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**Appraisal of Sustainable Procurement by Construction Firms in Ghana. Case Study
of Sekondi-Takoradi**

By

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College of Art and Built Environment
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MASTER OF SCIENCE

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CERTIFICATION

I hereby declare that this submission is my own work towards the 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 the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Sustainable procurement plays a strategic role in safeguarding the environmental, economic and social impacts of the activities of an organization in a community. Over the years, Ghana has made significant progress with procurement management, infrastructure development and social development but sustainability issues remains one of the major drawbacks of current construction procurement practices and still not fully utilized in the Ghanaian construction industry. The aim of the current study was to investigate into the sustainable procurement practices by construction firms in the Ghanaian construction industry. The key drivers to the implementation of sustainable construction practices and the key challenges the firms encounter were among the issues addressed in the study. Using the Sekondi-Takoradi as a case study, a total of 60 questionnaires were administered to construction professionals who work with 30 construction firms. The data collected were analyzed using the Statistical Package for Social Sciences (SPSS) version 16 software package. The results revealed that the factors which drive or motivate construction firms in Ghana to embark on sustainable procurement are: the quest to promote corporate image, Government legislations and laws, corporate social responsibility considerations and value for money considerations. Moreover, the barriers to the implementation of sustainable procurement were: lack of basic education about sustainable procurement; lack of understanding of the sustainable procurement concept; low stakeholder education; lack of social drive; lack of client awareness and the absence of government interest in ensuring the promotion of sustainable procurement. From the study, it is recommended that public education on sustainability and enforcement of legislations should be intensified. Also, competitive bidding, e-procurement and information technologies should be encouraged to help achieve the aim of sustainable procurement among construction firms in Ghana.

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DEDICATION

I dedicate this work to the Most High God and the entire Sanful family.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Sustainable procurement according to Walker and Wendy (2006) is the process whereby the objectives of the supply chain involve not only sustainable development objectives but also attention is given to the social, environmental and economic impact of the process on the community. In other words, sustainable procurement (SP) considers the effect of procurement process on the community, environment, and the social effect on those delivering the product as well as the end users of the product or service. From the above definition, sustainable procurement in the construction industry can be explained as the process of ensuring that all activities of the construction industry do not have any negative impact on the ecosystem (the atmosphere, land, water bodies), the community within which the project is being constructed as well as the workers who are involved in the construction of the project. Thus sustainable procurement in the construction industry has a broad spectrum which include considering climate change issues, minimizing materials wastage, supporting communities, biodiversity and ecology considerations, ensuring the health, safety and wellbeing of workers on site, complying with labour standards (Carthy and Shaun 2011).

During the past few decades, researchers and professionals of the built environment have gained much interest in how the activities of construction firms and their suppliers can be controlled so that they do not have adverse effect on the society, the environment, and the economy of the country as a whole (Walker and Wendy 2006). Carter and Easton, (2011)

noted that in many countries business organizations have been compelled to bid by environmental laws, controlling cost and managing all forms of risk. The researchers further noted that the need to gain good reputation in a community also drive most firms to embark on sustainability issues. Moreover, management of firms are more concern about sustainability issues since their customers, stakeholders, the government, a number of NGOs and even their own workers are progressively demanding that their firms address and manage the social and environmental impact of their activities (Carter and Easton 2011). Porter (2008) argued that during the award of contract, sustainability should be cardinal criteria in the selection of contractors. In the same way, procurement officers of construction firms can also impact the social and environmental performance, through the evaluation and selection of suppliers by using sustainability criteria to evaluate the suppliers.

From the above discussion, it has become progressively clear among all stakeholders that procurement can play a key role in fulfilling the sustainability development goals of a country. Through Sustainable Public Procurement (SPP), governments can demonstrate its commitment by formulating policies that will safeguard the social, environmental and economic impact of procurement activities. In the environmental sense, sustainable procurement can be useful to help the governments improve water and energy efficiency in the country. Moreover, recycling of materials will reduce the effect of wastage. Socially, pursuing sustainable development objectives will help to ensure poverty reduction, eradication of discrimination and respect for labour standards. In the economic perspective,

Sustainable Public Procurement can help generate revenue, reduce cost and support technology transfer and skills development (Porter, 2008; Carter and Easton 2011).

