heading; nature of the Ghanaian construction industry, Classification of the Ghanaian Construction Industry, Classification of Building Construction Industry in Ghana, construction supply chain, contractor – material supplier relationship, best-practices in contractor – supplier relationships, challenges in ensuring a continuous contractor – supplier relationships.

2.2 THE CONSTRUCTION INDUSTRY

The construction industry can be divided into three broad sectors:

- a) Building construction;
- b) Heavy and civil engineering construction; and
- c) Specialty trade construction. Building construction itself consists of residential and nonresidential such as commercial and industrial building (CIDB-Local Contractors, 2009).

The industry is also used as an economic regulator by government who is a major client of the industry by intervening to regulate performance through financing, legislation and provision such as:

- Intervention in the market through finance by grant, benefits, subsidies and taxation.

- Grant for construction of industrial or commercial premises in area of high unemployment.
- Incentives for the construction of certain types of project such as private housing.

In addition, the industry generates a high percentage of gross fixed capital formation (G.F.C.F). In financial terms, the industry converts financial investment into physical assets which enable other economic activities to take place. In the developed and developing nations the construction industry accounts for over 50% of fixed capital formation (Edmonds, 1979, Wang and Yao, 2003, Bhalla, 1995).

The building construction industry also contributes to the level of imports in three ways;

- (i) By its need for plant to process raw materials and physically execute construction project;
- (ii) By the direct importation of buildings and components to supplement domestic production; and
- (iii) By the use of design and implementation expertise provided by foreign consultant and contractors.

On the other hand, it contributes to exports by the sale of building products and other raw materials which constitute the basis of these products (Bhalla, 1995)

A United Nations Environment Programme (UNEP) report has noted that about one tenth of the global economy is dedicated to constructing and operating homes and office. It further reported that the industry consumes 16.67% to 50% of the world's wood, minerals, water and energy. The industry generates employment and income for about 7%, 8% and 5.5% of Europe, United States and Turkey's workforce respectively (Kazaz *et al.*, 2008). According to Bhalla (1995), Stresemann made some interesting comparisons between construction and manufacturing industries in terms of changes in the overall

level of output. This Stresemann suggested that an early stage of development, construction activity outstrips manufacturing and as the economy develops, construction activity slows down relative to manufacturing and then latter overtakes construction (Bhalla, 1995)

More so, in the developed countries, the constructions of high rise buildings are undertaken by the use of available equipment's and management techniques which tend to improve the quality of the output. Contrary to this, the developing countries have very little modernization and, therefore, still continue with the traditional labour-intensive style of construction which is time-consuming and does not match quality requirements demanded in construction. It is therefore appropriate to introduce complete mechanization in the construction industry to ensure good quality of the products (Sengupta and Guha, 1998, Sengupta, 2010)

2.3 THE GHANAIAIAN CONSTRUCTION INDUSTRY

The Ghanaian Construction Industry is an important sector and plays a vital role in a national economy due to the usage of its end products such as roads, buildings and dam (Anaman and Osei-Amponsah, 2007, Osei, 2013). In Ghana, an overall GDP growth rate of 5.9% and 6.2% were realized compared to the targeted 5.8% and 6.0% in the year 2005 and 2006 respectively. Figures produced by the statistical service indicate that the industry grew from 7.0% in 2006 and a target of 8.2% is expected at the end of 2007 and this is as a result of the increased in road construction and other infrastructural developments undertaken throughout the country (MOFEP, 2007). According to the 2000 Population and Housing census, out of 9,039,318 of Ghana's economically active population of age 15 years and above 2.3% were engaged in the construction industry placing the industry 96th to offer employment among the 17 industries of the Ghanaian economy (Ghana Statistical Service, 2001). It has been projected further that 3.08% of the

economically active population of 13,468,288 are engaged in construction in 2007 (Ghana Statistical Service, 2008).

The construction industry in Ghana is primarily divided into eight sections based on the type of work, namely

- A – Roads, Airports and related structures;
- B – Bridges, Culverts and other structures;
- C – Labour-based roadwork;
- D – General building works;
- S – Maintenance and rehabilitation of steel bridges and structures;
- K – General civil works;
- E – Electrical works; and
- G – Plumbing works.

In Ghana, Civil Engineering firms undertake some the aforementioned projects which involves heavily engineering characteristics such as bridges, roads, railways and dams, while the Building Construction Firms (BCF) also undertakes projects such as construction of schools, hospitals, health centres, hotels, offices etc. The BCF also undertakes external works which sometimes involved “simple” engineering construction such as drive ways etc.

2.4 CLASSIFICATION OF BUILDING CONSTRUCTION INDUSTRY IN GHANA

The Ghanaian building construction firms comprises of a large number of enterprises of various sizes as registered and categorized by the ministry of Water Resources, works and Housing (MWRW&H) as DIK1, D2K2, D3K3 and D4K4. Based on factors such as

annual turnover, equipment holding personnel, etc., the D1K1 class of contractors are termed as larger firms, whereas D2K2 construction firms are medium and D3K3 and D4K4 are small firms (Edmonds *et al*, 1984). The larger firms, according to MWRW&H are registered as financial class 1, capable of undertaking projects of any value, class 2 (the medium firms) are capable of undertaking projects up to US\$500,000, while the small firms (financial class 3) are also capable of undertaking projects up to US\$500,000 or class 4 to undertake projects up to US\$750,000.

Table 2.1: Operational financial ceiling (Cedi Equivalent of Dollars)

Financial class	Category ‘D’ General Building	Category ‘K’ Civil Work
1	Over US\$500,000.00	Over US\$500,000.00
2	200,000 – 500,000	200,000 – 500,000
3	75,000 – 200,000	75,000 – 200,000
4	Up to US\$75,000.00	Up to US\$75,000.00

Source: (Ministry of Water Resource, Works and Housing, 2010)

Edmond *et al.*, (2007) reported that, the large and medium Ghanaian construction firms’ forms about 10% of the total number of construction firms registered with the Ministry of works and Housing. These firms do not have the appropriate technological compatibilities, plant and equipment and key personnel to handle projects properly and the evidence is by the fact that the nation’s major construction project are awarded to the very few large foreign contractors. The remaining 90% are the small firms or small contractors of which in 2002, their total number was 7095.

As indicated earlier on these small firms engage in simple construction work with contract sum not exceeding Up to US\$200,000.00 in public jobs, and their total

construction output ranges between 10% and 20% as compared to large and medium firms. Edmond et al (2007) suggest, that the proprietors of these small firms have little or no knowledge in the building construction industry and their perception about industry is money making business and the only requirement is your financial ability.

2.5 CONSTRUCTION SUPPLY CHAIN

Construction is generally seen as an industry producing one-off projects where repetitiveness is smallest (Betts and Ofori, 1992). Several initiatives have been taken in order to increase efficiency, effectiveness and productivity in the supply relationship aiming at integration of design and production (Love et al., 2004), examine the relationship between the client and its suppliers (Thompson et al., 1998) and the relationship between the construction site and the supply relationship (Vrijhoef and Koskela, 2000). Furthermore, Akintoye and Main (2007) examined the UK contractors' perceptions of relationships 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 relationship within construction in many cases is synonymous with partnering (Fernie and Thorpe, 2007), supply relationship 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 organizations 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 challenges have been identified. One of the main challenges seems to be that the suppliers perceive the relationship initiatives as enhancing the contractor's profitability at the expense of the suppliers.

The interactions relationship between contractor and supplier required at the construction site are a foundation for learning's and mutual experiences, which should be taken care of by building relationships with a duration longer than a single project (Dubois and Gadde, 2000). 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 solution to all problems within construction, but rather the relations should be adapted to the context (Ferne 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, Eriksson and Westerberg (2011) 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, Bakker and Kamann (2007) 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.

Capo *et al*; s., (2004) paper, research into the construction supply relationship is relatively new, dating only from the 1990s when it became a specific research area (London and Kenley, 2000). It has evolved with clear influences from the fields of logistics, systems engineering and other management theories.

Many of the most significant contributions to the construction supplier relationship come precisely from lean construction philosophy. Work following this school of thought originates from production philosophy, with clear influences from systems engineering

methodologies, as has already been seen in previous sections. Some studies relating to the construction supplier relationship have focused on establishing the relationship between productivity and the flows of materials(Akintoye and Main, 2007).

A number of contributions have been made along the lines of strategic management in construction: Cox and Townsend (1998) propose a model for supplier relationship in the construction section in which it is the contractor (promoters/owners) that control the supplier relationships. The authors argue that there is a need for contractor to understand the structural characteristics of their own supplier relationship in order for it to be managed properly. Cardoso (1999) puts forward a model for new ways of rationalizing production based on two strategies: leadership in costs and differentiation.

Other studies introduce elements of industrial organization, such as vertical integration (Clausen, 1995; Tommelein and Yi, 1999) and the contractor concentration (Taylor and Bjornsson, 1999). Although some authors suggest it is important to consider the entire supplier relationship (Taylor and Bjornsson, 1999), the construction supplier relationship is normally perceived as belonging to the main contractor. London and Kenley (1999) propose that management of the construction supplier relationship should be centered on the customer and not on the main contractor, understanding the customer to be the promoter/owner. Given the particular production characteristics of the sector, the supplier relationship will be different for each construction project. (London, 2004)put forward a method for describing construction supplier relationship, considering them in terms of the construction involved, their characteristics and structural and behavioural relationships. The main criterion for establishing relationships and structure is to first identify each particular project. The three key features of the model are project, participating companies and the relationships between them. Each project involves demand from the customer's organization for an infrastructure or specific construction element.

Figure 2.1 below shows the structure of a construction supplier relationship in which the client is considered to be the central or demand organization following the model put forward by Lambert et al; (1998), the contractor as always being understood to be the promoter or owner

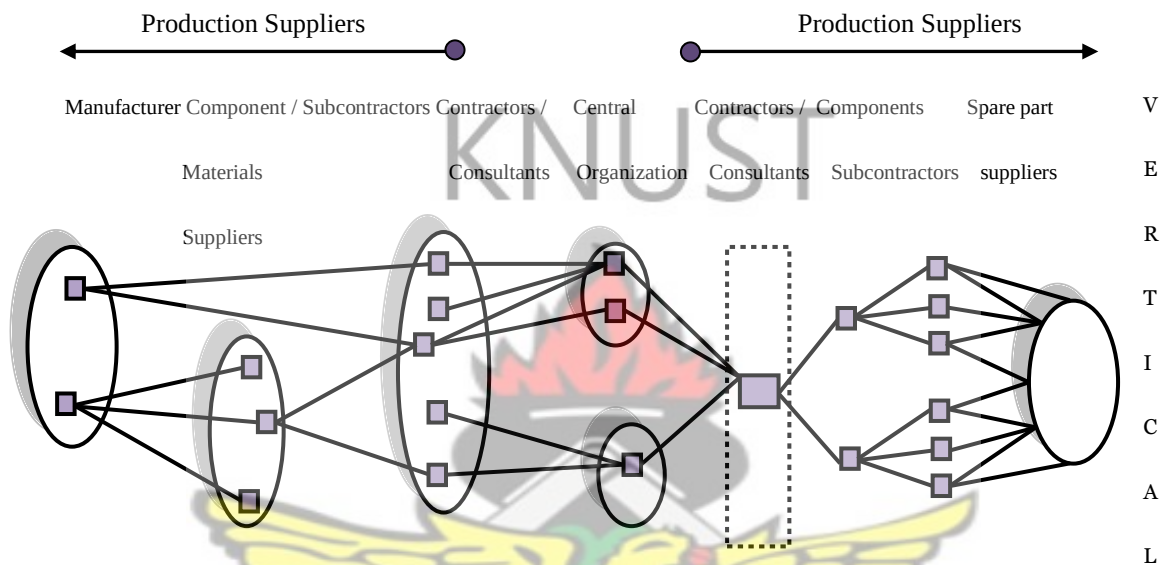


Figure 2.1: The Supplier relationship in the Construction Industry

Source: (London and Kenley, 2000)

According to the model developed by London (2004), the contractor, being the central organization, is equivalent to the main manufacturer in traditional supplier relationship models in the automotive sector. In this way the idea assumed by many authors that the main contractor is equivalent to the main manufacturer is changed. This new model is more logical because, in terms of longevity, financial risk, and the origin and potential control of the construction supplier relationship, the contractor is the key member. Given this sector's characteristics and culture, the central organization normally exercises little control or overall management of the project. Each level of the chain controls the immediately preceding level. Problems of integration between specialist companies at

each level are very common; therefore Enterprise Integration methodologies will be essential in order to obtain good configuration, coordination and management of the supplier relationship in each construction project(Pryke, 2009, Bower, 1986).

