ASSESSING CRITICAL FACTORS FOR PRICE SOURCING IN THE BUILDING INDUSTRY: CHALLENGES AND STRATEGIES

By

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DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

Competition within the construction industry has greatly increased due to new knowledge and technology and how best value for money is achieved to the benefit of all stakeholders involved. All forms of financing have had its various challenges requiring that stakeholders take well calculated and pragmatic steps to control cost from the conception to the completion stage of any construction project. In getting this achieved, price sourcing plays a vital role with some identifiable successes but has not been void of its associated challenges. This research tries to assess the challenges of price sourcing stakeholders are faced with within the industry and the strategies that have been adopted in addressing these challenges. In order to achieve this aim, the following objectives were set to help achieve the aim; first, to examine the current price sourcing procedures and strategies. Secondly, to identify challenges involved in sourcing procedures and thirdly, to outline strategies for effective price sourcing. Also, literature review was undertaken delving into the price sourcing procedures, the challenges involved in price sourcing as well as the sourcing strategies that can be adopted by construction professionals for effective price sourcing. The study adopted a quantitative research method where questionnaires were used to collect data from construction professionals and the data obtained was analyzed using mean score ranking and one sample t-test. The study revealed that, *Commerciality; the supplier plays a vital role within the organization*, *Negotiate and select suppliers* and *Rigor: not only organizational wise, but also structural, supply market analysis* and *professional approach emphasized* were the frequently used price sourcing procedures. *Foreign exchange fluctuations*, *Transportation delays, Type of products and Inventory management* were the most experienced challenges. Also, it was revealed that most construction professionals practice single sourcing

and out sourcing while a few practice insourcing. The study recommends strategic price sourcing procedures by all construction professionals.

Keywords: Price sourcing, strategies, Building Industry, critical factors

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DEDICATION

I dedicate this thesis to the Almighty God and to my entire family.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Project financing and access to capital has been a major issue within the building and construction sector which has required that stakeholders adopt strategies to ensure that delivery of any project is cost efficient. Projects unlike business processes are mainly brief and the operating environment of organizations is changing rapidly. Failure of these organizations to adjust to the new environment may lead to survival challenges presently or in future (Yitmen & Ozturk, 2005).

The uptake of huge and more sophisticated infrastructure within the building industry is on the rise and local companies are now compelled to rub shoulders with financially strong international and multinational competitors in project bidding (Markle, et al., 2015). With sourcing making up to 60% - 80% of product end costs, it is required that companies should become strategic in sourcing to avoid failure (Lee, 2016). Survival, in this context will not necessarily be financial strength but rather, satisfying expectations of stakeholders. Flexibility, rapidity, origination, integration, and the challenges of constantly changing conditions are necessities construction managers ought to adopt. The competitive conditions of the business world make the industry very risky, whereby the investments required to compete globally are massive and the effects of failing are catastrophic (Hitt, et al., 2007). As a result of the high level of competition and rapid significant changes within the building industry, expectations are that, professionals adopt smart ways by which expenses are reduced, operations are streamlined, creating certainty in timely project delivery and optimizing profits but ensuring that quality is either maintained or improved upon but not compromised. Finding ways locally and

internationally to procure essential materials at a cost that provides the company advantages in pricing, time, and delivery will become the typical purchasing scheme the company will operate with. (Handfield, 2006)

(Sillanpaa, et al., 2015) in their article acknowledged that strategically managing suppliers is necessary for the competitive market, it continues to say that purchasing firms must consider the purchasing role as essential for competitive advantage and make investments to improve supplier performance and capabilities. They further added that, purchasing firms should consider suppliers as virtual extensions by commitments, which in itself is a factor of motivation to the supplier and developing a relationship between buyer and suppliers is a prospective way to invest into the supplier growth agenda. Lower prices are enjoyed by customers when suppliers are helped to improve. In this context, activities of supplier development are a collective responsibility of customer and supplier. (Sucky & Durst, 2013). Sourcing initiatives can follow the needs of internal clients, such as immediately purchased goods and services for urgent supply as well as contracts that allow for delivery of goods and services that are paid for on as needed basis. (Horne, 2007)

This research tends to explore more about identifiable critical factors of price sourcing, outlining the challenges encountered during price sourcing and highlighting strategies that stakeholders can implement to achieve the best results.

1.2 PROBLEM STATEMENT

Assessment of the current sourcing processes is important to stakeholders to identify potential improvement areas and envisage wastages in construction procurement. Selecting a supplier, supplier performance assessment and cooperation are identifiable challenges in the sourcing

process and even greater when done globally which become a bit more complicated. (Furlotti, 2014)

Improvement is required to succeed and purchasing policies deeply contribute to business success by increasing income, improve better arrangements with suppliers and business relationship become more effective. (Furlotti, 2014)

Currently, most companies struggle in identifying and adopting the right sourcing strategy that best fits the company style to achieve the necessary results. Companies need to have an effective framework and system that understands the customers' needs hence the need to adopt strategic sourcing and a means of reducing holdups which delay projects. In this thesis, focus is on various construction sourcing strategies for successful procurement and outlining the challenges also.

1.3 AIM

Assessment of price sourcing factors in the building industry outlining the challenges and strategies associated with effective price sourcing.

1.4 OBJECTIVES

- To examine the current pricing sourcing procedures and strategies;
- To identify challenges involved in sourcing procedures and
- To outline strategies for effective price sourcing.

1.5 SCOPE

The scope of this research of this research is mainly stakeholders within the building industry such as building construction companies, construction material suppliers, construction clients,

architects, quantity surveyors or any other professional who in one way or the other is involved in construction price sourcing.

1.6 SIGNIFICANCE OF STUDY

This study is of significance to researchers and stakeholders in the building industry who need understanding about price sourcing strategies being implemented currently, how these strategies affect project pricing and providing information of new strategies based on empirical evidence in order to make informed decisions.

1.7 METHODOLOGY

The work was conducted in two major stages due to its nature; literature review and a field study. A contextual and an extensive literature appraisal was conducted to bring to light the critical factors for price sourcing in the building industry. Structured survey questionnaires were mainly depended on to gather pragmatic data from the field. Questionnaires were the favored style in obtaining the data because it produces results which adequately provides an accurate demonstration of the sample.

The questionnaires were designed and administered to several professionals including public and private consultants and contractors actively involved with construction projects in the construction industry in Ghana. Purposive technique of sampling was used to organize a sample size of the vital number of respondents because the questionnaire and purposive sampling techniques is able to ascertain key respondents in the target population

1.8. RESEARCH STRUCTURE

Research was structured into five chapters as discussed below. The first chapter provides Information on Background, Statement of Problem, aim and objectives of the research, Study scope, methodology, limitations of the study and finally, the Report Structure. Chapter two deals with the review of literature associated with the area of research. Chapter three then scrutinizes the methodology adopted for the study. The fourth chapter covers the analysis of data. The fifth chapter finalizes the research by giving the summary, conclusion and recommendations for the study. The framework below represents the various five structured chapters.