In conclusion, sustaining procurement and achieving effective and sustainable outcomes require continuous engagement of all stakeholders especially the political class and civil society groups who understand the rules to mount pressure on the operators of the system to comply with the law.

1.2 Problem Statement

In Ghana, the construction industry is one of the major sectors of the economy. The industry is a very important tool in the pursuit of sustainability issues. Through procurement, sustainability issues can be addressed (Carter and Easton 2011). In a study by (Walker and Wendy 2006) it was found that the current construction procurement practices are being widely planned for disregarding sustainability issues in the various phases of a construction project.

Over the years, Ghana has made significant progress in procurement management, infrastructure development and social development but sustainability issues have not been given much attention by most organizations either public or private. In the construction industry, a situation exists whereby in the award of contract sustainability is not considered as a key criterion in the selection of bidders. Contracts are awarded mainly based on the lowest bid. Little attention is paid to the social and environmental track record of the construction firms. Walker and Wendy (2006) argue that sustainability is among the major

setbacks of current construction procurement practices. The concept is not fully implemented in the Ghanaian construction sector.

The lack of understanding of the concept among professionals affects its implementation.

The current study aims at investigating into the sustainability procurement practices of construction firms in Ghana. The factors which drive the firms into the implementation of sustainable construction practices will be identified.

1.3 Aim and Objectives

1.3.1 Aim

The study aims to investigate into the sustainability of procurement practices of construction firms in the Ghanaian construction industry.

1.3.2 Objectives

The current study was guided by the following research objectives:

- To identify the sustainable procurement practices adopted by construction firms in Ghana,
- To identify the drivers to sustainable procurement among construction firms,
- To identify the barriers to the implementation of sustainable procurement in the Ghanaian construction industry.

1.4 Research Questions

The following research questions guided the study:

- What are the sustainable procurement practices pursued by construction firms in Ghana?
- What factors drive construction firms in Ghana into pursuing sustainable procurement objectives?
- What are the potential barriers that hinder the implementation of Sustainable Procurement in the Ghanaian building construction organizations?

1.5 Research Methodology and Methods

The study used quantitative research approach in addressing the research problem. The study commenced with a review of literature on sustainability, sustainable procurement, sustainable construction and other issues relevant to the current study. Data for this exercise was from books, previous thesis, journal publications among others. The purpose of the review was to help identify the gaps in the literature so that they can be addressed in the current study. The review also helped the researcher to select an appropriate methodology for undertaking the rest of the study.

Following the literature review, structured questionnaire was designed and administered to the key procurement personnel in the selected construction firms such as Quantity surveyors and procurement officers. The questionnaire was divided into four sections. The first section drew information about the background information of the respondents and the firms. The second section asked questions about the sustainable procurement practices which is being pursued by the firms. The remaining two sections asked all the necessary

questions to address the objectives of the study. The questions were mainly close ended. The questionnaire was self-administered by the researcher in the month of June 2016. The data collected were analyzed using the Statistical Package for Social Sciences (SPSS) software package. The data was analyzed into descriptive statistics such as means, frequencies, percentage. Relative Importance Index (RII) was also used to analyze some of the ordinal data. The results were presented in the form of charts and tables. Based on the findings, recommendations were made.

1.6 Scope of Study

The study was limited to the construction firms in the Sekondi-Takoradi Metropolis of the Western Region of Ghana due to site accessibility and availability of contacts. These sites are mainly made up of construction professionals who are well experienced with adequate knowledge and are prepared to give response to questionnaires when the needs arise. The study focused on the appraisal of the sustainable procurement of the construction firms in Sekondi-Takoradi.

1.7 Significance of the Study

The results of the current study will positively impact the Ghanaian building construction industry, the academic world and other stakeholders in the following ways.

- There is no doubt about the fact that the implementation of sustainable procurement practices will benefit construction firms. The current study will help to identify the factors which hinder the implementation of sustainable public procurement and suggest

measures to eliminate barriers so that the firms will realize the benefits of implementing sustainable procurement.