2.6 CONTRACTOR – MATERIAL SUPPLIER RELATIONSHIP

WhileDubois and Gadde (2000) strive for an understanding of the supply network, analysis of supplier relationship interaction should be done at a dyadic level (Bäckstrand, 2007). No general best type of relationship exists and that fundamentals and context play a major role in relationship decisions (Håkansson and Snehota, 2000). They pointed out that the degree of involvement in a relationship should never be a permanent decision but should be reconsidered as conditions change. In a seminal article, Kraljic (1983)divided a firm's purchases into four categories based on two dimensions: the importance of the purchase and the complexity of the supply market.

The four categories range from noncritical, leverage, bottleneck to strategic as the two dimensions increase. Long-term relations are most interesting for a construction firm if the supplier is categorized as strategic according to (Kraljic, 1983). The purchased product also needs to be of high volume and of critical nature (Monczkaet *al.*, 2009).

Studies of contractor-supplier relationship often have the perspective of the buyer. Several criteria have been pointed at as essential in order to build sustainable relations, such as trust and coordination, commitment, effective communication, top management commitment and expectation of relationship continuity (e.g. Ellram, 1995; Monczka et al., 1998; Krause, 1999). Based on their survey of 141 contractor-supplier relationship, 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 supplier relationship performance.

Krause (1999) claimed that the construction organization would like to see some evidence of the supplier's commitment to the buying organisation and the relationship, and that the supplier's commitment may be fostered through the buying organisation's engagement in the supplier's problems. If the contractor is treating these problems as a matter of internal concern, the supplier may be encouraged to commit to a long-term perspective of the relationship in the construction organization.

Attraction between the parties is also needed during the entire lifespan of the relationship and is argued to be a way of increasing the added value of the contractor-supplier relationship (Ellegaard, 2008). Attractiveness implies that the contractor creates interest from the supplier leading to benefits such as greater commitment to the contractor (Ellegaard, 2008). 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 (Dubois and Gadde,

2002). Literature about relations between contractors and their suppliers often discusses temporary contract relations, especially how and the criteria on which contractors should base their choice of suppliers for specific projects.

There are less papers dealing with studies relating to how long-term relations can be developed, even though there is a common view that long-term relations between companies reduce problems and lead to better products. The idea is that historical collaboration and expected future collaboration leads to higher efficiency and better results. Lee (2008) shows in a study of 448 contractor-supplier relations that this correlation can be found especially in cases where individuals rather than firms have historical and expected future collaboration. Supplier development has received increased attention in other industries.

For example, Rogers et al. (2007) evaluated supplier development programs in the North American automotive industry, while Sánchez-Rodríguez et al. (2005) shows in their study of 306 manufacturers in Spain, that performance had been positively influenced by applying processes and methods for supplier development. In the construction industry, Errasti et al. (2007) studied development of partnership with sub-contractors and argue that bigger purchasing volumes and fewer suppliers leads to significant improvements. Krause and Ellram (1997) argue that supplier evaluations are necessary for more systematic supplier development while Carr and Pearson (1999) found that implementation of supplier evaluations in it leads to increased profits. One discussed reason is that evaluations make it more evident for the customer what is important. Nevertheless, the ambition with supplier evaluations has to be higher than that. A great number of models for evaluating suppliers have been developed over the years. One such model was developed by Safayeni et al. (1992) and Purdy (1993), who focused on supplier working processes and an evaluation of their management systems. Another

model was developed by Vonderembse and Tracey (1999) who aimed at understanding how supplier evaluation criteria and supplier performance influence the bottom line.

2.7 BEST-PRACTICES IN CONTRACTOR – SUPPLIER RELATIONSHIPS

When studying how to achieve efficient contractor-supplier relationships, many researchers choose to do so from the contractor's perspective. For example, Monczka *et al.* (1998) identified critical factors for strategic supplier alliances based on qualitative and quantitative data from purchasing managers of 77 companies in various industries. The strategic alliances examined in the study were those where transactions were between contractors and suppliers relationships. Monczka *et al.* (1998) categorized their findings into four groups: attributes of the relationship, communication behaviour, conflict resolution, and commodity/supplier selection process formalization, which are discussed in the following.

First, attributes of the relationship include trust, coordination and interdependence, which are considered essential for the relationship. Trust is argued to be the most critical factor and is founded in reliable role performance, cultural alignment, and interaction frequency (McAllister, 1995). Trust is concluded to be stimulated by greater task coordination and by doing what is said to be done. Interdependence is said to exist when one actor does not control all of the conditions necessary for achievement of a desired outcome, but a reciprocal dependence is present. (Kabadayi and Ryu, 2007) carried out a study within the manufacturing industry, exploring the criteria, that positively affects a manufacturer to develop a long-term relationship with a supplier and concluded that trust in the relationship between manufacturer and supplier has a positive effect on the long-term orientation of the relationship. Kabadayi and Ryu (2007) argued that performance of the supplier is one of two facilitators for trust. The prior track record of the relationship is

essential for initiating long-term orientation and may be reflected in the supplier's reputation.

Based on case studies of Canadian universities and education consortia, Pidduck (2006) claimed that previous mutual experience engenders trust. Reputation, which according to Pidduck is defined as the perception of quality over time, may not only be based on the company's own experiences but may also come from experiences in social networks and in informal networks. If the supplier's reputation is perceived as too high or too low, this may be detrimental for the contractor organization as a too low reputation may imply a low quality and a too high reputation may lead to the supplier trying to control the relationship (Pidduck, 2006).

It is argued that attraction is a prerequisite for trust. Attractiveness implies that the contractor creates interest from the supplier leading to benefits such as higher commitment of resources to the contractor. Attraction between the contractor-supplier is needed during the entire relationship lifespan and is argued to be a way of increasing the added value of the contractor-supplier relationship (Ellegaard and Ritter, 2006)

Second, communication behavior concerns the information communicated to the other party in the relationship. Monczka *et al.* (1998) concluded that both the depth of the information, such as quality and participation, and the breadth of information, such as the extent of sharing, play an important role in managing the contractor-supplier relationship. Moreover, Kabadayi and Ryu (2007) discussed the quality of shared information and argued that the information has to be trustworthy in order to increase confidence in the relationship.

Based on responses to a questionnaire survey from 527 purchasing executives in various industries, Krause (1999) explored factors that inspire construction firms' involvement in supplier relationship development. He found that effective contractor-supplier relationship communication is one of the factors and concluded that it is vital that suppliers are provided with the necessary information in order to ensure a high level of service. In addition to formal communication, he pointed out the importance of informal communication.

Third, conflict resolution relates to the manner in which conflict in the relationship is resolved. Monczka *et al.* (1998) encouraged joint problem solving as a means for improving quality performance because it is more likely to lead to a win-win situation between the parties. Moreover, Krause (1999) contended that the construction organization would like to see some evidence of the supplier's commitment to the relationship and that this may be fostered through the construction organization's engagement in the supplier's problems. If the contractor is treating these problems as a matter of internal concern, the supplier may be encouraged to commit to a long-term relationship with the construction organization (Krause, 1999).

Fourth, and last of the four group, commodity/supplier selection process formalization concerns the construction company's identification of specific commodities for relationship development as well as formal processes for identification of appropriate suppliers. Monczka *et al.* (1998) contended that strategic relationships not should be pursued with all suppliers. They claimed that before initiating a long-term relationship, a formal assessment of the cultural alignment between the firms should be performed as well as of the supplier's relationship capability to improve and willingness to initiate a long-term relation with the construction organization.

Even though prior studies have shown how it is possible to strengthen the contractor-supplier relationship, fulfilling the criteria does not guarantee success. In a comparison of companies in the automotive aftermarket in Spain and the UK, Harland (1996) showed that trust, friendliness and co-operation in long-term relationships would not guarantee greater satisfaction and understanding. In the close and in the distant relationships that were studied, the satisfaction was equal why Harland (1996) argue that the circumstances decide what kind of relationship is the most appropriate. Consequently, relationships may be satisfactory whether they are distant and hostile or warm and friendly. Harland also showed that understanding between the parties is independent of the closeness of the relationship. These findings are surprising since the general perception is that closer relationships lead to greater understanding.

It is argued that market conditions might influence the long-term direction of the relationship (Kabadayi and Ryu, 2007). The conditions include the manufacturer's power over the supplier and uncertainty in the market. In relation to the power balance between the contractor and the supplier, Kabadayi and Ryu (2007) argued that a powerful manufacturer does not have the same incentive for building construction long-term relationships with their suppliers as a less powerful manufacturer. Consequently, a long-term orientation from the manufacturer's perspective is mostly applied by less powerful contractors, who do not have the same possibilities to ensure that their suppliers strive to fulfill their goals as the more powerful contractors who can use their power to make suppliers align their strategy with that of their own. Also the uncertainty of the market affects the contractor's willingness to develop a long-term relationship with the supplier because manufacturers in a volatile resource market tend to be more hesitant towards relationships with only a certain set of suppliers since these suppliers may not be able to deliver satisfactorily in a fast developing market. Based on a case study of a relationship

between a major contractor and its largest supplier in the construction industry, Frödell *et al.* (2008) reported uncertainty as a major variable characterizing this relationship. Uncertainty was also concluded to be a reason why higher flexibility may be commended in the relationship between contractor and supplier in a construction context, although it often results in a higher total cost.