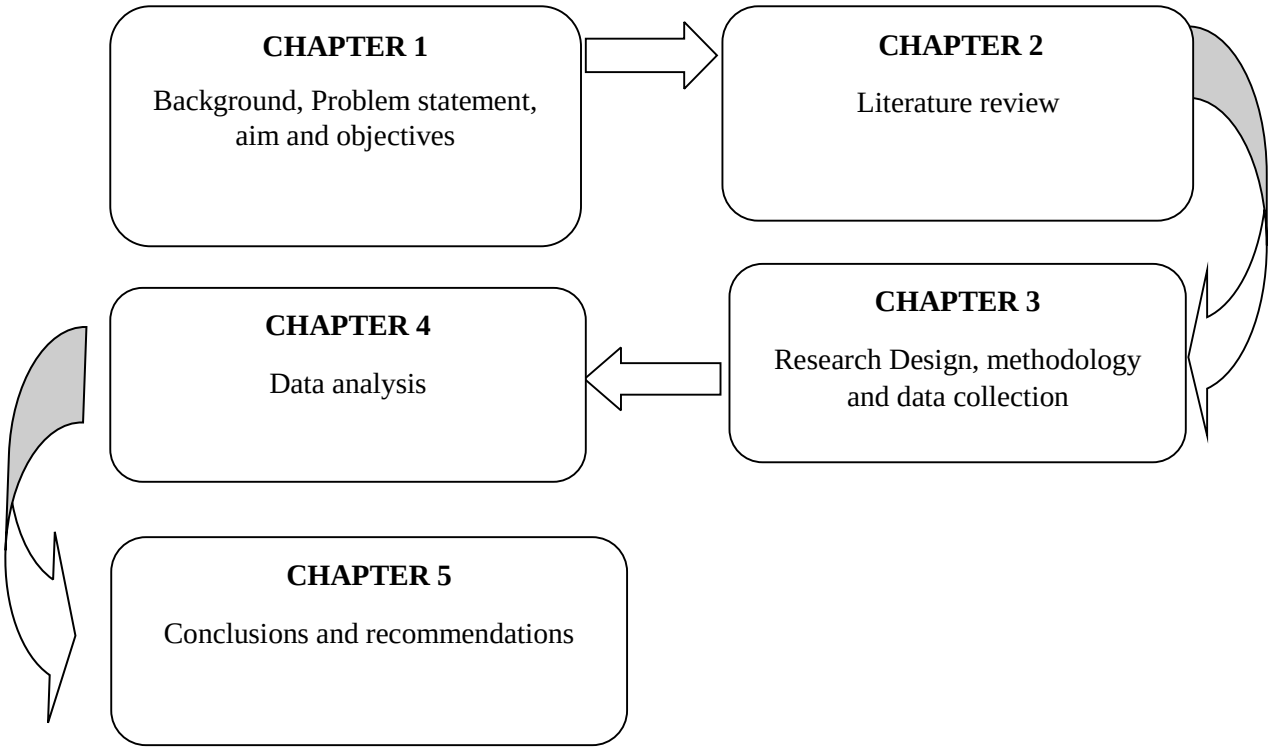


Figure 1.1Conceptual diagram of research organization

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This section of the research mainly seeks to delve into existing literature and previous works by recognized scholars and researchers on critical factors for price sourcing in the Ghanaian Construction Industry and to assess some challenges involved in sourcing procedures as well as delve into the strategies that could be adopted for effective price sourcing. An actual literature review "serves as a strong basis for improving knowledge". It eases concept development, notifies situations where excess a research exists, and where research is needed is exposed. (Webster and Watson, 2002), in view of this, published and already addressed problems concerning critical factors for price sourcing in the construction industry is explored in this section of the study. Information acquired from the literature review will help convey the subject matter into a clearer understanding and outlook.

2.2 OUTLINE OF THE CONSTRUCTION INDUSTRY IN GHANA

Ghana's construction industry like many other industries stands out to be one of the major industries which contribute significantly to the growth of socio-economic development (Chan and Kumaraswamy 1993). However, due to its complexity and nature it is often expounded to a wide range of risks connected to supply chain and interferences and this situation has brought about the emergence of strategic sourcing which facilitates the management of its supply. Chopra and Sodhi (2004) opined that the supply chain in general is affected tremendously by some risks such as wars and terrorisms, political instability, diseases or epidemics. These supply chain risks have direct impact on long-term strategic sourcing decision which has therefore resulted in most organizations practicing strategic sourcing. Strategic sourcing has been studied extensively using

observed studies as well as assessment work. Some enablers include importance of strategic sourcing, its challenges, processes, and framework, and so on. However, there is no study for factors on critical success for strategic price sourcing particular to the Ghanaian Construction Industry. Thus, this study seeks to broadly assess serious success features for price sourcing in the Ghanaian Construction Industry.

2.3 PRICE SOURCING

Novack and Simco (1991) explain that sourcing is a complex process that contributes tremendously to the competitive advantage of an organization. Martinez-Martinez and Campus (2008) also explain that, an organization's sales revenue or total manufacturing cost as much as 70 per cent is spent on purchasing raw materials, components, finished goods or services. Dobler and Burt (1996) posit that, if the cost of sourcing can be reduced it will improve returns on investment by increasing both profit margins and asset turnover rate.

In simple terms, a price sourcing involves analysis, review and examination of the price proposed by a supplier and an evaluation to determine if otherwise it is reasonable. A resolve that there is fairness and reasonability with the conclusion that the proposed price is fair to both parties, considering the quality, delivery and other factors. Following this is the levers associated with the sourcing.

2.3.1 Price Sourcing Levers

Most purchasers within the industry are faced with the issue of achieving annual saving to cost. In this regard, sourcing levers provide a list to check methods that can probably save cost. Characteristics of sourcing levers focus on purchases made by groups. This is also referred to as "sourcing categories". And these purchases encompass services and materials of similar type

provided a singular supplier (Schiele et al., 2011). This in the end creates a unique market supply according to Drake et al. (2013) and Boutellier and Zagler (2000). This sourcing category does not allow for the inclusion of just one material or considering just one supplier, neither does it allow for a single purchasing function to manage spending. Typically, sourcing category comprises of several aspects and suppliers as well (Horn et al., 2013; Li et al., 2014). Under the approach known as category management, the option is available to firms to make use of what is called "category managers" who are primarily purchasing agents. They are responsible for managing sourcing activities under any category of sourcing (Driedonks, 2010; Sundtoft and Sigurbjornsson, 2013; Ateş, 2014). This concept is suited to trade environment particularly in circumstances where groupings are made for consumer goods for product offering and joint marketing. This is done ti facilititae thegenral range of products, shelf management and cross-sales (Leeflang and Parreño-Selva, 2012; Lindblom et al., 2009). In this category, the concept is used to categorize goods purchased into a sizable number, either four portfolios or nine portfolio cells (Gelderman and Semeijn, 2006; Nellore and Söderquist, 2000). For better accounting of the uniqueness of materials as well as group offering service, organizations are restricted to move near a better variation of categories associated with sourcing. In a contemporary approach of category management, firms separate various sourcing categories in areas such as technology associated with production, efficiencies of suppliers or market-facing areas (Ateş, 2014; Monczka and Markham, 2007; Van Weele, 2010).

Several authors have tackled the subject of action planning to enhance performance in achieving source category goals. They developed a number of tactics called sourcing tactics technically referred to as "sourcing levers". (Hesping and Schiele, 2015; O'Brien, 2012; Schiele et al., 2011; Schuh et al., 2011; Schumacher et al., 2008; Stollenwerk, 2012). Levers of sourcing are neither

recent or new to research. This research describes the ways to foster the implementation of the general strategy.

Schiele et al. (2011) explicitly admit to a positive application of seven core sourcing levers in 134 cross-functional cost-saving workshops. Thus;

1. Bundling of volume, which influence volumes of big purchases,
2. Evaluation of price, whereby new prices are negotiated centered on information on costs
3. Supplier's base extension, which is the introduction new sources of supply
4. Product optimization material revision or service improvement,
5. Process optimization to streamline the interaction between the buyer and seller,
6. Optimization of supply connection in partnership with providers, and
7. Category-spanning optimization to find out available collaborations through sourcing categories

Previous works emphasizes the direct applied significance of the concept regarding sourcing lever as a tool "used to achieve the strategic goal of cost reduction" [Schiele et al., (2011), p.322]. Still, the current conceptualization of sourcing levers in literature is moderately narrow (Hesping and Schiele, 2015).

2.4 STRATEGIC SOURCING

Narasimhan and Das (1999) defined strategic sourcing as the process of designing and managing supply networks in line with operational and organizational performance objectives. Alternatively, Welch and Nayak (1992) defined strategic sourcing as an approach to

procurement, where manufacturing cost analysis is augmented by consideration of technological and strategic factors it makes versus buy decisions. According to Welch and Nayak (1992), strategic sourcing emerged out of two needs. The first emerged as a result of the introduction of new manufacturing and information technologies which prompted a need to closely align buying cycles with production requirements. The second emerged as cost containment started to become an absolute necessity to remain competitive, managers realized major savings could be achieved if purchasing and supply management activities were streamlined and non-value-adding tasks were eliminated. Also, strategic sourcing gained increasing attention over the years owing to the general trend toward outsourcing, hence creating reliance on suppliers for critical materials and components (Anderson and Katz 1998).

According to Hult (2002), sourcing impacts the competitive benefit and business performance of a firm. The positive effect of strategic sourcing depends mainly on manufacturing flexibilities, as purchasers can increase the performance of manufacturing and reduce costs through strategic sourcing (Narasimhan and Das, 1999). The key dimensions of strategic sourcing with empirical validation as presented by Khan and Pillania (2008) clearly emphasized that partnerships, flexibility, supply selection and trust are essential. Evidence was provided for the importance of strategic sourcing as well as its positive impact and positive correlation with the performance of the company. Recently, organizations are experiencing wide range of supply chain risks and disruptions and these have brought to light the emergence of strategic sourcing which plays a crucial role as an enabler for managing global supply chain. For example, financial crises led to several supplier bankruptcies, which resulted in supply shortages.