- The study will help identify factors which drive construction firms to implement sustainable construction practices. Knowledge of these factors will inform decision makers on how to motivate construction firms to implement sustainability principles in the life cycle of construction projects.
- The findings of the study will also serve as a source of reference for further studies.

1.7 Organization of the Thesis

The study was organized into five chapters as summarized below:

The first chapter which is titled “General Introduction” explains the background to the study, the research problem, the aim and objectives, the research questions, scope, methodology, and justification of the study.

The second chapter reviews literature of issues relevant to the current study. The concept of procurement, factors that drive the implementation of sustainable procurement among the construction firms as well as the factors which serve as barriers to the implementation of SP were reviewed.

The methodologies used in carrying out the study are spelt out in the third chapter. The study population, sample size and sampling techniques, data collection and analysis tools that were used in the current study have been explained in this chapter.

The fourth chapter presents the results of the study and a discussion on the key findings in relation to the literature.

The last chapter presents conclusion and recommendations based on the findings of the study. Areas of further research have also been highlighted in this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of existing studies on sustainable procurement with the spotlight on the construction industry. The various sustainable procurement activities, drivers to the implementation of sustainable construction as well as the barriers have been reviewed. Moreover, the chapter presents the definition of key terms and concepts such as sustainability, procurement, sustainable construction among others. The chapter ends with a summary of the key lapses identified in the literature for which the present study seeks to address.

2.2 Definition of Terms and Concept

2.2.1 Sustainability

Various definitions for sustainability exist in literature. ISO 15392 (2008) defines the term as maintaining the state and functions of the various components of the ecosystems for the present and future generations. This definition gives recognition for the need to protect the environment (land, water bodies and the atmosphere) for the benefit of the future generation. Bruntland (1987) also argued that the idea is about “fulfilling the needs of the current generation and not compromising the capability of the future genealogy from meeting it needs. With regards to this, Bruntland was not specific as to the particular “needs” which have to be preserved. The definition by (Norman and MacDonald 2004) is the most widely accepted definition. According to them, sustainability encompasses three

main things: social, environmental and economic sustainability. They explained that sustainability in respect to the above three components involves living within environmental limits”, “ensuring a strong, healthy and just society”, “achieving a sustainable economy”, “promoting good governance” and “using sound science responsibly”, “climate change and energy conservation”, “natural resource protection and environmental enhancement” and “sustainable communities”.

At the organizational level, (Porter, 2008) explains sustainability as fulfilling the environmental and social needs of an organization together with the firm’s profitability. From all the definitions above, sustainability can be summarized as “meeting the current needs of society or an organization (environmental, social and economic needs) without compromising on the future. It focuses on meeting economic, social and environmental needs at the same time. Sustainable development balances social progress, environmental resource protection, economic growth and stability for the present and future generations.

2.2.2 Procurement

Procurement is defined as the process of purchasing or acquiring goods, services or works for an entity whether in the Public Sector or the Private Sector (Soreide, 2002). The process covers the period from the recognition of needs up to the end of the useful life of a product or asset. Depending on the entity doing the procuring, Procurement can be grouped into two: Public and Private Procurement (Odhiambo and Kamau 2003). Regardless of the type, the objective of every procurement process is to achieve value for money. In other words all the activities involved in the procurement process are executed such that the goods, works or services provided are from the right source, of the right quality and cost

and delivered in the right quantities, at the right time and at the right place (Benslimane et al. 2005).

2.2.3 Sustainable Procurement

Sustainable Procurement Task Force (2006) defines sustainable procurement as the practice whereby business entities acquire goods and services such that there is value for money. That is to say the benefits do not accumulate to the organization, but also to society within which it operates. The concept places responsibility on organizations beyond their own boundaries (Meehan and Bryde 2011). Sustainable procurement has several benefits including the following:

- Minimize business risk
- Provides value for money and increase cost savings through the use of whole life costing techniques during the acquisition of services and goods. This includes reusing, recycling, reducing usage and eventually minimizing the amount of wastage.
- Sustainable procurement helps to enhance the corporate image of an organization in the industry
- It helps to create markets for newly developed services, technology and products.
- It helps to ensure that goods and services are continually provided despite the increasing environmental legislations.
- It helps to minimize waste and improve efficiency in resource utilization

2.2.4 Sustainable Construction

Sustainable construction involves implementing concepts that achieve a sustainable development in the industry of construction. In the opinion of (Parkin, 2000) sustainable construction is a process that assimilates core principles of sustainable development. The aim is to minimize environmental effect of a structure over its lifespan while ensuring a safe and comfortable environment for its users and occupants while improving the economic value (Addis and Talbot 2001).