2.8 CHALLENGES IN ENSURING A CONTINUOUS CONTRACTOR – SUPPLIER RELATIONSHIPS

There are numerous reasons for examining constraints that undermine the establishment and maintaining of contractor-supplier relations in construction. First, contractors purchase material and services for 70-80% of their turnover. In order to increase their competitiveness they need to import the value created by the suppliers and appreciate the suppliers' part in the delivery. Hence, suppliers form large part of the quality that the contractors deliver (e.g. Proverbs and Holt, 2000; Karim *et al.*, 2006). Second, contractors invest resources to establish closer and long-term relations with their supplier while they ignore establishing long-term relations with their suppliers (Josephson *et al.*, 2009). Third, a construction project involves several relations between firms. Projects that initiate new relations between firms increase the uncertainty and the risks. Long-term relations could decrease the uncertainty and the risks. Moreover, research within construction has so far focused on relationships between contractor and client and ignored the relationship between contractor and supplier (Saad *et al.*, 2002; Akintoye *et al.*, 2000).

The first restraint relates to the regionalized organizational structure implemented in the contractors' organizations. An effect of this, however, is that many decisions are made locally in the organization and have a tendency to see to the good of the project rather than the good of the organisation as a whole. This sub optimization is an inherent part of the culture which was clearly articulated by one of the effects of this decision-making

pattern can be seen in purchasing and supplier relations. Even if the purchasing department signs the framework agreements with suppliers, the projects make the actual decision of what supplier to use. A strategic purchaser emphasized the subordinate status of the framework agreement and the power of the order itself: “The framework agreements may be good for our suppliers but in the end it is the actual order that matters, that is when they can secure their money at the bank. A non-binding agreement is more a case of nice to have.” This does in fact result in the framework agreements being mainly used when considered the most favourable from a project perspective. (Josephson *et al.*, 2009).

From a supplier perspective this might be seen as a need to promote their products twice, once to the purchasing organization for the signing of agreement and once to the project for the actual order. Even though loyalty to the current agreements can be considered high within the case organization, the reasons for this can be questioned. The fact is that many of the suppliers were already widely used through the organization even before the agreements were signed, which unambiguously lead to a high loyalty to the agreement. However, it is questionable if the loyalty would be as high if the supplier were changed in favour of a new one; or would the projects still buy from the former supplier? It is then obvious to ponder the actual benefits the suppliers gain from these framework agreements if the contractor only follows them when it is the most favorable for themselves and their specific project. Furthermore it may not be completely clear who should decide when to follow the agreements and when not to. (Saad *et al.*, 2002; Akintoye *et al.*, 2000).

Is the decision for the purchasing department which has signed the agreements and which is supposed to have the best holistic picture of the market, or it is for the projects which mainly are working to maximize the results for the specific project and are mostly updated on the current preferences and the actual needs in the production?

The second restraint relates to the contractor's organization and concerns the different ways of working in the projects. The major contractors carry out thousands of projects each year spread both geographically and in content. In these projects, the ways of working are very individual and relate to the specific site manager rather than to the company which the site manager is a part of. Hence, when the supplier is approaching the projects there are different ways in how the projects think the ordering and delivery should be conducted making the situation for the supplier very difficult. One part of the development of contractor-supplier relations relates to standardized ordering from the projects and standardized deliveries from the suppliers which has turned out to be a very difficult task for the contractors, and the suppliers use their own ways of dealing with this matter. (Saad et al., 2002; Akintoye et al., 2000).

One way for the suppliers to manage the inconsistency in the projects' ways of working has turned out to be separated prices. A strategic purchaser explained: "There are sub-contractors [service suppliers] that offer a certain price if a specific project manager is responsible for the project. This is because they know that it will be a better functioning process". Another strategic purchaser points out that this should not be seen as a rebate when there is a good project manager, i.e. a manager that runs projects in structured ways and follows the original schedule, but as an additional cost for extra work and for higher risks when the project manager is not as good. (Josephson et al., 2009)

Therefore, suppliers put great value in a consistent and well managed process within the project. When treating the issue of supplier relations and supplier development, it is questionable if the contractors are mature enough to deal with the suppliers' processes when they do not have control over their own situation and their own processes. A better support in these matters might be needed from other parts of the organisation. "The

production should focus on developing what they are best at, the production. (Monczka, 1999).

But they also need support with issues as structural calculations, processes and purchasing”, a strategic purchaser stated, further explaining the situation. Nonetheless, purchasing is considered a good and concrete way to understand cost reductions for the project. A production manager stated that “purchasing is the only post where we can make a profit. All other costs are pretty much fixed. Moving on to the contractor’s short-term and long-term perspective, the Third restraint concerns the contractor’s short-term approach. Even though it is generally accepted that long-term thinking is favourable for reducing transaction costs and increasing productivity, measurements and incentives systems still drive the organization to take a short-term perspective when it comes to supplier relationships. (Saad et al., 2002; Akintoyeet *al.*, 2000).

For instance, one of the strategic purchasers within the case organization stated that he could sign better deals with the suppliers, but since the evaluations of the contractor and the incentive structures were based on reducing prices each year, the most favorable deal for the company in a long-term perspective is not always the one chosen .That the measure’s and incentives systems encourage decreased prices each year must be seen as a major indicator of the contractor’s short-term approach since most mutual investments and initiatives of the contractor and supplier might take at least a couple of years to pay off. His incentives systems, however, indicate what the management sees as important and which criteria they wish to aim towards, which was supported during a group discussion through the statement: “What I have to do in order to get my bonus definitely drives my work”. (Saad et al., 2002; Akintoyeet *al.*, 2000).

The construction industry has already started to build long-term relationships between the actors and also identified the benefits. This is, however, only done in the relationships

between clients and contractors. Even if it is quite easy to show the positive effects of a long-term relationship with a client, both for the client and for the contractor in terms of money, it is more difficult to show in the relationship between contractor and supplier.

At the end of the day, it is money into the projects that matters” a strategic purchaser stated. While financial results are the main driver within the production management, it is hard to believe that the focus on the price might diminish in favour of total relationship costs. Who would be willing to take the initial cost of an investment in a supplier if the revenues cannot be seen within the time frame of the project, or not even in the coming year? The contractor takes on this kind of reciprocal investments would have a strong competitive edge compared with competitors. (Josephson *et al.*, 2009)

The fourth restraint is the organization’s maturity for long-term relations. In the literature it is argued that supplier development and long-term relationships with suppliers need an exhaustive set of antecedents and proper organizational founding in order to lead to the positive effects so often mentioned (Monczka, 1999). As a first step supplier base optimisation is mentioned; it is explicitly stated that closer interaction between the organisations is not feasible with a large supply base (Trent, 1999). The supply base of the case organisation constitutes approximately 28,000 suppliers annually. Of course the number is dependent on which exact definition of a supplier is used, but according to internal figures this is how many suppliers have invoiced the organization during one year. During 2007, 0.13 percent of the suppliers corresponded to more than 25 percent of the case organization’s purchased volume and 10.26 percent of the supplier delivered 90 percent of the value. Of course it is not as simple as that because several of the supplier markets are local and the production is often dependent on certain specialists, but since almost 9,000 of these suppliers only sent one invoice and almost 17,500 suppliers sent five invoices or less during 2007 something could most probably be done.

The fifth restraint concerns the power balance between the contractor and the supplier which is an often mentioned powerful factor when discussing contractor-supplier relationships. One aspect of power balance is related to demand and supply, i.e. the contractor has more power when the supply is bigger than the demand and vice versa. Another aspect of power balance is related to the contractor's and the supplier's sizes. A common situation is that the contractor is far bigger than the supplier. (Trent, 1999).

A third aspect, which is discussed here, concerns how much the supplier depends on a single contractor, i.e. percent of total sales volume. When looking at the largest suppliers of the case organisation it becomes evident that the majority of these suppliers deliver less than ten percent of their turnover to the contractor, with this relatively small impact on the supplier it could be questioned whether the supplier is interested in engaging in long-term relations with a specific contractor. It is, however, important to see whether the contractor is one of the largest contractors for the supplier. That could make the contractor important even though the part of the turnover is minor. Furthermore, the construction industry in some cases comprises a special segment within the supplier's organization which would make it even more interesting for the supplier to establish long-term relationships. It is, however, evident that few of the case organization's major suppliers are dependent on the contractor for their survival. "This certainly does not increase the possibilities for developing mutual processes", one strategic purchaser stated.

The sixth restraint is the issue of contractors not knowing what they are buying; at least not until it is too late. Generally it is argued that a prerequisite for purchasing is that what is going to be bought is specified. Yet, several examples to the contrary have been seen. Specifications are not really scrutinized until problems occur. As an additional effect, the bargaining power might decrease if the possible range of alterations in the products is

narrowed down by requisites and prescriptions above what actually is needed for a satisfactory functionality. (Monczka, 1999).

An actor with a major impact on this issue is the clients since they in many cases prescribe the parts of the construction object. The client (and the architect) prescribes specific material produced by a specific supplier and according to their product range. “We need a functional specification instead of just a brand and a model”, a strategic purchaser stated and emphasized that many alternatives to the well-known and sometimes preferred brand might be as good and might also come at a lower cost. (Josephson *et al.*, 2009)

Instead, as an effect of the client’s prescriptions, the contractor has to purchase from the suppliers’ ordinary product range rather than specifying what is actually needed. This issue further affects the possibilities of building long-term relations with suppliers since it is not always possible for the contractor to choose the supplier. “This could be changed if we want to”, one strategic purchaser stated and primarily addressed the projects which are developed in-house. It was, however, emphasized that the costs for setting the specifications might be high and that some sort of standardization of purchased good preferably should precede these efforts. Construction is characterized by major market changes on a national level over time. The changes on a regional level are even greater. The situation of constant market changes leads to a question of supply and demand on a short-term basis. When the demand is higher than the supply, the contractor has to negotiate with more suppliers while the suppliers are less interested in delivering to a specific contractor. When the supply is higher than the demand, the supplier has to negotiate with more suppliers, while the contractor may be less interested to purchase from a specific supplier.

The best opportunity to establish and maintain efficient contractor-supplier relations occurs when supply and demand are balanced. Supply and demand are, however, never in complete balance. The market is never perfect. Neither the contractor, nor its suppliers seem to be interested in ranking a single supplier or contractor, partly due to the great market changes.

A strategic purchaser mentioned how the contractor, in time of prosperity, had to buy a certain product from all suppliers active in the Gothenburg region. In contrast, when the market fell in 2008/2009, the top management gave strong recommendations to the suppliers to reduce prices in order to maintain their framework agreements. Furthermore, during the recession, contractors themselves negotiated with suppliers that the case organization already had framework agreements with in order to get lower prices than those already accepted by both parts.

Chopra *et al.* (2003) identify some challenges confronting the achieving supplier relationship coordination and these can be used to highlight some of the necessary organizational components required in an integrated supplier relationship. Key reasons for the lack of coordination at different stages of the supplier relationship include differences in management objectives within the supplier relationship and also the movement of distorted information between different stages. This results in a lack of visible demand information. Chopra *et al.* (2003) further break down these components into five types of obstacles which are;

1. Operation Obstacles

They are those actions that cause variability, e.g. ordering in large lots, gaming, and irregular replenishment lead-times.

2. Behavioral Obstacles

Behavioral obstacle such as managing locally, blaming others in supply for problems, and optimistic behavior also cause integration difficulties.