2.5 SOURCING – THE CONSTRUCTION ESSENCE

Sourcing in the construction industry is a core business in the process of purchasing that produces benefits for clients, encourage revolution and realize new markets openings and products for firms. As a strategy, sourcing can be described as a structured exercise that directs procurement and supply managers to plan, manage and broaden the supply base in line with the firm's objectives (Oy & Furlotti, 2014, cited in Roger, 2005).

Hinkelman defined Sourcing as the "location, acquisition and management of all the vital inputs required for an organization to operate. This includes raw materials, component parts, products, labour in all its forms, location and services" (Hinkelman, 2008). Moreover, sourcing can be described as a process of analysis used tactically and strategically at various levels. The general intention assists managers into sourcing to foster sourcing strategies as well as their implementation (Concept of Sourcing, 2017).

2.5.1 Sourcing Role

It is an activity undertaken daily in various fields of specialty, particularly the construction industry. When a decision is made to purchase a product or a service, the specification is decided first, a target price determined and from whom or where it will be bought from. Depending on products and on the budget the process can take time and efforts, for example, for a car or for a new mobile device. The exception is, often an approach deployed through scanning various markets to locate suitable providers who meets the criteria individually set out. In sourcing, there are two division of roles in procurement according to Scott, et al. (2011). The initial role is to identify and select new suppliers who can supply materials or goods meeting the specification required, inspecting them, and creating contracts and secondly, conducting business with the merchant within a definite time period.

2.6 THE FIVE SOURCING PRINCIPLES

Aside the acquiring the pricing levers, sourcing principles are highly noted which widen the search by most suppliers in the construction industries. Most firms are driven by unique values that guide and direct the organization's operations. The main attention is achieving the target of the organization, methods of work, and the intangible aspects of the organization's operations. The emphasis mainly is on the concrete corporate aims or preferred working methods and intangible aspects of the operation, such as the display of staff behaviors and the beliefs and values that the organization is set upon. The five major sourcing principles are enlisted and explained as follows.

Firstly, *Alignment*: This implies that activities and strategies used in sourcing are made certain to be coherent with the organizational needs and the needs of stakeholders with an understanding of the drivers of businesses in all areas and under all cases. These drivers include quality, cost, time and any such goal. Sourcing must be such that it reflects on these drivers. Moreover, there needs to be coordination and collaboration between the market and suppliers in order to alleviate conflicts when frictions result from interior and exterior features clashing.

The second which is *Openness* means exposing oneself to anything that can add and foster organizational success. Such things include ideas, suppliers, services, and products. The common practice is use one specific supplier and to purchase the same specific things. What this does is reducing competitive advantage. Curiosity is important in procurement where coordination and interaction is required among the various stakeholders, suppliers, and other possible innovative suppliers who work on processes, specification, and terms of specification.

Thirdly, *Rigour*: putting aside the fundamental requirement, sourcing no longer becomes significant, repetitive or simple in process. Therefore, to achieve project results, a structured and

professional approach is required. Critical planning is needed as well the right resource skill. Using the most appropriate tool and techniques will aid in producing optimum results in the selection of suppliers and contractor to delivering value for money.

Fourthly, *Coherence*: Sourcing is typically an end-to-end process. It commences with market arrangements all the way to the stage of managing contracts and suppliers. The stages are interconnected and work to achieve the aim of the firm and certain practices in sourcing. This process makes visible to both internal and external contributors the objectives of the firm. All components of the sourcing procedure must conform to the overall intentions of the firm.

Finally, *Commerciality*: Suppliers are key to any organization. It could be private or public. Thus, the underlying purpose of sourcing is to achieve the outcomes that are feasible and viable commercially. Also, sourcing purposes to contract with suppliers who can meet the organizations demands in profits, governmental policy, and social needs. In the private sector, competitive advantage is main focus. However, general to all organizations, having a commercial perspective is paramount, even just as important as any other sourcing principle (Smith, 2016).

2.7 VARIOUS SOURCING TYPES

Understandably, it should be known that the many options of taking decisions associated with sourcing vary. As an example, within the varying kinds of sourcing areas are: goods and elements, asset purchases for manufacturing such as equipment and machinery, subcontractor and services and computer software and programs. Each may comprise opposing factors. An example is availability of a material in a particular country but can be bought directly or from a distributer or agent. As regards to materials for production, inventory must be undertaken of the effects regarding logistics, the supplier’s proximity and the regularity of the delivery. Choice

decisions of subcontractors can be made available to personnel who are required to undertake the contract with the duties required of both parties spelt out (Baily et al., 2008).

2.7.1 Strategic Material Sourcing

In the 1980s, General Motors launched the strategic sourcing of materials. Strategic sourcing was then formalized into a methodology. This was later adopted by larger companies with support from firms such as KPMG and A.T. Kearney just to name a few. This methodology is currently observed like a benchmark practice (Nichiguchi, 1994). "Strategic Sourcing" at the end of 1980s to the beginning of 1990s has been promoted by several of the large organizations and some consulting companies. This approach has become a yardstick for the purchasing division in firms among the widely recognized companies. It therefore is a procedure to increase the mode of supply at the least cost. It is an extension to traditional purchasing process which does not leave out activities within the purchasing cycle, beginning by specifying of material to receipts. This type of sourcing is a firm's method of procurement with room to be improved frequently as well as reviewed. Within the service industry, it can be referred to a service solution, and sometimes a calculated collaboration, custom-made to meeting desires of clients. The sourcing business assists in planned daily operations, such as suppliers being issued with purchasing orders which are preparation, growth of providers, contract deliberations and subcontracting. (Kerruish and Chris, 2016)

(Kerruish and Chris (2016) are of the view that sourcing strategically is concerned with the total acquiring price of owning embodying the activities of procurement cycle and unlimited to the least buying price. It is a reality-based method and a sequence for growing a firm’s source and improving the entire worth. Burt, et al., (2010) and Kerruish, et al., (2016) agree on the fact that it considers the entire acquisition cost not leaving out the purchased price which is the lowest. It

also spans across the orthodox functions of procurement and other activities contained in the cycle of procurement.

2.8 CRITICAL FACTORS FOR PRICE SOURCING IN THE BUILDING INDUSTRY

A sourcing scheme that is responsible enables manufacturers to gain accreditation for their products to a "standard framework" for a specific product or material group such as concrete, timber, etc. Various papers on strategic sourcing critical success factors were consulted. Table 2.1 below presents an extract on the said factors. It reveals that before the new millennium began, strategic sourcing was had the main driver to be better management of suppliers and cost reduction.

Table 2.1 A summary of critical success factors for strategic sourcing

AUTHORS	IDENTIFIED CRITICAL SUCCESS FACTORS
Anderson and Katz (1998)	Total ownership costs, excellence in sourcing process, yearly plan, develop requirements, create strategies of sourcing, procurement services and materials, assess suppliers, and the management of supplier relationships.
Narasimhan and Das (1999)	Buyers can increase through strategic sourcing, the manufacturing performance and reduced costs. Suppliers should have strong delivery, consider volume-change-response capabilities and focus on modification response. Furthermore, supplier involvement is a key element.
Kocabasoglu and Suresh (2006)	Status of purchasing, internal coordination, information sharing with key suppliers and key supplier development. The authors argue to empower the sourcing function with relevant tools to make strategic decisions and to

	manage the supplier relationships.
Khan and Pillania (2008)	Strategic supplier partnership, sourcing flexibility, supplier evaluation and trust. Empirical justification of the importance of strategic sourcing and supply chain agility and the impact on organizational performance. Strategic partnerships are the most important factor when it comes to stability and effective demand and distribution.
Chiang et al. (2012)	The researchers conclude that strategic sourcing and strategic flexibility are significant influencing factors for the agility of supply chains. Specifically, strategic sourcing being determined by strategic purchasing, supplier development, internal integration and information sharing has a greater influence on a firm's supply chain agility than flexibility.
Su (2013)	a) sourcing long-term plan is revised and adjusted to support changes in the company's regular strategic plans, b) developing relationships with major suppliers is included in sourcing's long term plan c) top management of the company emphasizes the sourcing function is strategic

Source: Author's construct, 2019

2.10 CHALLENGES INVOLVED IN SOURCING PROCEDURES.

Price sourcing, when not done properly construed can affect the quality of performance of most project, especially government financed projects. The study was initiated as much of government financed construction projects are executed with variations on delivering time, cost and quality.