Sustainable construction is hypothesized as comprising of three main scopes: environmental protection, social equity, and economic growth. Environmental sustainability scrutinizes the effect of activities of construction procurement on the environment through the reduction in waste, using resources efficiently etc. Social sustainability on the other hand focuses on the legal, moral and ethical duties of an organization to its beneficiaries such as customers, employees and the community within which the organization operates. In the economic realms, sustainability involves improving project delivery from maximum productivity to attain a maximum and steady economic growth (Addis and Talbot 2001; Parkin *et al.* 2003).

The definition of sustainable development in the book written by (Brandon and Lombardi 2011) titled “Evaluating sustainable development in the built environment” share the same view with (Parkin *et al.* 2003). They defined the concept as a cycle that focuses on providing a social, physical, and psychological environment in which the conduct of people is continuously synchronized to cater for the dependency on and integration with nature. This is done to help enhance and reduce the negative effects on current and future generations.

2.3 The Three Dimensions of Sustainability

Sustainable development implies constructing a built environment that stands and develops the quality of life of mankind; eradicates the social and environmental effects of the current on the future generation. It also enhances the sustainability of the ecosystems, environment, and develops the quality of the lives of the people in a society's (Bennett and Crudginton 2003). In the opinion of (Raynsford, 2000) sustainable construction can be described as a cycle through which a gainful and competitive industry provides infrastructure (structures/buildings) that enhances the quality of life of the people. The infrastructure can be adjusted to suit future needs, supports the necessary natural and social environments, make use of the total advantage from the effective use of the resources. Scholars have come to the consensus that sustainable development embodies three main dimensions or pillars namely environmental, economic, and social dimensions. These three dimensions are commonly referred to as the 'Triple bottom line' (Hall and Purchase 2006; Lehtonen, 2004).

Sustainable development encompasses the reduction in the negative effects of the activities of society so as to enhance the environment and improve the quality of life for both the present and future generations. That is keeping a balance in economic development and progress whilst safe guiding the scarce natural resources and stimulating the quality of life of society (Leiper *et al.* 2003). In sustainability, the environmental aspect entails the reduction in the environmental impacts today so as to preserve it for the foreseeable generations of the future. The economic facet involves ensuring a potent economic growth. Finally, the social dimension includes the obligation of organizations in business and individuals to conduct business properly so that there is no adverse effect (Jones *et al.*

2010). Notwithstanding the above, (Beheiry *et al.* 2006) argued that when you compare the environment to the social and economic dimensions, sustainability efforts in construction projects are biased towards the environment.

Over the past years, the pursuit of sustainability has placed huge pressure on the construction industry from both the general public to the government to enhance the current unsustainable array of construction projects delivered (Adetunji *et al.* 2003). Presently, there is a nationwide realisation that the construction sector owes a responsibility towards the country's bid effort to achieve its sustainable development objectives. Leiper *et al.* (2003) however, observed that, the construction industry is sluggish in implementing sustainable methodologies in project execution. The industry owes a major social duty to curtail the effect its construction projects can have on social surroundings. In a study by (Sev, 2009) it came to light that both the existing built environment and its development have several social, environmental, and economic effects on a country. In the year 2000, the UK government launched a strategy to help address sustainability challenges which pertains to the construction industry. The strategy highlights the following key areas for action to be taken by the construction industry (Department of the Environment, Transport and the Region (DETR), 2000):

- Minimization of waste through project design,
- Implementation of lean construction theories to minimize waste on site,
- Preservation and enhancement of the ecosystem,
- Prevention of pollution to the land, water bodies and the atmosphere,
- Conservation of water resources for the benefit of the future generations ,
- Respect for people and the environment.