3. Incentive Obstacles

Incentive obstacles are described as incentives offered to different stages of the supplier relationships that serve to reduce supplier relationship effectiveness. It is important that incentives are aligned with the end goal of maximizing supply profits.

4. Information Processing Obstacles

They speak to the potential information to become distorted as it moves between different parts of the suppliers. This can be resolved if greater information is shared throughout the process allowing all members to view actual demand information. These obstacles can be overcome through a change in management techniques towards greater supply process orientation and greater information connectivity (Kung and Zhang, 2008). Insufficient supplier resources in terms of information systems, employee skills, and organizational resources may also hamper efforts. This is because integration can be resource intensive (Neuman, 1996). In such cases, some assistance may be given by the focal organization.

Other authors found the following obstacles to building construction supply relationships implementation:

- Collaborating organizations have different vision, mission, goals and priorities;
- A lack of focus and consensus on the delegation of tasks;
- An imbalance of resources of time, money, human (frequent turnover of participants) etc.;
- Confidentiality, Intellectual Property and legal considerations; Technological incompatibility; and

- A lack of understanding of the expertise, knowledge, and language of the other collaborating participants.

In identify some challenges in implementation of supplier relationship which involves identifying the supplier relationship affiliates, with whom it is critical to link, what processes need to be linked with each of these key members, and what type/level of integration applies to each process link (Cai *et al.*, 2009). The objective is to create the most value not simply for the construction industry but the whole supplier relationships, including the contractor. Consequently supplier relationship process aims at improving total process efficiency and effectiveness across parties of the supplier relationships.



CHAPTER THREE

RESEARCH METHODOLOGY AND METHODS

3.1 INTRODUCTION

The concept of methodology refers to the whole process of the research work. Hussey and (Collis and Hussey, 2003) stated that research methodology embraces the overall approach to the research process from the theoretical underpinning to the collection and analysis of the data. Leedy (1989) cited in Remenyi *et al* (1998) also defined research methodology as a “procedural framework within which is conducted”. Jankowics (1999) in a related development define methodology as the analysis of a rationale for the particular method or methods used in a given study. Thus, it is clear from the above definitions that it is important for every research project to have an operational framework within which all the facts can be placed such that meaningful conclusion can be drawn from them.

This chapter dealt with the research methodology. The methodology describes the procedures in conducting the research. It actually shows the various approaches that were adopted to get responses to the research questions and through data collection and analysis. It indicated the research design adopted and how the data was collected, managed, processed, analyzed and interpreted to arrive at a conclusion. This chapter examined the approach used to investigate the problem set forth at the beginning of this study. It also considered the statistical tool that was used to analyze the data. This chapter was organized into the following sub-heading; study area, research design, sample frame, source of data, data collection instrument, data analysis procedure and organizational profile.

3.2 SOURCES OF DATA

Data collection consisted opinions, facts and statistics that were collected together and used for the analyses. Both primary and secondary data sources were used in the study.

3.2.1 PRIMARY DATA

The primary sources of data refer to as firsthand information obtained by the researchers through one-on-one interviews, distribution of questionnaires and physical observation. Saunders *et al.* (2011) explains it as data collected specifically for the research project being of undertaken. The primary data was collected using questionnaires with closed ended questions. These were used to collect data in the research. It was made up of closed ended questions on the determination of Supply relationship that exist between the contractors and the major suppliers on one hand, it effectiveness and efficiency in terms of sole sourcing of materials supply such as cement, iron rods, sand, chippings etc.

3.2.2 SECONDARY INFORMATION

In explaining its nature, Saunders et al. (2011)said it is data used for a research project that was originally collected for some other purpose. Secondary Information was used for the research project that was originally collected for some other purposes. It is information that has been previously gathered and so might be relevant to the problem at hand. Using secondary information was the enormous saving of time and money.

Again, this not only helps the researcher to better formulate and understand the research objective, but also broadens the base from which conclusion can be drawn. The sources of secondary information were collected from reports and documents written on building construction contractors in the building construction industry.

The secondary source of data included the respective websites, internet textbooks, journals, articles, magazines and articles from search engines, quantity surveyors, architects etc.

3.3 RESEARCH DESIGN

A particular research design is adopted because of its ability to help the researcher answer the research questions and to be able to meet its specific set objectives. However there are many research designs available to the researcher but the researcher finds appropriate for this particular study to use a case study. The case study would give considerable ability to generate answers to questions 'why' as well as the 'what' and 'how'? A case study addresses peculiar issues relating to particular subjects, (Yin, 2014, Runeson and Höst, 2009). A case study was used by the researcher because it provided an opportunity to analyze a phenomenon that few researchers have considered before. The main data gathering instrument used in the study was questionnaires which were personally administered by the researcher.

3.4 STUDY AREA AND THE TARGET GROUP

This research work was conducted in the Kumasi Metropolis. This study area was chosen as this area is one of the largest cities in Ghana which massive construction works have been undertaken.

3.5 SAMPLING TECHNIQUE

The sampling technique adopted was purposive sampling technique because the researcher wanted specific data and information from specific institutions. In this regard respondents were all D1K1 contractors operating within the Kumasi Metropolis. The list of contractors was obtained from the contractors registered association in KMA and AESL in Kumasi with a total number of twenty (20). Due to the small number of the firms the

researcher decided to include all of them in the exercise after that total of 3 respondents each were selected from the firms. The total number of questionnaires therefore became 60. The three (3) people were the personnel who mainly deal with purchasing of the building materials for the firms.

3.6 DATA COLLECTION INSTRUMENTS

In an effort to collect credible information to provide answers to research questions raised, a research questionnaire and observation was used to solicit for the needed information from the respondents. Out of the 60 questionnaires sent out, 45 were successfully retrieved.

3.6.1 A STRUCTURED QUESTIONNAIRE

The term questionnaire is a technique of data collection in which each case is made to respond to the same set of questions in a predetermined order. As stated earlier, both quantitative and qualitative approaches were used to collect primary data. The quantitative method, which is a sample survey, was carried out with the use of structured questionnaires. The closed ended questions were used. With the closed ended questions, answers were provided for respondents to choose from. The open-ended questions were without answers; the respondents were to provide their own answers. This gives the respondents the opportunity to express their opinions on issues and justify their answers. This is the sample of my structured questionnaire. A copy of the questionnaire can be found at the appendix.

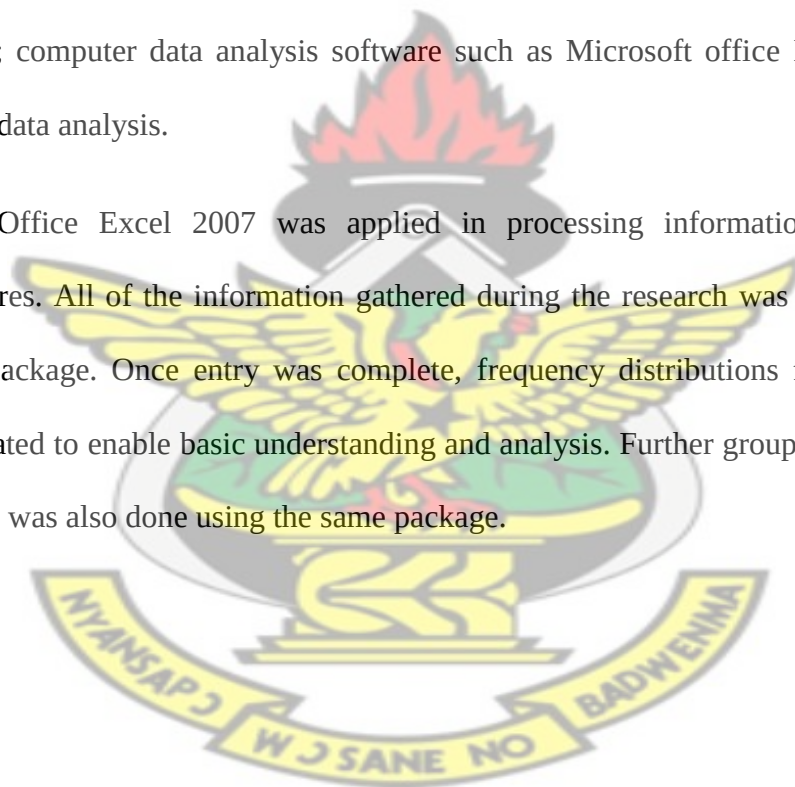
3.6.2 OBSERVATIONS

The non-participant observation was used to confirm the authenticity of some of the information obtained from questionnaires administered. By this method, the researcher was physically present only as a spectator who does not become directly involved in the activities of the people who are being studied (Agyeadu *et al.* 1999).

3.7 DATA ANALYSIS PROCEDURE

Quantitative and qualitative methods of analyzing statistical data were employed in analyzing the data. Descriptive statistical tools such as tables and charts were presented. In addition; computer data analysis software such as Microsoft office Excel 2006 was used in the data analysis.

Microsoft Office Excel 2007 was applied in processing information gathered using questionnaires. All of the information gathered during the research was entered into the computer package. Once entry was complete, frequency distributions for all variables were generated to enable basic understanding and analysis. Further grouping and analysis of variables was also done using the same package.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents the results on the questionnaire survey conducted on 45 respondents from 20 contracting firms in the Kumasi Metropolis with the aim of studying the relationship between Ghanaian building contractors and material suppliers working in the Kumasi Metropolis. The chapter was organized into four sections:

The first section dealt with the demographic characteristics of respondents. The second section explored the nature of the current relationship between contractors and material suppliers. The last two sections look at the best practice contractor-supplier relationships and the challenges which affect such relationships.

4.2 GENERAL PARTICULARS OF RESPONDENTS

The first section of the questionnaire sought to find out about the demographic characteristics of the respondents and their firms. The objective of this exercise was to find out the credibility of the respondents in providing the required information. The result of their responses is summarized in Table 4.1. From the Table, majority of the respondents had Bachelor's degree (55.6%) and Master's degree (31.1%) and held various positions ranging from Quantity surveyor's (53.3%), Project Managers (26.7%) to site managers (15.6%). Moreover, most of the respondents had long term working experience. As high as 82.3% had worked more than 5 years in the construction industry and most especially in the area of purchasing building materials. This is a good reason to justify the credibility of the respondents. With regards to the firms, it was found that a majority (95.6%) of them have been in operation not less than five years. Based on the

above observations, there is no doubt that the information provided by the respondents and the firms can be relied upon.