Project quality performance or as widely viewed by many scholars as project success had been extensively studied by many researchers who came up with different definition of project success. Project Management Institute Guide Book (2004), argues that the success of projects had been measured through timely delivery, on cost and targeted quality parameters.

The quality performance has developed from the Dark Age period (Rose, 2005), where the craftsmen were responsible for the quality of item. The craftsmen were responsible for design, tools, sales and customers' feedback. Few are the encountered challenges related to sourcing, locally and globally.

i. The firm size;
ii. Type of products;
iii. The import volume;
iv. The percentage of imports;
v. The experience in sourcing globally as compared to local means of sourcing; and
vi. The region where the products are purchased (Monczka and Giunipero, 1984).

The major challenges and relative impact of these challenges may differ in terms of a firm's managerial and demographic characteristics, too. For instance, firms more experienced in global sourcing might perceive international logistics to be less challenging than do firms just starting global sourcing (Czinkota and Ronkainen, 1993).

2.11 STRATEGIES FOR EFFECTIVE PRICE SOURCING.

The construction industry is subject to growing stakeholder expectations about the accountability, transparency and legitimacy of its operations. This arises form concerns about; environmental impacts, global supply, labour and welfare conditions and bribery and corruption.

It is time to act on these concerns and ensure that the Ghanaian construction industry is responsibly sourcing its materials and products.

Carr and Smeltzer (1997) specifically point out that strategic sourcing consists of the strategic process of planning, evaluating, implementing and controlling all sourcing activities by a company to achieve its long-term goals. All strategic sourcing strategies emphasize the integration of business practices such as early supplier involvement, supplier development, supplier assessment, supplier certification and measurement (Smelter et al, 2003). Efficient sourcing usually provides a cost advantage, while responsive sourcing allows a firm to obtain more accurate demand information when making procurement decisions.

During the sourcing process, there are many qualitative attributes that procurement teams should take into consideration. Attributes like market share, supplier performance, and supplier production and delivery capabilities are all a part of the sourcing process and play an important role in what will bring tremendous value for your sourcing at large. Sourcing is not about identifying the lowest price, but identifying the greatest value for your organization, hence, the construction industry. In addition to price, a mature sourcing organization should be able to incorporate these other market differentiators into their final evaluation and award of a supplier contract.

Effective Strategic Sourcing demands an appreciating the business strategy of a firm, the resources required to realize that strategy, the requirements of the market and the risks associated with establishing specific methods in the organization involved. An appraisal of sourcing strategy over time increases the application of the required results and is in line with commercial objectives. Supply chain management sourcing strategies existing currently include: Single

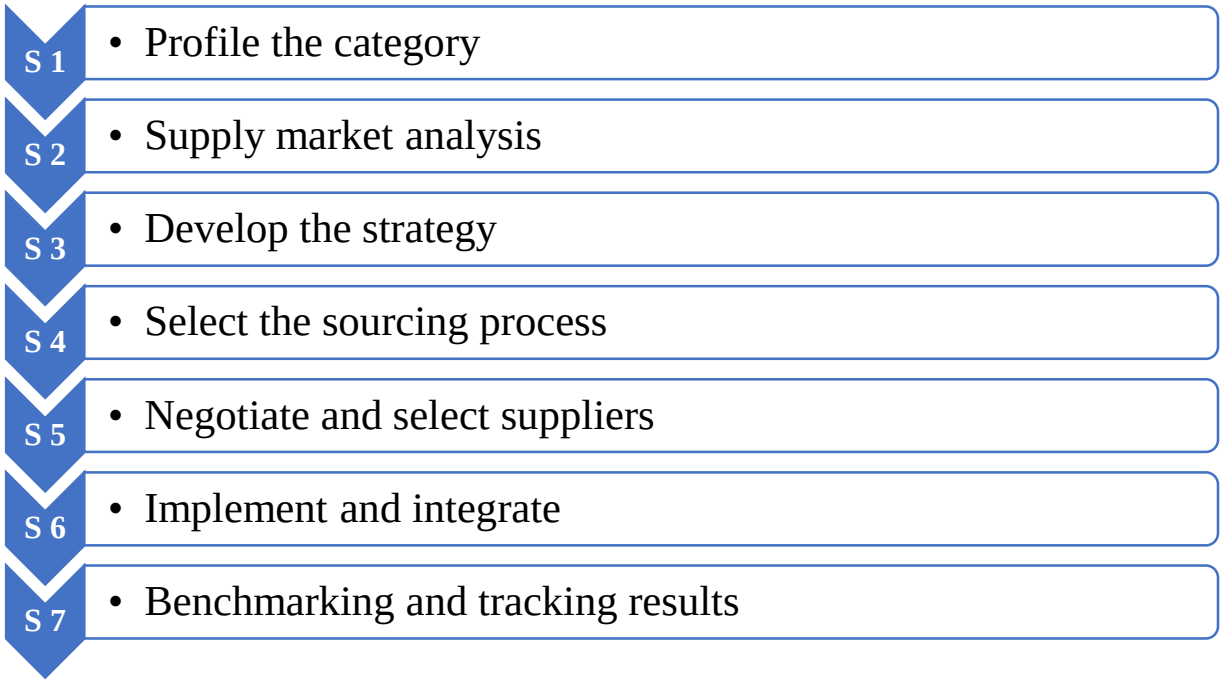
Purchasing: one vendor providing purchasing. JIT (Just in Time) manufacturers assist the purchasing department with a supplier providing good significance and this is achieved by having a sizeable number of suppliers which can improve dependability, quality and lessen delivery times.

Multi-sourcing which is the second, is whereby a purchased material or a service is contracted from more than one supplier. Organizations often apply this method to entice suppliers to encourage competition establishing quality and reduced price. Thirdly, Outsourcing is basically whereby supplies and services are delivered by an outside supplier. It requires the supplier substituting internal capacity and production. Insourcing, which is the fourth, is when internally, materials or services are developed. (Sourcing strategy, 2011).

2.11.1 Why to use a formal strategic sourcing process

Through experience, it is revealed that the seven (7) step strategic sourcing process developed in 2001 has survived with time and with some variations has become the best practice. Strategic sourcing's main objective is money savings but other reasons are improving acquisition process and supplier performance while minimizing risk.

The 7 Strategic Sourcing Process is summarized below



Source: Kearney (2001)

Figure 2.1 Seven Step Strategic Sourcing Process

Kearney (2001) explained the overall process as;

Step 1 – Outline the category: understanding and defining the group and commodities in it as the first step. Questions that can be used for brainstorming can include; "What is the quantity being used lately, what are the types and sizes? Who are the users and where are they located? Data documented must be thoroughly detailed in as much as possible as alterations may be needed.

Step 2 – Supply market analysis: identification of potential new local and foreign suppliers. The cost constituents of the product or service, and analysis of the suppliers' market must be assessed for risks opportunities. Prices of key raw material and variables such as labour costs and transportation must be priced and added to the suppliers' cost elements.

Step 3 – Strategy development: decision concerning where to buy while cutting down on risk and costs. The strategy will depend on factors such as the alternatives available to current suppliers, the competition of the supplier marketplace and how the users adapt to new suppliers.

Step 4 – Sourcing process selection: a commonly used method of sourcing is a Request for Proposal. Specifications of the product or service are stated, requirements for delivery and service, breakdown of price and legal and financial terms and conditions.

Step 5 – Negotiate and select suppliers: the negotiation process begins when the bids to the valid ones are reduced. Clarifications and further details may be requested by suppliers. A good strategically, it is ideal to conduct multiple further negotiations to obtain a short list.

Step 6 – Implement and integrate: successful suppliers must be notified and involved in further processes. The communication will include any improvement to specifications or process, changes in delivery or service requirements or pricing.

Step 7 – Benchmarking and tracking results: this is a key and is the start of a continuous cycle, beginning with benchmarking the present status of the category, observing the results and achieving the full value.