In the study by (Doppelt, 2003) he observed that the construction organizations are not fully taking on sustainability responsibilities as a result of the fact that most leaders of business entities wholly do not understand the problems and challenges and how to come up with schemes necessary for its adoption.

2.4 Sustainable Procurement Practices in the Construction firms

The process of construction disrupts the natural environment and creates interferences in the lives of the neighbouring surroundings. The built environment as a result affects the manner of life of the people who live in the community. The method of construction coupled with the kind of buildings and infrastructure that is created makes the difference (Parkin, 2000). This implies that the buildings should:

- Be sensitive to the environment in its design and usage – It should minimize the effect to the surrounding environment.
- Be water and energy efficient over its built environment in the service life within which it is situated. The construction process should also be water and energy efficient.
- Few resources are used during the service life of the completed project
- Utilize resources from more sustainable sources
- Offer the best results for stakeholders (i.e. designers, developers, end users).

The table below summarizes some key sustainability areas that are important to the construction industry.

Table 2.1: Sustainability issues relevant to the construction industry (Carthy and Shaun 2011)

Sn	Sustainability issues	
1	Waste	(i) Employing strategies such as recycling, reusing, and recovering throughout the construction phases to reduce waste
2	Climate change	(i) Minimize the emission of greenhouse gases into the built environment through the building process
		(ii) Design of facilities are tailed to meet climate change adaption strategies
3	Materials	(i) Identify and use socially and environmentally friendly materials
4	Water	(i) Minimize water usage and the effect of construction activities on water bodies
5	Supporting communities	(i) The economic, social, and environmental effect of construction of a project on a community are taking into consideration. Construction firms should also look at how a project can provide benefits and enhance the quality of life of the people within the area it is situated.
6	Ecology and Biodiversity	(i)The project should protect and develop the biodiversity and ecology throughout its life cycle
7	Land, water, air and noise	(i) Minimize the negative and maximize the positive effects of construction activities on land, water, the atmosphere and noise pollution throughout the project
8	Equality, employment and skills training	(i) Firms should consider ways through which construction can create employment opportunities for people
		(ii) Offer training and skills enhancement programmes for workers
9	Access	(i) Implement the principles of universal design to make the built environment accessible by all people.
10	Transport and mobility	Consider opportunities for sustainable transport of workers and materials throughout the construction phases.
11	Health and well-being	(i) The design and operation of buildings should promote the safety and wellbeing of workers.
12	Labour standards	(i) Steps should be taken to ensure that labourers are not exploited, and that their working conditions are satisfactory. Construction firms should also comply with labour legislations.

2.5 Factors which drives construction firms to implement sustainable procurement

The implementation of sustainable procurement concepts into the construction industry has gained root in many nations especially the United Kingdom. There are several factors which drive organizations to implement sustainable procurement practices. They include the quest to promote good corporate image, value for money considerations, customer requirements, government legislations and policies and market differentiation among others as explained below.

2.5.1 Value for money

Value for money is seen by many as one of the key drivers to the implementation of sustainable procurement in many organizations including construction firms. It is hypothesized that an increase in the use of whole life cycle costing procedures minimizes the overall cost on a building. Seuring and Müller (2008) observed that, the advantage of the whole life costing will not be realized by the construction firm but rather the client. For instance the benefit that will be gained from the reduction in the operation cost of a structure will be realized by the builder, since they are not the final users. Usually, the final user of a building is any other apart from the client. This therefore adds another level of interruption between the builder and the user. Thus there is the need for significant adjustment in current business models that will take a more long-term approach. This kind of change however, may not fall within the policy objectives of construction firms. Dobers and Wolff (2000) argued that the issue lies a lot in the way in which clients acquire funds for construction projects. In this case, changing the finance methods for construction will not be of importance to the contractor. Hence the extent to which value for money

motivates construction firms to implement sustainability practices calls for further investigations (Parkin, 2000).