Table 4.1: General particulars of Respondents

	Item Description	Frequency	Percent
1	Type of Qualification		
a	Master (MA,MSS or MBA)	14	31.1
b	Bachelor (BA, BSC or BBA)	25	55.6
c	Higher National Diploma	6	13.3
d	Total	45	100.0
2	Group that Respondents belong to		
a	Management	28	62.2
b	Employees	17	37.8
	Total	45	100.0
3	Position of respondents		
a	Site Manager	7	15.6
b	Project Manager	12	26.7
c	Quantity Surveyor	24	53.3
d	Purchasing Manager	2	4.4
	Total	45	100.0
4	Years of working Experience		
a	1-5 years	8	17.8
b	6-10 years	18	40.0
c	11-15 years	12	26.7
d	Above 20 years	7	15.6
a	Total	45	100.0
5	Years of Existence of the firms		
a	Less than 5 years	2	4.4
b	5-10 years	16	35.6
c	11-20 years	17	37.8
d	More than 20 years	10	22.2
	Total	45	100.0

Source: Field survey, 2014

4.3 NATURE OF THE CURRENT CONTRACTOR – SUPPLIER RELATIONSHIPS

The study as one of its main objectives, sought to explore the nature of the current relationship between the contracting firms and their suppliers. From the results presented in Table 4.2, all the respondents alluded to the fact that they have some sort of good relationships with their suppliers. For the majority of them (86.7%), the relationship was long term ranging from 6years and above. Some of the respondents during an interview expressed the need how contracting firms should do well to establish long term relationship with their suppliers. Almost all the respondents (95.6%) were in unison that, good contractor-supplier relationship is very important or critical to the success of the Ghanaian construction industry.

Table 4.2: Nature of the current Contractor-supplier relationship

	Item Description	Frequency	Percent
1	Does the firm have any relationship with its key material suppliers?		
a	Yes	45	100
	Total	45	100
2	Type of relationship		
a	Long-term relationship	39	86.7
b	Short-term relationship	6	13.3
	Total	45	100.0
3	Durations contractors have related with their suppliers		
a	From 1-2 years	2	4.4
b	Between 3-5 years	4	8.9
c	Between 6-10 years	14	31.1
d	More than 10 years	25	55.6
	Total	45	100.0
4	Importance of Contractor supplier relationships in the construction Industry		
a	Less important	2	4.4
b	Important	23	51.1
c	Critical	20	44.4
	Total	45	100.0

The above report perfectly agrees with earlier studies by Krause et al (2000) and Dyer and Hatch (2006) where they observed that a well-developed and routinized supply relationship arguably encourages a joint approach to problem solving and leads to reduction in cost, improvements in quality and the imports of new and critical knowledge.

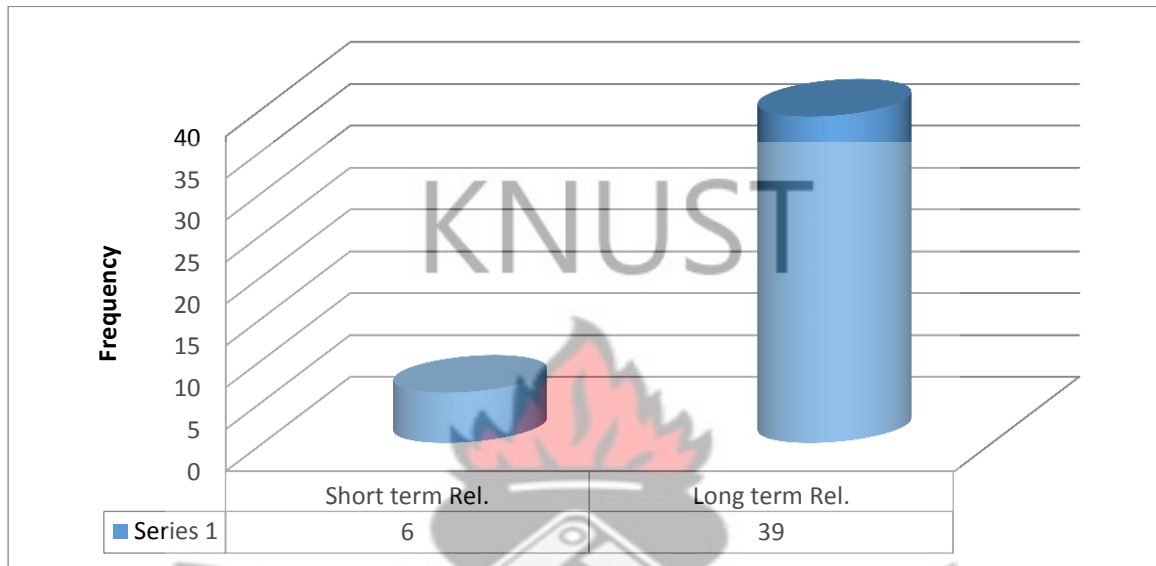


Figure 4.1: Type of relationship between contractors and suppliers

Source: Field survey, 2014

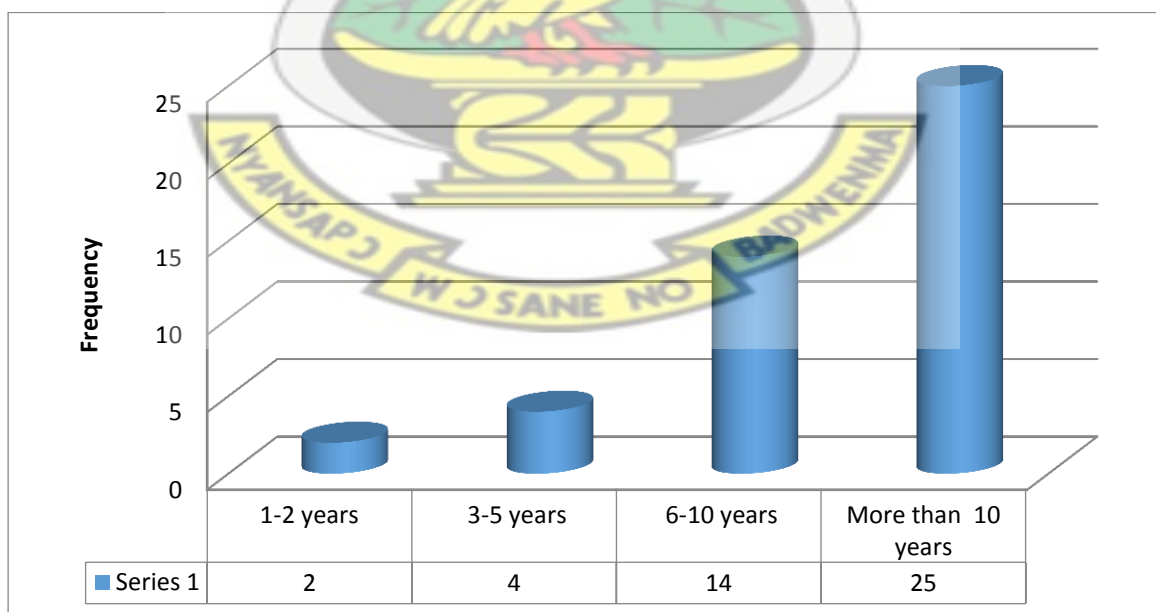


Figure 4.2: Durations Contractors have related with their suppliers

Source: Field survey, 2014

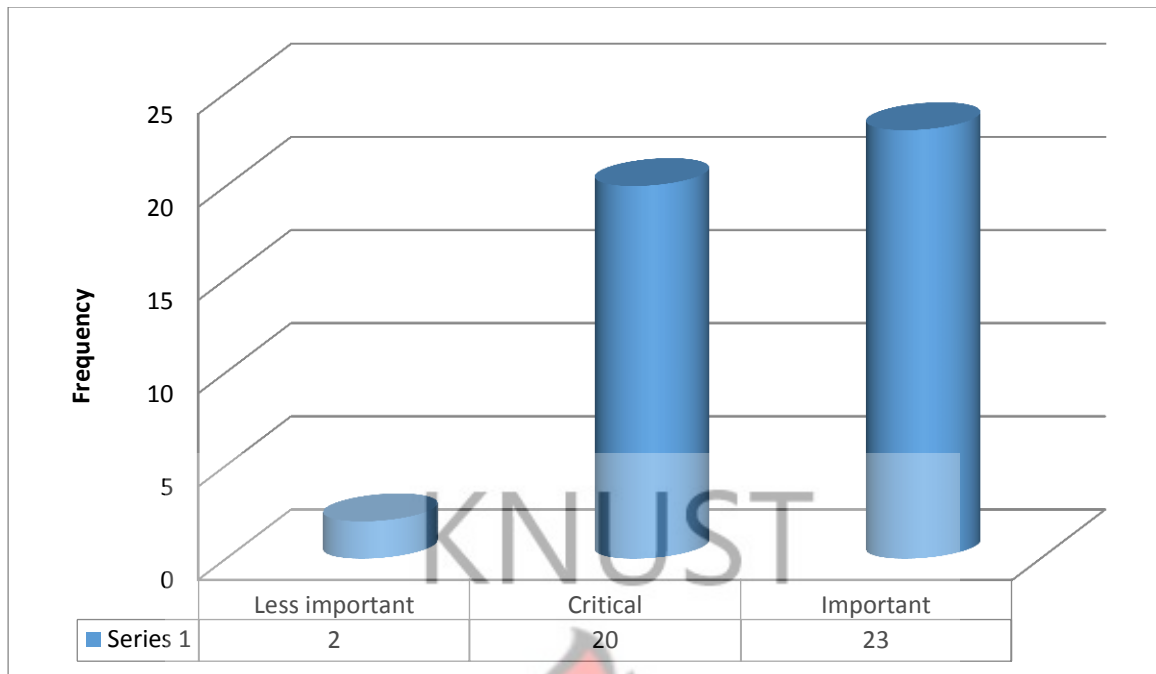


Figure 4.3: Importance of Contractor supplier relationships in the construction Industry

Source: Field survey, 2014

4.4 BEST-PRACTICE CONTRACTOR-SUPPLIER RELATIONSHIPS.

The relationship among suppliers and contractors or firms often termed as supply relationship cannot thrive without the existence of some key elements. Ackerman and Van Bodegraven (2007) in their studies highlighted some of the key ingredients to the success of Contractor-supplier relationship which included the existence of high trust and high communication. Besides trust and effective communication, other practices which have been reported to play key roles in supply relationships were gathered from literature. Consequently, the respondents were asked to indicate their level of agreement as to how the selected factors promote/sustain the relationship with their suppliers. The analysis of the Relative Importance Index (RII) values of all the variables indicated that all the selected factors play significant roles in contractor-supplier relationships. The RII values of all the variables were more than 0.5 (the average). However, based on the ranking, *Trust*,

Effective coordination between parties, Frequent communication, Transparency and Collaboration were the top 5 best practices endorsed by the respondents. As earlier on reported by Ackerman and Van Bodegraven (2007) no relationship can survive without trust, transparency or effective communication between the parties.

From literature, Monczka *et al.*, (1998) also reported that the first attributes of any relationship include trust, coordination and interdependence, which are considered essential for the relationship. Trust is argued to be the most critical factor and is founded in reliable role performance, cultural alignment, and interaction frequency (Lewicki *et al.*, 1998). Trust was concluded to be stimulated by greater task coordination and by doing what is said to be done. Interdependence was said to exist when one actor does not control all of the conditions necessary for achievement of a desired outcome, but a reciprocal dependence is present. In the study by Kabadayi and Ryu (2007) where he explore the criteria, that positively affects a manufacturer to develop a long-term relationship with a supplier, he concluded that trust in the relationship between manufacturer and supplier has a positive effect on the long-term orientation of the relationship. Argued that performance of the supplier is one of two facilitators for trust. The prior track record of the relationship is essential for initiating long-term orientation and may be reflected in the supplier's reputation.