2.12 SUMMARY OF CHAPTER TWO

This chapter of the study begins with an introduction on what the whole literature review entails. Broadly, it elaborates on how, and by what means and/or strategies the stated aim and objectives would be met. Nonetheless, the exact connotation of the aim was emphasized. Some basic definitions and terms were clearly given. With regards to the defined terms, price sourcing, its roles, strategic sourcing – the effectiveness and the associated challenges were outlined concisely.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

On the search to assess the critical factors for price sourcing in the building industry in Ghana, it was required to discover appropriate data which will be analyzed to provide information for conclusion and recommendations to be made. The construction industry of Ghana was the main focus of the study. The chapter two of this thesis was a platform for discussing and revising already existing literature works on assessing critical success factors for price sourcing in the building industry focusing on its challenges and strategies as well. Briefly, this chapter explains the methodology of the research and gives the details of the manner of research. The general style was identified, tools needed, the gathering, examination and presentation of the collected data which was used to address the research aim and objectives. The manner of data collection and data analysis is also defined within the research work and how best it can contribute to effective cost management in the Ghanaian construction industry.

As a summary, this chapter explains how the research problem was analytically solved by means of data analysis, the determination of the sample size and population. The research is centered and focused on data collection assessing the critical factors for price sourcing in the building industry as well as assessing the challenges and strategies for effective price sourcing.

3.2 RESEARCH APPROACH/ STRATEGY

The research approach or strategy was mainly the adopted approach used for this research. It discusses the strategy or process of the research, the design of the research and the rationale behind the choice. This section further describes the strategy for the research: the quantitative

strategy, what it entails and the fundamental reason for adopting the method for the research. This aspect will finally recognize and validate the approach adopted in the research work.

3.2.1. Quantitative Research

It is a strategy in research that underscores quantity and measurement in collecting and analyzing data (Bryman, 2004). Its approach is deductive and is a link between theory and research combining the norms of natural science models. It also symbolizes reality in social life and objectively.

The quantitative strategy which follows a deductive approach in a theoretical sense was adopted in this research because quantitative research is focused on the sampling and measurement of the design (Naoum, 2002 cited by Asah-Kissiedu, 2009). The strategy uses statistically approved methods to organize data. This research can likewise be described as naturally objective where the hypothesis to be tested is made up of variables (Naoum 2002). Naoum (2002), citing Frechtling and Sharp (1997) characterized questionnaires, tests and existing databases as the basic technique of gathering data used in this type of research. Data regarded reliably hard are mainly gathered in this type of research therefore placing emphasis on quantity. Samples gathered are often large and characteristically meaning that results obtained can be generalized to the larger population with satisfactory magins of error. This study is aimed at assessing critical factors for price sourcing in the building industry as well as outlining the challenges and strategies for effective price sourcing. This would form a basis for suitable developments of strategies to assess the critical factors for price sourcing in the building industry.

3.3 DATA COLLECTION AND INSTRUMENTATION

3.3.1 Design of the Questionnaire

A questionnaire as explained by Frazer and Lawley (2000), are questions presented in a formal form seeking the views and obtaining information from respondents. Instructions are provided regarding its completion, specific means for reply recording and alternative responses where appropriate. The four methods of questionnaire distribution as discussed by the authors are: questionnaire sent by mail; personally, administered questionnaire; questionnaire administered on phone; and internet questionnaire. A questionnaire contains questions that are either open or close-ended or a combination of both.

In achieving the aim and objectives of this research, the questionnaire developed was close-ended and centered on the spelt-out objectives of the research. The questionnaire included four parts, part one was made up of questions relating to the general background, respondent information and their firms. The second part is made up of questions concerning the current price sourcing procedures and strategies while part three contained questions regarding challenges involved in sourcing procedures and Part four was made up of questions pertaining to the strategies for effective price sourcing. The questionnaire sought to ascertain from the respondents the critical factors for price sourcing in the building industry.

3.3.2. Definition of population

The respondents selected were restricted to project managers, quantity surveyors, engineers and consultants with relevant work experience in the Ashanti Region. The choice of population was on the premise that these targeted professionals were with established firms with offices that could be easily located and are involved with sourcing procedures by virtue of the type and size of projects they handle. The professionals who were considered under this study were those who

have been involved in the management of projects such as buildings, roads, civil engineering, water and sanitation, mechanical installation and quantity surveying, this was done because the nature of the research requires a fore knowledge in critical factors for price sourcing in the Ghanaian construction Industry.

3.3.3 Sampling Method and Sample Size

Probability sample and the non-probability sample were the sampling methods mainly used in this research. To generalize findings, probability samples are used which is in contrast with generating ideas which non-probability samples offer Non-probability sampling methods availably used are four. Namely, the judgmental sampling method, the snowball sampling method, the quota sampling method, and the last, which is known as the convenience sampling method (Page and Meyer, 2000). Purposive technique of sampling falls under the probability samples. This method from the probability sampling was adopted for this research and the snowball sampling technique from the non-probability sample method were used to deduce a sample of fifty (50) respondents. The purposive sampling technique enabled the identification of key respondents namely project managers, quantity surveyors and engineers. This was necessary because the research targeted a category of respondents who are or had been involved in construction projects and having some knowledge and level of experience in sourcing procedures. Using the purposive sampling resulted in selecting project managers and quantity surveyors from well-known and reputable construction and consultancy firms from the Ashanti region which could be similarly used to represent the population of interest as well as provide convincing answers to the questions administered

Also, the snowball sampling technique was used to select consultants that are currently operating within Kumasi. The snowball sampling was used to identify respondents with vital knowledge in

price sourcing procedures that are relevant to the study. This sample technique was used after initially contacting a few potential respondents (project managers, quantity surveyors and engineers) operating in the metropolis for questionnaire administration and when the process was concluded they were then asked to give names of consultants with the characteristics sought for, within the area of study.

3.3.4 Instrument Administration

Administration of the questionnaires was done by the researcher and handed out to professionals in construction firms such as project managers, quantity surveyors, engineers and consultants to seek their responses and views adequately. Some questionnaires were retrieved instantly while others were later retrieved. Fifty questionnaires were sent out and thirty-five were recovered which is 80% response rate.

3.4 DATA PREPARATION AND TOOLS FOR ANALYSIS

Retrieved questionnaires are coded and analyzed using simple statistical tools such as the Statistical Package for Social Sciences (SPSS) version 20.00 and Microsoft Excel. The data interpretation is primarily done using these tools. To have a better view and understanding, the data obtained is presented in tabular and graphical forms. Information connecting to respondents is prepared in a tabular form. The results obtained from the research are assessed corresponding to the research objectives.

Successively, data obtained are analyzed by using non-parametric tests statistically such as mean score index, t-test as well as statistics that are descriptive are also utilized.

3.5 SUMMMARY OF CHAPTER THREE

The various methodologies accessible for the study and the purpose for adopting this research's methodology are referred in this chapter. The process of data collection which was the use of survey questionnaires is discussed as the research approach implemented. The means of 30 administering the questionnaires were also captured in this chapter and also the tools utilized in analyzing the data. In conclusion, the adopted strategy for the study was quantitative. The primary data was gathered principally through close ended questionnaire. The analysis of both the primary and secondary data was accounted for in this chapter. The collected data is discussed and analyzed in the succeeding chapter.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS DISCUSSION

4.1 INTRODUCTION

This chapter deals with the analysis and discussion of primary data that was obtained from the field as a result of administering questionnaires to masons in the Kumasi metropolis. IBM SPSS (Statistical Package for Social Sciences) version 25.00 and Microsoft Excel was used for the data entry and analysis. Descriptive statistics specifically frequencies, ranking the mean score and the t-test were tools adopted.

Discussions were based on the data that was obtained with respect to the aims and objectives of the study. This chapter is presented in five sections which includes; the introduction, whiles section two entails the background of the respondents, section three discusses the current price sourcing procedures and strategies, section four discusses the challenges involved in price sources and section five delves into the strategies for effective price sourcing.

4.2 BACKGROUND INFORMATION OF RESPONDENTS

Construction professionals in Kumasi were targeted to obtain certain information regarding the study through questionnaire answering. From the 50 questionnaires circulated, 35 were retrieved. Those that were not retrieved were due to the loss of the questionnaires by the respondents as well as their busy schedule. The main focus is placed on the type of firm in which the respondents work, their position as well as their experience with the firm. These have been shown in Table 4.1 below.