2.5.2 Reputation

The quest to improve the corporate image is another major factor that drives construction companies to improve their sustainability practices in the construction process and supply chain. Where business organizations are held accountable for the social and environmental impacts of the activities, they are more careful (Seuring and Müller 2008). Dobers and Wolff (2000) suggested that the extent to which this item drives firms to implement sustainability issues rest essentially on the effect (benefits) of the image on the construction firm. If building clients and consumers are particular on using construction firms with credible track record on sustainability issues, it will influence most construction firms. During the award of contracts, client should consider sustainability as one of the selection criterion.

2.5.3 Customer Requirement

Customer requirement is also another major factor which drives the implementation of sustainable procurement methods. If customers are aware of the benefits of sustainability, they will set it as part of the requirements for the award of contracts (Dobers and Wolff 2000). This pressure to meet customer requirements for sustainable products will compel construction firms to take more sustainable procurement decisions.

2.5.4 Competitive Advantage

Difference in market also has a major role to play in motivating firms to take on sustainable procurement practices. If a construction firm will see the implementation of sustainable procurement practices as an opportunity to market his business they will implement it without hesitation. Some firms argue they are able to attract jobs from customers who place much importance to sustainability issues and are willing to do same. Shen et al. (2011) posited that such an advantage depends mainly on the value building clients attach to sustainability and their readiness to afford the benefits perceived. A proposal has been made that implementing practices which are sustainable in construction provides an edge which is competitive for a contractor, however the magnitude to which this is realized is unknown. If the government pledge to procure more sustainably it would imply that there is a market for it at least in projects funded by the governments (Stern, 2002).

2.5.5 Government policies and legislations

Government legislation and policies play significant role in stimulating firms to implement. If companies are required by law to procure sustainably, it will compel them to consider their supply chain management policies to meet government legislations. In the UK, the government has passed a law which aims at making the United Kingdom government European Union leaders in sustainable procurement activities. The Sustainable Procurement Action Plan which was passed in 2007 defines a set of policy directive which construction firms are required to follow (Department for Environment Food and Rural Affairs, 2007). Legislations influence the procurement decisions of the firms. In other

words, the laws reduce the procurement options available to the firms, their own requirements are considered.

2.6 Barriers to the Implementation of Sustainable Procurement Practices

Despite the enormous benefits that will accrue to an organization from the implementation of sustainable procurement practices, they are not usually implemented. A number of obstacles have been observed to affect the implementation of sustainable procurement in the construction industry. Few of them are discussed below.

In a study conducted among the managers of contracting firms, (Wood and Ellis 2005) saw that pertaining to joint venture in construction, situations exists where opinions and even activities are positive but the new approach may be cost driven (Meehan and Bryde 2011). The high initial costs that are associated with the implementation of some sustainable procurement policies hinder its implementation.

In addition to the above, implementation of sustainable policies can only work when they are incorporated in the procurement policies of the organization. In a case where the staffs of an organization feels that other pressures put on them do not agree with the procurement strategies of the firm's their commitment is low (Morgan, 2010).

Another barrier occurs where the positive gains of making sustainable procurement decisions do not benefit those who incur the expense of implementation. A typical example lies in the whole life costing technique mentioned previously (Department of Trade and Industry n. d.).

In conclusion, one more potential barrier is employee motivation to enhance sustainability operations. Employee defiance contributes to weaken the entity's effort greatly. The

defiance results consequently from employees sensing that they have been subjected to extra duties. With this scenario, employees may be hesitant to alter their practices if an appreciable reward for their hard work and efforts is not felt. It is evident that several factors affect the procurement decisions. Some serve as barriers while other act as drivers to sustainable procurement. It is vital for any business organizations to settle on what defines sustainable development in their company objectives. This will be influenced by the requirements of key stakeholders, their opinions which may coerce the firm to change its practices. For over a couple of decades sustainability in construction industry has been initiated by clients. This has resulted in a situation where many contractors take a passive role when it comes to implementing sustainability issues. That is to say they only adopt sustainable solutions on demand by clients. Seuring and Müller (2008) also noted that two key barriers to the implementation of sustainable construction are increase in cost, insufficient communications during the supply chain.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter makes clear the various processes involved in carrying out the study. The study population, the sample size and sampling technique used for the study have been explained. The data collection and analysis tools used for the study have also been spelt out.