In addition to the above, communication behaviour according to Monczka *et al.* (1998) concerns the information communicated to the other party in the relationship. They concluded that both the depth of the information, such as quality and participation, and the breadth of information, such as the extent of sharing, play an important role in managing the contractor-supplier relationship. Moreover, Ryuet *et al.* (2007) argued that the information has to be trustworthy in order to increase confidence in the relationship. The

findings of the current study confirms/agrees with the report by Monczka *et al* (1998), Ryuet *al.* (2007) and Ackerman and Bode graven, (2007)

Table 4.3: Best-Practice contractor-Supplier relationships

S/n		RATING									
	Best-Practice contractor-Supplier relationships	5	4	3	2	1	Total	ΣW	Mean	RII	Rank
1	Ensuring Trust	31	14	0	0	0	45	211	4.689	0.938	1
2	Coordination between parties	14	31	0	0	0	45	194	4.311	0.862	2
3	Will for dialog and collaboration	22	17	4	2	0	45	194	4.311	0.862	2
4	Frequent communication	14	29	2	0	0	45	192	4.267	0.853	4
5	Transparency relationship	14	29	2	0	0	45	192	4.267	0.853	4
6	Adopting interactive procurement	15	26	2	2	0	45	189	4.200	0.840	6
7	Ensuring commitment	14	27	2	2	0	45	188	4.178	0.836	7
8	Loyalty to framework agreement	16	21	6	2	0	45	186	4.133	0.827	8
9	Long-term orientation	16	19	6	4	0	45	182	4.044	0.809	9
10	Market condition	10	27	6	2	0	45	180	4.000	0.800	10
11	Guarantee volumes	14	21	6	2	2	45	178	3.956	0.791	11
12	Effective conflict resolution	6	24	15	0	0	45	171	3.800	0.760	12
13	Willingness and capability for collaboration	4	33	4	4	0	45	172	3.822	0.764	13
14	Mutual incentive	10	17	10	6	2	45	162	3.600	0.720	14

Source: Field survey, 2014

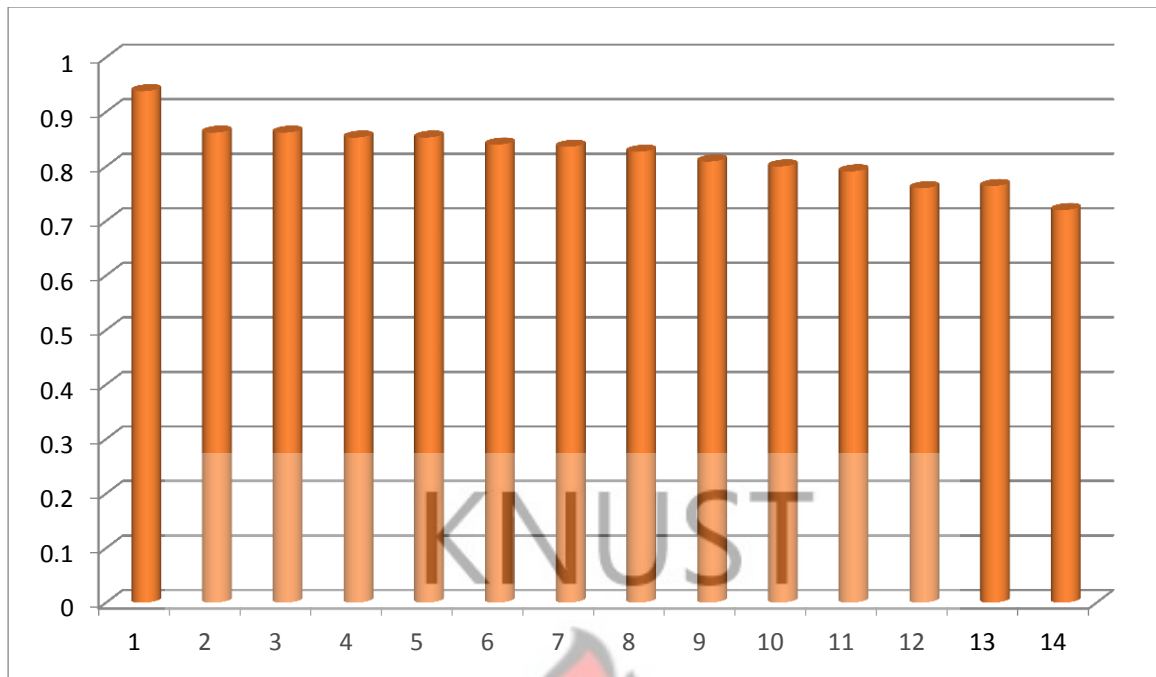


Figure 4.4: Ranking of the best practice contractor-supplier relationship

Source: Field survey, 2014

4.5 CHALLENGES WHICH AFFECT BUILDING CONTRACTOR-SUPPLIER RELATIONSHIPS

The last part of the questionnaires sought to find out the challenges which affect Contractor-supplier relationships. The results revealed that the key challenges were *Lack of trust, Market charges, Non-conformance to specification, Poor quality of supplies, Delays in responding to orders and Poor communication*. Some of the respondents narrated cases where they had to part with or some of the suppliers had to part with them when the parties suspected some elements of mistrust. Non-conformance to specification and Poor quality of supplies according to some of the respondents caused their firms to fail to establish long term relationships with some of their potential suppliers. The above findings also perfectly agree with the findings of Kabadayi and Ryu (2007), Ackerman and Van Bodegraven (2007), Kleindorfer and Saad (2005) and Akintoye et al. (2000).

Kabadayi and Ryu (2007) reported the role of trust and effective communication in contractor- supplier relationship

Table 4.4: Challenges which affect Building Contractor-Supplier Relationships

		RATING									
	Challenges	1	2	3	4	5	Total	ΣW	Mean	RII	Rank
1	Lack of trust	0	6	5	18	16	45	179	3.978	0.796	1
2	Market charges	0	0	13	24	8	45	175	3.889	0.778	2
3	Non-conformance to specification	2	0	12	19	12	45	174	3.867	0.773	3
4	Poor quality of supplies	2	0	19	8	16	45	171	3.800	0.760	4
5	Delays in responding to orders	2	0	15	18	10	45	169	3.756	0.751	5
6	Poor communication	2	3	16	8	16	45	168	3.733	0.747	6
7	Contractor difficulty in obtaining jobs	0	2	12	27	4	45	168	3.733	0.747	6
8	Poor conflict resolution	2	4	13	22	4	45	157	3.489	0.698	8
9	Contractors decentralized organization	4	0	15	22	4	45	157	3.489	0.698	8
10	Poor financial position of suppliers	2	3	18	16	6	45	156	3.467	0.693	10
11	Overdependence on one-off contract	0	6	19	16	4	45	153	3.400	0.680	11
12	Absence of mutual understanding	2	7	20	8	8	45	148	3.289	0.658	12
13	Contractors short term approach	2	4	21	16	2	45	147	3.267	0.653	13
14	Organizational weak planning	4	2	21	16	2	45	145	3.222	0.644	14

Source: Field survey, 2014

Besides the above other factors such as the decentralized organization set of Contractors was also pose challenge to contractor- supplier relationship. As reported earlier in literature, the regionalized organizational structure implemented in many contractors'

organizational set up results in many decisions been made locally. Even if the purchasing department of a firm signs the framework agreements with suppliers, the projects make the actual decision on what supplier to use. Moreover, most contractors carry out thousands of projects each year spread both geographically and in content. In these projects, the ways of working are very individual and relate to the specific site manager rather than to the company which the site manager is a part of. Hence, when the supplier is approaching the projects there are different ways in how the projects thinks the ordering and delivery should be conducted making the situation for the supplier very difficult. One part of the development of contractor-supplier relations relates to standardized ordering from the projects and standardized deliveries from the suppliers which has turned out to be a very difficult task for the contractors, and the suppliers use their own ways of dealing with this matter.

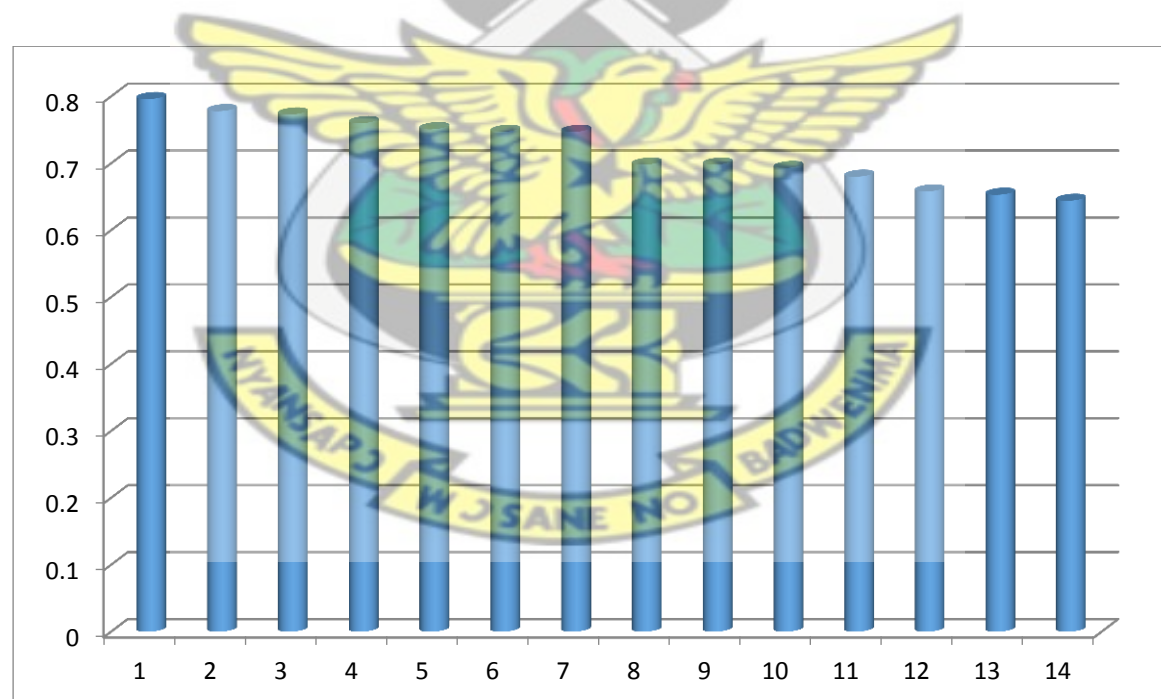


Figure 4.5: Ranking of the challenges which affect Building Contractor-Supplier Relationships

Source: Field survey, 2014

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The aim of the study was to study the relationship between Ghanaian building contractors and material suppliers. In line with this, the researcher sought (1) To identify best-practice contractor-supplier relationships and (2) To identify challenges which affect building contractor-supplier relationships in Ghana. Based on the questionnaire survey conducted on 45 respondents from 20 contracting firms in the Kumasi Metropolis, the following conclusions were drawn:

5.2 SUMMARY OF RESULTS AND CONCLUSION

Objective 1: To identify best-practice contractor-supplier relationships

- (i) Most contractors in the Kumasi Metropolis have some of good relationships with their suppliers
- (ii) For the majority of them (86.7%), the relationship was long term ranging from 6 years and above.
- (iii) The study identified some best –practice contractor-supplier relationships. From the survey it was found that the successful contractor-supplier relationships showed evidence of mutual trust, effective coordination between parties, frequent communication, transparency and collaboration.