Table 4.1 showing the frequencies of the background of respondents

VARIABLE		FREQUENCY	PERCENT
Firm	Local	21	60
	Foreign	14	40
Years of experience	Less than 2 years	8	22.9
	2-5 years	14	40
	More than 5years	13	37.1
Position in firm	Quantity Surveyor	10	28.6
	Procurement officer	5	14.3
	Architect	8	22.9
	Project Manager	5	14.3
	Others	7	20

Source: Field survey (2019)

Table 4.1 above shows the frequencies of the background of respondents. From the 35 questionnaires retrieved, 21 were respondents working with local firms representing 60 per cent of respondents whereas 14 were respondents working with foreign firms representing 40 percent of respondents. Among the same respondents, 14 people representing 40 per cent had worked with their respective firms from 2 to 5 years which was the highest while those having worked for less than 2 years were 8 representing 22.9 per cent which was the least. Positions occupied by respondents included 10 Quantity Surveyors, representing 28.6 per cent; 8 Architects, representing 22.9 per cent; 5 Project Managers, representing 14.3 per cent and Others, such as Site supervisors and Store managers were 7 representing 20 per cent.

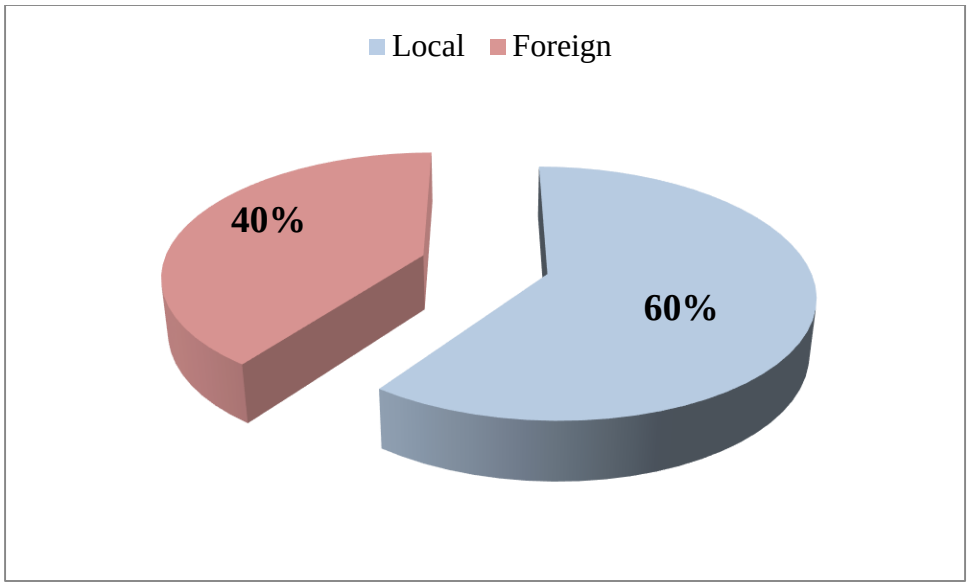


Figure 4.1 Firm of Respondent

Figure 4.1 is a Pie Chart showing the type of firm respondents worked with. Respondents with local firms represent 60 per cent while respondents with foreign firms were 40 per cent.

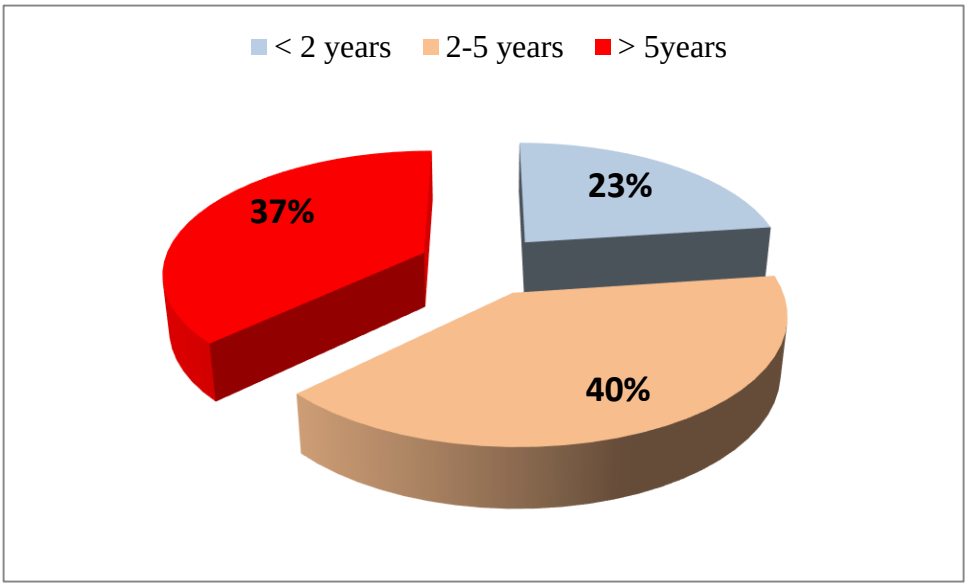


Figure 4.2 Experience of Respondents

Figure 4.2 is a Pie chart showing the experience of respondents. Respondents with less than 2 years' experience represented 23 per cent, more than 5 years represents 37 per cent and respondents having between 2 to 5 years' experience represented 40 per cent

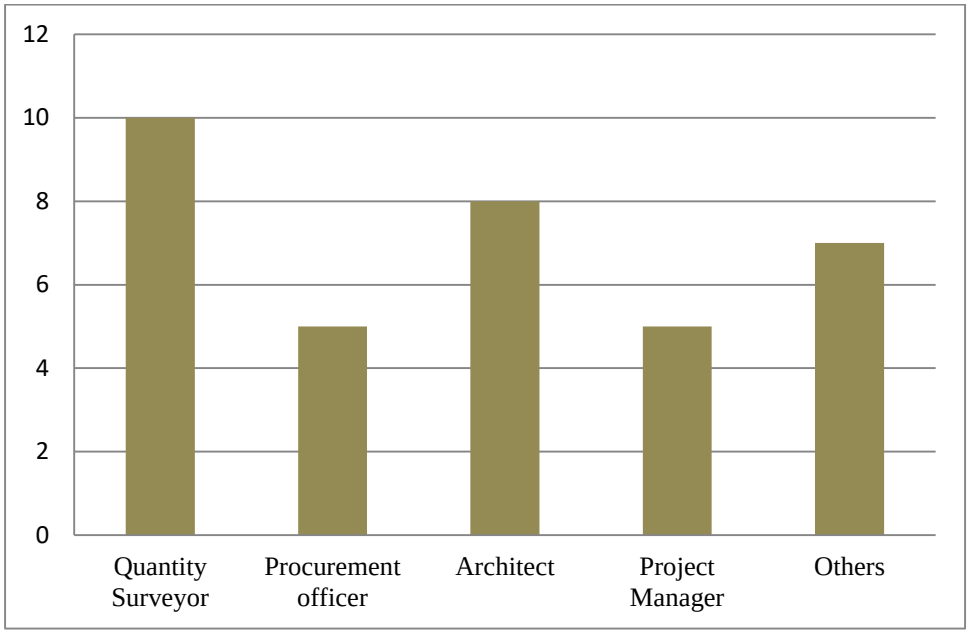


Figure 4.3 Position of Respondent in Firm

Figure 4.3 is a bar chart representing the various positions occupied by the respondents. Out of the 35 respondents, 10 are Quantity Surveyors, 5 are Procurement Officers, 8 Architects, 5 Project Managers and 7 Others comprising of Site supervisors and Storekeepers.

4.2.1 The type of firm the contractor works

This field was included because, the type of firm in which the respondent works is to be identified. Answers from the respondents and as presented in the above table revealed that 21 of them making up a percentage of 60 are working in local firms whiles 14 respondents making up

40 % of the total sample are working with foreign companies. This indicates that majority of the sample work with local firms.

4.2.2 Work experience with the firm

This section was added to ascertain the number of years the respondents have been working with their various firms. Table 4.1 indicates that 8 respondents making up 22.9 % have worked for less than 2 years whiles 14 respondents making up 40% of the total number years of respondents have worked between 2-5 years. 13 respondents making up a percentage of 37.1 have more than 5 years of work experience. From the table, it was realized that most of the respondents are less experienced in the industry and so they may have little knowledge on price sourcing procedures are strategies. However, the data obtained from this survey may not be the full reflection of price sourcing procedures and strategies by the construction professionals.

4.2.3 Position in Firm

This field was included in order to ascertain the position held by the respondents in their firms. From table 4.1 above, 10 respondents representing 28.6% are Quantity surveyors. 5 representing 14.3% are procurement officers whereas 8 respondents are Architects making up 22.9% with 5 project managers making up 14.3%. Some of the respondents indicated others and this was made up of 7 with a percentage of 20. This result shows that majority of the respondents are Quantity Surveyors.

4.3 DISCUSSION ON CURRENT PRICE SOURCING PROCEDURES

This section presents the analysis associated with objective one of the studies which seeks to identify the current price sourcing procedures and strategies. With the review of literature, twelve (12) price sourcing procedures existed. Respondents were required to indicate the price

sourcing procedures within often used in the construction industry. The main aim of this research is to assess the current price sourcing procedures in the building industry. Some current price sourcing procedures reviewed from literature are; negotiate and select suppliers, Coherence: the sourcing process is expanded throughout the entire period of the contract, implement and integrate. However, the main focus of this section is to determine the most often used procedures. To achieve this objective, information had to be gathered on the frequency with which the procedures were experienced by measuring their responses using a 5 -point Likert scale where, (1 = Never; 2= Hardly; 3= sometimes; 4= Often; 5= Always) and analyzed using one sample t-test. According to Coakes et al. (2001), t-test is used to determine whether the sample mean is the same or considerably divergent from the hypothesized mean. The hypothesized mean could be an assumed mean or a theoretically derived. In the research, 3 was the value of the mean hypothesized. A summary of the results is presented in Table 4.2.

4.3.1 Mean Score Ranking

According to Smith (2016), when it comes to commerciality, suppliers play vital and fundamental role to the company be it private or public. In this sense the objective of the sourcing aims at achieving targets such as profit, achieving social needs as well as governmental related policies. Competition is paramount in the private area, however, among all firms, commerciality appears crucial being at par with the other principles guiding sourcing.

From table 4.2 below, *Commerciality: the supplier plays a vital role within the organization* was ranked as the first sourcing procedure recording 3.63 as its mean score with standard deviation of 1.08, *Negotiate then select suppliers* was ranked 2nd recording 3.63 as its mean score with standard deviation being 1.06. It was released that *commerciality and Negotiate and select supplier* obtained the same mean however commerciality was ranked first because it obtained a

standard deviation of 1.08. *Rigour: not only organizational wise, but also structural and professional approach are emphasized as well as supply market analysis* were ranked as the 3rd and 4th price sourcing procedures adopted by the construction. Drawing from the table, Coherence: the sourcing process is expanded throughout the entire period of the contract, Select the sourcing process, Implement and integrate, Profile the category, Alignment: sourcing strategic activities and the organizational needs are properly aligned, Develop the strategy, Develop the strategy, Benchmarking and tracking results and Openness: the sourcing process is made known to all – both private and public were ranked as the 5th, 6th,7th,8th,9th, 10th, 11th and 12th price sourcing procedures which are not often adopted.

4.3.1.1 One Sample T-test

From table 4.2 below, the first two procedures had p-values also known as the test significance being less than 0.05 implying therefore as that the variable means are not meaningfully unlike of the mean of the hypothesis as shown in the table. However, the procedures *Rigor: not only organizational wise, but also structural and professional approach are emphasized, Supply market analysis, Coherence: the sourcing process is expanded throughout the entire period of the contract and* the rest had p-values, which are beyond 0.05 representing means that are suggestively unlike from their theoretical means. Commerciality*: the supplier plays a vital role within the organization and Negotiate and select suppliers* had a p-value 0.000 which is less than 0.05 and this indicates that it is a statically significant injury.

Table 4.2 showing the mean, standard deviation and p-values of the price sourcing procedures

PRICE SOURCING PROCEDURES	MEAN	STD. DEVIATION	P-VALUE	RANKING
Commerciality: the supplier plays a vital role within the organization	3.63	1.08	0.002	1st
Negotiate and select suppliers	3.63	1.06	0.001	2nd
Rigour: not only organizational wise, but also structural and professional approach are emphasized	3.34	1.08	0.070	3rd
Supply market analysis	3.26	1.06	0.16	4th
Coherence: the sourcing process is expanded throughout the entire period of the contract	3.29	1.22	0.17	5th
Select the sourcing process	3.09	1.01	0.619	6th
Implement and integrate	2.97	0.98	0.86	7th
Profile the category	2.94	0.99	0.73	8th
Alignment: sourcing strategic activities and the organizational needs are properly aligned	2.89	1.40	0.635	9th
Develop the strategy	2.86	0.91	0.31	10th
Benchmarking and tracking results	2.77	1.03	0.19	11th
Openness: the sourcing process is made known to all – both private and public	2.77	1.11	0.23	12th

Source: Field survey (2019)

4.4 DISCUSSION ON CHALLENGES INVOLVED IN PRICE SOURCING

This section presents the analysis associated with objective two of the study which seeks to identify the challenges encountered in price sourcing procedures and strategies. With the review

of literature, fourteen (14) price sourcing procedures were identified. The respondents were asked to indicate challenges often encountered in the price sourcing construction industry. To achieve this objective, information had to be gathered on the frequency with which the challenges were experienced by measuring their responses using a 5 -point Likert scale where, (1 = Never; 2= Hardly; 3= sometimes; 4= Often; 5= Always) and analyzed using one sample t-test. According to Coakes et al. (2001), t-test is used to determine whether the sample mean is the same or considerably divergent from the hypothesized mean. The hypothesized mean could be an assumed mean or a theoretically derived which was set at 3 for purposes of this research. A summary of the results is presented in Table 4.3.

4.4.1 Mean Score Ranking

From table 4.3 below, *Foreign* exchange *fluctuations* obtained a mean of 3.26 with a standard deviation of 1.03 and was ranked as the 1st challenge to price sourcing. *Transportation delays* was ranked 2nd obtaining 2.91 as the mean score and 1.17 as the standard deviation. *Type of products* was ranked 3rd obtaining 2.63 mean score and 0.94 as the standard deviation *while Inventory management* was ranked as the 4th challenge of price sourcing by the construction managers obtaining 2.66 mean score 1.16 as the standard deviation. Drawing from the table, Quality Assurance, Percentage of import, Firm size, Trade restriction bills, Different business practices, import volume, Tariffs, Different customs and language barrier were ranked as the 5th, 6th,7th,8th,9th, 10th, 11th, 12th ,13th challenge. *Political stability* was ranked as the 14th challenge obtaining 1.91 as the mean score and 0.81 as the standard deviation being the least challenge associated with price sourcing. The results obtained confirms to the study of Rose (2005) which revealed some challenges related to sourcing, locally and globally. These challenges include; the firm size, type of products, the import volume, the percentage of imports, the experience in

global sourcing as compared to local sourcing and the region where the products are purchased (Czinkota and Ronkainen, 1993)

4.4.1.1 One sample T-test

From table 4.3 below, the *challenges Type of products, Percentage of import, Firm size, Trade restriction bills, Different business practices, import volume, Tariffs, Different customs, language barrier and, political stability* had test significance or p-values being less than 0.05 and implying that the means obtained for the variables are not meaningfully different from the mean of the hypothesis as shown in the table and this indicates that they are statically significant challenges. However, the challenges Foreign exchange *fluctuations, Type of products and* Inventory management had p-values, which are exceeding 0.05 revealing means are meaningfully unlike compared to their theoretical means.