Objective 3: To identify challenges which affect building contractor-supplier relationships?

From the study, the key challenges to building contractor-supplier relationships were identified as:

- (i) Lack of trust;
- (ii) Poor communication;
- (iii) Market charges, Delays in responding to orders; and
- (iv) Non-conformance to specification, Poor quality of supplies.

5.2 RECOMMENDATIONS

Based on the findings from the study, it was recommended that:

- ❖ contractors should put in strategies to improve trust and communication with their suppliers, since these have a lot of positive effects on both parties
- ❖ Suppliers should be educated on the effects of delays in responding to orders and the problems caused by failure to conform to specification and poor quality of suppliers.
- ❖ The contractor should have a long term relationship with their suppliers
- ❖ mutual trust, effective coordination between parties, frequent communication, transparency and collaboration

5.3 FURTHER STUDIES

In conclusion further studies should be carried out to include the views of material suppliers on best-practice characteristics of contractor-supplier relationships and the challenges to the attainment of these best-practices. Also, the scope could be extended to include contractors and suppliers in other major cities in the country to give a better representation of the Ghanaian construction industry as a whole. .

REFERENCES

- Ackerman, K. B. & Van Bodegraven, A.(2007). *Fundamentals of Supply Chain Management: An Essential Guide for 21st Century Managers*, DC Velocity Books.
- Ahuja, H. N., Dozzi, S. & Abourizk, S. M.(1994). *Project management: techniques in planning and controlling construction projects*, John Wiley & Sons.
- Akintoye, A. & Main, J. (2007). Collaborative relationships in construction: the UK contractors' perception. *Engineering, Construction and Architectural Management*, 14, 597-617.
- Ashworth A. (1999), *Cost studies of buildings*, 3rd edition, Longman, pp 31-33
- Akintoye, A., McIntosh, G. & Fitzgerald, E. (2000). A survey of supply chain collaboration and management in the UK construction industry. *European Journal of Purchasing & Supply Management*, 6, 159-168.
- Albaloushi, H. & Skitmore, M.(2008). Supply chain management in the UAE construction industry. *International Journal of Construction Management*, 8, 53-71.
- Anaman, K. A. & Osei-Amponsah, C. (2007). Analysis of the causality links between the growth of the construction industry and the growth of the macro-economy in Ghana. *Construction Management and Economics*, 25, 951-961.
- Ashworth, A. 2004.Takim and Akintoye,(2002)*Cost studies of buildings*, Pearson Education.
- Bakker, E. F. & Kamann, D.-J. F. (2007). Perception and social factors as influencing supply management: A research agenda. *Journal of Purchasing and Supply Management*, 13, 304-316.

- Bäckstrand, J. (2007) *Levels of Interaction in Supply Chain Relations*, Licentiate thesis, Chalmers University of Technology, Göteborg.
- Bhalla, G. (1995). Agricultural growth and industrial development in Punjab. *Agriculture on the Road to Industrialization*, 67-112.
- Bower, J. L. (1986). *Managing the resource allocation process: A study of corporate planning and investment*, Harvard Business Press.
- Bubshait, A. A. (2001). Partnering: an innovative and effective project organization concept. *Cost Engineering*, 43, 32-37.
- Cardoso. (1999). "Entrepreneurial Strategies and new forms of rationalization of production in the building construction sector of Brazil and France", (IGLC-6) Conference
- Cai, J., Liu, X., Xiao, Z. & Liu, J. (2009). Improving supply chain performance management: A systematic approach to analyzing iterative KPI accomplishment. *Decision Support Systems*, 46, 512-521.
- Camacho, M. V. (2011). Warehouse Logistics And Internal Distribution Optimization.
- Carr, A. S. & Pearson, J. N. (1999). Strategically managed buyer-supplier relationships and performance outcomes. *Journal of operations management*, 17, 497-519.
- Chopra, I., O'Neill, A. J. & Miller, K. (2003). The role of mutators in the emergence of antibiotic-resistant bacteria. *Drug resistance updates*, 6, 137-145.
- Cidb-Local Contractors.(2009.)*Annual Report* [Online]. Malaysia: CIDB Malaysia.
- Collis, J. & Hussey, R.(2003.)*Business research*, Citeseer.
- Capo, J. Lario F.C. and Hospitaler A. (2004). Lean production in the construction supply chain: second world conference on POM and 15th annual POM conference, Cancun, Mexico
- Clausen, L (1995). Report 256: Building Logistics, Danish building research institute:4

- Dainty, A. R., Millett, S. J. & Briscoe, G. H. (2001.) New perspectives on construction supply chain integration. *Supply chain management: An international journal*, 6, 163-173.
- De Haan, J. & Sturm, J.-E. (2000.) On the relationship between economic freedom and economic growth. *European Journal of Political Economy*, 16, 215-241.
- Dubois, A. & Gadde, L.-E. (2000). Supply strategy and network effects—purchasing behaviour in the construction industry. *European Journal of Purchasing & Supply Management*, 6, 207-215.
- Dubois, A. & Gadde, L.-E. (2002). The construction industry as a loosely coupled system: implications for productivity and innovation. *Construction Management & Economics*, 20, 621-631.
- Dyer, J. H. & Hatch, N. W. (2006). Relation-specific capabilities and barriers to knowledge transfers: Creating advantage through network relationships. *Strategic Management Journal*, 27, 701-719.
- Edmonds, G. A. (1979). Construction Industry in Developing Countries, The. *Int'l Lab. Rev.*, 118, 355.
- Edwards, D.F., (2004) A seamless supply chain model for construction, *Supply Chain Management: An international Journal* 9
- Ellegaard, C. (2008). Supply risk management in a small company perspective. *Supply Chain Management: An International Journal*, 13,pp 425-434.
- Ellegaard, C. & Ritter, T. The Concept of Attraction: Its Purchasing Potential. The 15th Annual IPSERA Conference, (2006).
- Eriksson, P. E. & Westerberg, M.(2011). Effects of cooperative procurement procedures on construction project performance: a conceptual framework. *International Journal of Project Management*, 29, 197-208.

- Ellram, .LM, (1995). "Supply Chain Management and the implications for purchasing and logistics strategy." *International.Journal.Logistics.Management*, volume 4 (2) pp 13-24.
- Errasti, A., Beach, R., Oyarbide, A. & Santos, J. (2007) A process for developing partnerships with subcontractors in the construction industry: An empirical *International Journal of Project Management*, 25 (3), 250-256.
- Fan, S. & Chan-Kang, C.(2005). *Road development, economic growth, and poverty reduction in China*, Intl Food Policy Res Inst.
- Fernie, S. & Thorpe, A. (2007). Exploring change in construction: supply chain management. *Engineering, Construction and Architectural Management*, 14, 319-333.
- Frödell, M. (2009). Criteria for achieving efficient contractor-supplier relations in the construction industry. *Contractor-Supplier Relations in a Large Contractor Organisation*.
- Frödell, M., Josephson, P.-E. & Lindahl, G. (2008). Swedish construction clients' views on project success and measuring performance. *Journal of Engineering, Design and Technology*, 6, 21-32.
- Green, S. D., Fernie, S. & Weller, S. (2005) Making sense of supply chain Management: a comparative study of aerospace and construction. *Construction Management and Economics*, 23 (6), 579 - 593
- Håkansson, H. & Snehota, I. (2000). The IMP perspective: assets and liabilities of business relationships. *Handbook of relationship marketing*, 69-94.
- Hargreaves, A. & Shaw, P. (2007.) Knowledge and Skill Development in Developing and Transitional Economies. Boston: World Bank/DfID.

- Harland, C.(1996) International comparisons of supply-chain relationships. *Logistics Information Management*, 9, 35-38.
- Howes, R. (2000.) Making governance mechanisms effective in a coordinated industry: the case of construction in the United Kingdom. *International Journal of Technology Management*, 20, 194-213.
- International Monetary Fund(2011) Revenue Mobilization in Developing Countries. International Monetary Fund
- Josephson, P.-E., Polesie, P. &Frödel, M. (2009) Understanding resources waste reduction priorities in Swedish construction. *CIB Joint International Symposium 2009: Construction Facing Worldwide Challenges*. Dubrovnik, Croatia
- Kabadayi, S. & Ryu, S.(2007) The protection of the trustor through the use of control mechanisms and its performance implications. *Journal of Business & Industrial Marketing*, 22, 260-271.
- Kalsaas, B. T.(2010) Work-time waste in construction. Proceedings of the 18th Annual Conference of the IGLC, Technion, Haifa, Israel, 2010.
- Kraljic, P. (1983) Purchasing must become supply management. *Harvard business review*, 61, 109-117.
- Krause, D. R. (1999) The antecedents of buying firms' efforts to improve suppliers. *Journal of Operations Management*, 17 (2), 205-224
- Krause, D. R. (1997) Supplier Development: Current Practices and Outcomes *Journal of Purchasing and Materials Management*, 33 (2), 12-19.
- Karim, K., Marosszeky, M. & Davis, S. (2006) Managing subcontractor supply chain for quality in construction. *Engineering, Construction and Architectural Management*, 13 (1), 27 - 42.

- Lambert, D., Cooper, M, and Pugu, J. 1998). “ Supply Chain Management”. *International Journal of logistics management* 9 (2), p 1 -1 19
- Lee, K. (2008) Opportunities for green marketing: young consumers. *Marketing intelligence & planning*, 26, 573-586.
- Lewicki, R. J., Mcallister, D. J. & Bies, R. J.(1998) Trust and distrust: New relationships and realities. *Academy of management Review*, 23, 438-458.
- Love, P. E.D., Irani, Z., and Edwards, D.F., (2004) A seamless supply chain model for construction, *Supply Chain Management: An international Journal* 9
- London, K. (2004)*Construction supply chain procurement modelling*. The University of Melbourne.
- London, k. A. and Kenley. R., (2000). “ The development of a neo-industrial organization methodology for describing & comparing Construction Supply Chains”. Eighth Annual conference of the International Group for Lean Construction (IGLC-8), Brighton UK
- Lopes, J. (1998), “The construction industry and macro-economy in Sub-Saharan Africa post-1970”, *Construction Management and Economics*, Vol. pp.16, pp. 637-49
- McAllister, D. J. (1995) Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of management journal*, 38, 24-59.
- Monczka, R., Handfield, R., Giunipero, L. & Patterson, J. (2009) *Purchasing and Supply Chain Management*, South-Western, Mason, USA.
- Osei, V. (2013). The Construction Industry and its Linkages to the Ghanaian Economy– Policies to Improve the Sector’s Performance. *International Journal of Development and Economic Sustainability*, 1, 56-72.
- Pidduck, A. B. (2006). Issues in supplier partner selection. *Journal of Enterprise Information Management*, 19, 262-276.