Table 4.3 showing mean, standard deviation and p-values of the price sourcing challenges

CHALLENGE	MEAN	ST. DEVIATION	P-VALUE	RANKING
Foreign exchange fluctuations	3.26	1.03	0.152	1st
Transportation delays	2.91	1.17	0.66	2nd
Type of products	2.63	0.94	0.02	3rd
Inventory management	2.66	1.16	0.09	4th
Quality Assurance	2.57	1.11	0.03	5th
Percentage of import	2.37	1.00	0.00	6th
Firm size	2.37	1.03	0.00	7th
Trade restriction bills	2.37	1.03	0.001	8th
Different business practices	2.34	0.83	0.00	9th

Import volume	2.31	0.86	0.00	10th
Tariffs	2.26	1.03	0.00	11th
Different customs	2.00	0.76	0.00	12th
Language barriers	1.91	0.78	0.00	13th
Political stability	1.91	0.81	0.00	14th

Source: Field survey (2019)

4.5 STRATEGIES FOR EFFECTIVE PRICE SOURCING

This section presents the analysis associated with objective two of the study which seeks to identify the strategies for effective sourcing procedures. With the review of literature, four (4) price sourcing strategies existed. Respondents were required to indicate the strategies often adopted in the price sourcing in the construction industry. To achieve this objective, information had to be gathered on the frequency with which these strategies were used. This section was included in order to ascertain the effective price sourcing strategies that is usually adopted by the construction professionals. From table 4.4 below, two (2) of the respondents representing 5.7 % adopt insourcing. Five (5) respondents making up 14.3% indicated that they usually adopt multi-sourcing whereas seven (7) respondents making up 20.1% practice outsourcing. Single sourcing was being practiced by eleven (11) respondents making up a percentage of 36.4 whiles six (6) practice both single purchasing and multi-sourcing making up 17.5% of the total sample. All three strategies; single purchasing, multi-sourcing and outsourcing were indicated by four (4) respondents making up 17.3 %. The results obtained indicates that, majority of the respondents adopt single purchasing.

Table 4.4 showing the frequency and percentage of price sourcing strategies

STRATEGY	FREQUENCY	PERCENT
Insourcing	2	5.7
Multi-sourcing	5	14.3
Outsourcing	7	20.1
Single purchasing	11	36.4
Single purchasing and multi-sourcing	6	17.3
Single purchasing, multi-sourcing and outsourcing	4	11.5

Source: Field survey (2019)

4.6 SUMMARY OF CHAPTER

This chapter delved into the analysis and discussions of the results obtained from the field survey. It started with the discussion of the survey questionnaires and descriptive statistics of the obtained results. Also rankings of one sample t-test and the ranking of the mean score were used to analyze the objectives of the study.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 ACHIEVEMENT OF RESEARCH OBJECTIVES

The aim of this research is to assess critical factors for price sourcing in the building industry. The results obtained for the various objectives is presented as such.

5.1.1 Objective 1: To examine current price sourcing procedures and strategies

With the background knowledge from literature, a questionnaire containing 12 variables was tested as responses from construction professionals. Questions asked were mainly about the current price sourcing procedures and strategies employed by these professionals in the construction industry. Mean score ranking and one sample t-test was used to analyze the data. *Commerciality: the supplier plays a vital role within the organization, Negotiate and select suppliers and Rigour: not only organizational wise, but also structural, supply market analysis and professional approach are emphasized* were ranked as the frequently used price sourcing procedures.

5.1.2 Objective 2: To identify challenges involved in sourcing procedures

With the background knowledge obtained from the literature a questionnaire was designed with twelve variables and tested on the professionals. Foreign exchange *fluctuations, Transportation delays, Type of products and* Inventory management were ranked as the most experienced challenges.

5.1.3 Objective 3: To outline strategies for effective price sourcing

The knowledge obtained from literature helped in designing a questionnaire which pertained to the strategies for effective price sourcing. The strategies identified in sourcing are Single

sourcing; Multi sourcing; Outsourcing and Insourcing. Single sourcing was being practiced by eleven majority of the respondents whiles some practice out sourcing. However, a few indicated that they adopt insourcing.

5.2 RECOMMENDATION

Sourcing is a vital business in the process of purchasing in the construction industry that produces advantage for client, encourage revolution and discover new products and market opportunities. Strategic Sourcing enhances business performance as well as maintain a close competitive advantage among its practitioners. The study therefore recommends the adverse practice of Strategic Sourcing in every construction industry, especially Ghana and its neighboring countries. In order to achieve performance goals and also widen the scope of purchasers' yearly cost saving targets, the researcher recommends that price sourcing levers are enforced within the embodiment of the construction industries.

5.3 RESEARCH LIMITATION

There are limitations to every project undertaken. The words of Leedy and Ormrod were true, who said, "majority of the people who receive questionnaires don't return them and those who do might not be representative of the originally selected sample" (Leedy and Ormrod, 2001). The researcher encountered similar issue as clearly stated. Also, the advantages of delivering questionnaire personally are that the researcher can clarify any ambiguity with the questions and the respondents can be persuaded and reminded in order to get a high response rate (Walliman, 2011).

Notwithstanding, the demographic profile of the respondents suggest that they have reasonable and clear understanding of what Price Sourcing entails, especially those who work in construction firms, which should generate some credibility in the responses received.

Also, this limitation didn't affect the validity and reliability of the work done, because all the preliminary test justified that the response rate was accurate for further analysis.

5.4 DIRECTIONS FOR FUTURE RESEARCH

The practical contribution of this research is also significant. Based on our research literature and findings, practitioners should adopt Strategic Sourcing and consider it as an important function within their organizations in order to increase their business performance and competitive advantage.

There are several possibilities for extending knowledge in the area of Strategic Sourcing. First, this research can be replicated in other countries and industries. Besides developed countries, it is worth of comparing developed and developing countries on the adoption and execution of Strategic Sourcing. Second, longitudinal studies should be carried out to examine whether the adoption and execution of strategic sourcing add value to an organization and influence the competitive advantage and business performance. Finally, this research shows that organizations in different countries behave differently. The construction industry is subject to growing stakeholder expectations about the accountability, transparency and legitimacy of its operations. Therefore, it will be of uttermost concern and interest to delve into the wider perspective of Strategic Sourcing principles in all construction industries, even worldwide.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ART AND BUILT ENVIRONMENT

FACULTY OF BUILT ENVIRONMENT

DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT

RESEARCH QUESTIONNAIRE

This study is being conducted as part of an academic requirement for the award of a M.Sc. in Construction Management. Also, it is to assess the critical factors for price sourcing in the building industry.

The objectives of the study are:

- To examine the current pricing sourcing procedures and strategies;
- To identify challenges involved in sourcing procedures and
- To outline strategies for effective price sourcing.

The information obtained from this survey shall be kept anonymous and completely confidential. Only findings in aggregate form will be submitted to the relevant authorities.

Your participation in this survey is much needed and would be highly appreciated for the success of the research.

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PART I: BACKGROUND OF RESPONDENTS

1. Which type of firm do you work with?

   [ ] Local

   [ ] Foreign

2. How long have you worked with the firm?

   [ ] Less than 2 years

   [ ] 2-5 years

   [ ] More than 5 years

3. What is your position in the firm?

   [ ] Quantity Surveyor

   [ ] Procurement Officer

   [ ] Architect

   [ ] Project Manager

   Specify Others if any……

PART II: PRICE SOURCING PROCEDURE AND STRATEGY

The table below contains criteria that are considered in the sourcing procedure. Please indicate by ticking how often they are considered in the sourcing process.

[**1**] NEVER [**2**] HARDLY [**3**] SOMETIMES [**4**] OFTEN [**5**] ALWAYS

CRITERIA	**1**	**2**	**3**	**4**	**5**
Alignment: sourcing strategic activities and the organizational needs are properly aligned					
Openness: the sourcing process is made known to all – both private and public					
Rigour: not only organizational wise, but also structural and professional approach are emphasized					
Coherence: the sourcing process is expanded throughout the entire period of the contract					
Commerciality: the supplier plays a vital role within the organization					
Profile the category					
Supply market analysis					
Develop the strategy					
Select the sourcing process					
Negotiate and select suppliers					
Implement and integrate					
Benchmarking and tracking results					
Please specify others if any and rank accordingly					

PART III: CHALLENGES INVOLVED IN SOURCING

The table below contains some common challenges associated with sourcing. Please indicate by ticking how often these challenges are experienced.

[**1**] NEVER [**2**] HARDLY [**3**] SOMETIMES [**4**] OFTEN [**5**] ALWAYS

CHALLENGES	1	**2**	**3**	**4**	**5**
1. Language barriers					
2. Different customs					
3. Different business practices					
4. Foreign exchange fluctuations					
5. Political stability					
6. Transportation delays					
7. Inventory management					
8. Quality Assurance					
9. Trade restriction bills					
10. Tariffs					
11. Type of products					
12. Firm size					
13. Import volume					
14. Percentage of import					
Please specify others if any and rank accordingly					

PART IV: STRATEGIES FOR EFFECTIVE PRICE SOURCING

Kindly indicate by ticking the sourcing strategy/strategies adopted by your firm in procuring materials and services for your firm.

[ ] Single Sourcing [ ] Multi sourcing

[ ] Outsourcing [ ] Insourcing

Please specify if any ……