- Proverbs, D. G. & Holt, G. D. (2000). Reducing construction costs: European best practice supply chain implications. *European Journal of Purchasing & Supply Management*, 6, 149-158.
- Pryke, S. (2009). *Construction Supply Chain Management*, John Wiley & Sons.
- Rogers, K. W., Purdy, L., Safayeni, F. & Duimering, P. R. (2007). A supplier development program: rational process or institutional image construction? *Journal of Operations Management*, 25, 556-572.
- Runeson, P. & Höst, M. (2009). Guidelines for conducting and reporting case study research in software engineering. *Empirical software engineering*, 14, 131-164.
- Ryu, I., So, S. & Koo, C. (2009) The role of partnership in supply chain performance. *Industrial Management & Data Systems*, 109 (4), 496-514.
- Saad, M., Jones, M. & James, P. (2002) A review of the progress towards the adoption of supply chain management (SCM) relationships in construction. *European Journal of Purchasing & Supply Management*, 8 (3), 173-183.
- Sarkar, A. & Mohapatra, P. K. (2009). Determining the optimal size of supply base with the consideration of risks of supply disruptions. *International Journal of Production Economics*, 119, 122-135.
- Sánchez-Rodríguez, C., Hemsworth, D. & Martínez-Lorente, Á. R. (2005) The effect of supplier development initiatives on purchasing performance: a structural model. *Supply Chain Management: An International Journal*, 10 (4), 289 - 301.
- Sengupta, B. & Guha, M. (1998). *Construction Management and Planning*, McGraw Hill Companies.
- Sengupta, U. (2010). The hindered self-help: Housing policies, politics and poverty in Kolkata, India. *Habitat International*, 34, 323-331.

- Taylor, D. and Bjornsson, H., (1999). “ Construction supply chain improvements through internet pooled procurement”. (IGLC-6) Conference, Berkeley.
- Takim, R. & Akintoye, A. Performance indicators for successful construction project performance. 18th Annual ARCOM Conference, (2002). 545-555.
- Teece, D. J.(2009). *Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth: Organizing for Innovation and Growth*, Oxford University Press.
- Thompson, I., Cox, A. & Anderson, L. (1998). Contracting strategies for the project environment. *European Journal of Purchasing & Supply Management*, 4, 31-41.
- Tommelein, I. and En Yi Li. (1999). “Just-In-Time Concrete Delivery: Mapping Alternatives for Vertical Supply Chain Integration.” Proceedings of IGLC 7th Annual Conference, Berkeley, California, USA, [http:// cic.vtt. fi/lean/ conferences.htm](http://cic.vtt.fi/lean/conferences.htm)
- Trent, R. J. & Monczka, R. M. (1999) Achieving world-class supplier quality. *Total Quality Management*, 10 (6), 927-938.
- Vonderembse, M. A. & Tracey, M.(1999). The impact of supplier selection criteria and supplier involvement on manufacturing performance. *Journal of Supply Chain Management*, 35, 33-39.
- Vrijhoef, R. & Koskela, L. (2000). The four roles of supply chain management in construction. *European Journal of Purchasing & supply management*, 6, 169-178.
- Walter, A., Müller, T. A., Helfert, G. & Ritter, T.(2003). Functions of industrial supplier relationships and their impact on relationship quality. *Industrial Marketing Management*, 32, 159-169.
- Wang, Y. & Yao, Y. (2003). Sources of China's economic growth 1952–1999: incorporating human capital accumulation. *China Economic Review*, 14, 32-52.

Wells, J. (1985). The role of construction in economic growth and development. *Habitat International*, 9, 55-70.

Xue, X., Wang, Y., Shen, Q. & Yu, X. (2007). Coordination mechanisms for construction supply chain management in the internet environment. *International Journal of Project Management*, 25, 150-1

Zhi, M., Hua, G. B., Wang, S. Q. & Ofori, G. (2003). Total factor productivity growth accounting in the construction industry of Singapore. *Construction Management and Economics*, 21, 707-718.



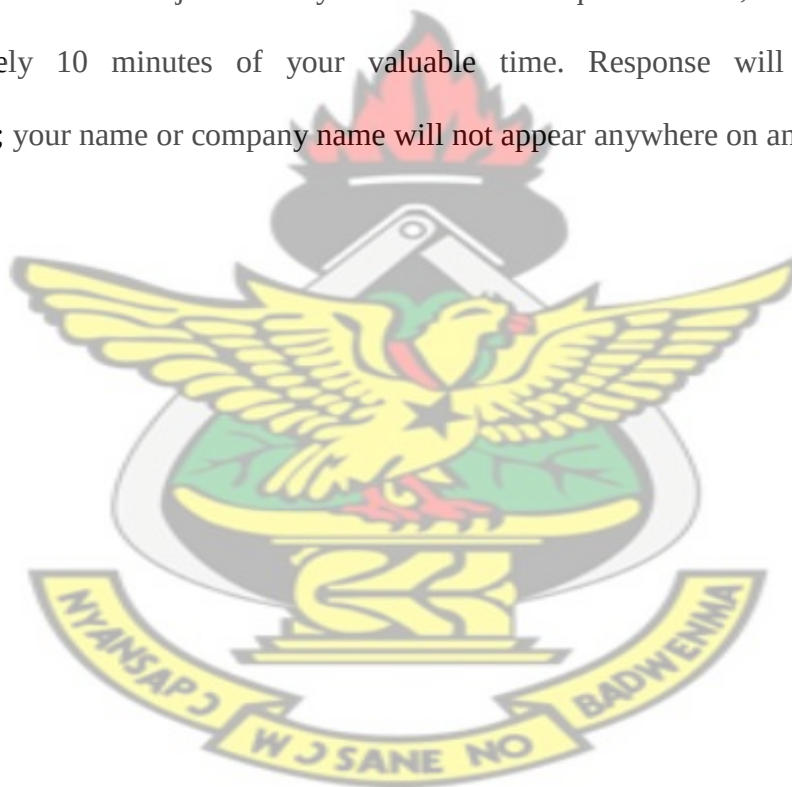
APPENDIX

Date: 22nd July, 2014

Sir/Madam

Research Questionnaire Survey

Please be informed that I am a research student from Department of Building Technology, Kwame Nkrumah University of Science and Technology. Currently, I am pursuing a Master's programme in MSC Construction Management and undertaking my Final Year Research Project. Kindly fill in this short questionnaire, which should take approximately 10 minutes of your valuable time. Response will be completely anonymous; your name or company name will not appear anywhere on any publication.



SURVEY QUESTIONNAIRE ON
A STUDY OF THE RELATIONSHIPS BETWEEN GHANAIAN BUILDING
CONTRACTORS AND MATERIAL SUPPLIERS WORKING IN KUMASI
METROPOLIS

The questionnaire is set up to study of the relationships between Ghanaian building contractors and material suppliers working in Kumasi metropolis, Explore the nature of the supply relationships between contractor s and suppliers working in Kumasi metropolis, to identify best- practice contractor-supplier relationships, to find out the challenges which affect building contractor- supplier relationships in Ghana

Your participation in the survey is voluntary and your answer will be kept strictly confidential.

There are **four parts** of the questionnaire:

Part I: Particulars of Respondent

Part II: General Information

Part III: Best-Practice Contractor-Supplier Relationships

Part IV: Challenges Which Affect Building Contractor-Supplier Relationships

Prof. Edward Badu

(Research Supervisor, Department of Building Technology, KNUST)

Email: Edward@yahoo.com

Richard BoscoMensah

(Research Student)

MSC Construction Management.

KNUST

If you have any questions, please contact me at

Tel: 0244504682

Email: bosco_pwd@yahoo.com

PART I: PARTICULARS OF RESPONDENT (OPTIONAL)

Name of person completing the questionnaire.....

Designation:.....

Institution/Department:.....

Address.....

Tel:..... Fax:.....

1. What type of qualification do you hold in this construction firm or organisation?

Master (MA, MSC or MBA) ☐

Bachelor (BA, BSc or BBA) ☐

Higher National Diploma ☐

Others please specify

2. Which group do you belong to?

Management ☐

Employees ☐

3. If management what position do you occupy in your organisation?

Managing Director ☐

Site Manager ☐

Project Manager ☐

Quantity Surveyor []

Purchasing Manager []

Others please specify

4. How many years of experience do you have working in this construction industry

1-5years []

6-10 years []

11-15 years []

Above 20 years []

5. How long this firm has been into the building construction industry

Less than 5 years []

5 – 10 years []

11 – 20 years []

More than 20 years []

6. What type of relationships do you have with your suppliers?

Long – term relationship []

Short – term relationship []

Others please specify.....

PART II: GENERAL INFORMATION (PLEASE TICK)

7, Tick to indicate the importance of contractor -Supplier relationships in the construction industry?

Not important ☐

Limited important ☐

Important ☐

Critical ☐

8. What would you consider as the most important material or component for your work?

9. Does the firm have any long-term relationship with its key suppliers for the material(s) mentioned in Q. 8 above? Yes ☐ No ☐

10, If yes, how long have your related to these suppliers?

From 1-2 years ☐ Between 3 – 5 years ☐ Between 6 – 10 years ☐ More

than 10 years ☐ No ongoing relationship ☐

PART III: BEST-PRACTICE CONTRACTOR-SUPPLIER RELATIONSHIPS

INSTRUCTIONS: For statements 11 -26, Please indicate your level of agreement for the following Best-Practice Contractor-Supplier Relationships placing a checkmark (✓) in the right column under the 5-point Likert Scale where 1= **Strongly Agree** 2 =**Agree** 3 = **Disagree** 4 = **Strongly Disagree**. Please use the space below to add any additional factors.

		1	2	3	4	5
11	Ensuring Trust					
12	Coordination between parties					
13	Frequent communication					
14	Effective Conflict Resolution					
15	Market condition					
16	Ensuring commitment					
17	Transparency relationship					
18	Willingness and capability for collaboration					
19	Loyalty to framework agreement					
20	long-term orientation					
21	Adopting interactive procurement					
22	Will for dialog and collaboration					
23	Guarantee volumes					
24	Mutual incentive					
25	Others (please specify)					

PART IV: CHALLENGES WHICH AFFECT BUILDING CONTRACTOR-SUPPLIER RELATIONSHIPS

Please tick to indicate the major barriers or challenges confronting the relationship between contractors and suppliers?

INSTRUCTIONS: For statements 26-40 Please indicate your **measure of importance** of the following factors as **key challenges which affect building contractor supplier relationships** by placing a checkmark (✓) in the right column under the 5- point Likert Scale where 1=**Not Important at all** 2=**Somewhat important** 3= **Moderately Important** 4= **Important** 5= **Very Important** . Please use the space below to add any additional factors.

		1	2	3	4	5
26	Lack of trust					
27	Poor communication					
28	Market charges					
29	Poor conflict resolution					
30	Overdependence on one-off contract					
31	Organizational weak planning					
32	Contractors decentralized organization					
33	Contractors short term approach					
34	Absence of mutual understanding					
35	Poor financial position of supplier					
36	Delays in responding to orders					
37	Poor quality of supplies					
38	Nonconformance to specification					
39	Contractor difficulty in obtaining jobs					
40	Others (please specify)					