3.2 Research Design

The study is a descriptive research which utilized quantitative and qualitative research approaches. It attempts to explore and explain while providing additional information about the sustainable procurement practices of construction firms in Ghana including the challenges they face. It tries to offer in depth explanation to the issues, filling in the missing parts and expanding our understanding on the problem

3.3 Study Population, Sample Size and Sampling Technique

3.3.1 Study population

The study was conducted to investigate into the sustainable procurement practices of construction firms in the Ghanaian construction industry. To achieve this, firms which operate in the Sekondi-Takoradi Metropolis in the Western region of Ghana were used as case study. Procurement practitioners such as Quantity surveyors, project managers, and procurement officers/assistants in these firms formed the population. The firms included both civil engineering and building construction.

3.3.2 Sample size

A number of factors influence the sample size required for a study. According to (Miaoulis and Michenser 1976) cited by (Glenn, 2012) these factors include the purpose of the study, the population size, the level of precision, the level of confidence or risk and the degree of variability in the attributes being measured. Moreover, (Glenn, 2012) proposed that the sample size can be determined using (a) figures in Published tables (b) Sample size of similar studies (c) A consensus for small populations and (d) Formulas. In the current study, the size of the population is not known. In view of this, the researcher adopted the sample size of sixty (60) used by (Opoku and Fortune 2011) which is a similar research with same objectives as the current study. Thirty (30) construction firms were purposively selected and in every firm two (2) respondents were targeted.

3.3.3 Sampling Technique

As explained earlier on, the selection of the thirty (30) construction firms was done using purposive sampling techniques. This method was used to select the large construction firms in the Sekondi-Takoradi Metropolis. In every firm two (2) respondents were selected using simple random sampling techniques.

3.4 Data Collection Instrument

Questionnaire and Interviews were used as the main data collection instruments in the current study. Through the use of questionnaire, respondents were asked to indicate the sustainable procurement practices they adopt in their firms. Moreover, they were asked to rank the challenges they face with the implementation of sustainable procurement practices

on a 5-point Likert scale. Effort was made to keep the questions in the questionnaire in simple language, devoid of technical terms to minimize potential challenges.

Semi-structured face-to-face interview were also held with 15 of the respondents. The various factors obtained were compiled together with others found in literature. The first part of the questionnaire drew information about the demographic characteristics of the respondent such as their position, years of working experience among others. This was done to ascertain the credibility of the respondents.

3.5 Data Analysis Tools

The demographic characteristics were analyzed using descriptive statistics such as frequency, percentages and mean. The analysis was done using the Statistical Package for Social Sciences (SPSS) version 16 in collating the data. The results were presented in the forms of charts and tables. The ordinal data were analyzed using Relative Importance Index (RII). This was done to determine the critical challenges the firms face with the implementation of the SP practices. The RII is calculated using the formula (Fagbenle *et al*, 2004).

$$RII = \frac{\sum W}{nN}$$

Where RII = Relative importance index

$\sum w$ = respondent rating of severity of the challenges

N= sample size; n =the highest attainable score

3.6 Ethical Considerations

At the first phase of the data collection, the consent of the selected firms was sought and the purpose of the study explained to them. This was done to enable the respondents feel free and answer the questionnaires with all frankness without hiding any information. The privacy, anonymity and confidentiality of the responses were highly treated. Moreover, any piece of document used for the work was appropriately referenced to avoid plagiarism.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results of the study and a discussion on the main findings. There are four (4) main sections in this chapter. The findings from the present study are compared with literature.

4.2 Background of Respondents

This section illustrates information about the demographic characteristics of the respondents and their firms. The intention of this section is to find out the credibility of the respondents and the firms that were selected for the firm. Fig 4.1 shows the position of the respondents who took part in the study. 44.4% were Quantity surveyors followed by project managers/supervisors who constituted 31.1%. Procurement officers were 15.6% while 8.9% held different positions in their firms. It was further revealed that as high as 77.8% of the respondents have worked more than 5 years in their professional fields and they have been engaged in procurement activities in their firms for more than 5 years. The above statistics showed that the respondents are very experienced in their job which places them in sole position to provide credible information for this study.



Fig 4.1: Position of the respondents

Source: Field Survey, 2016

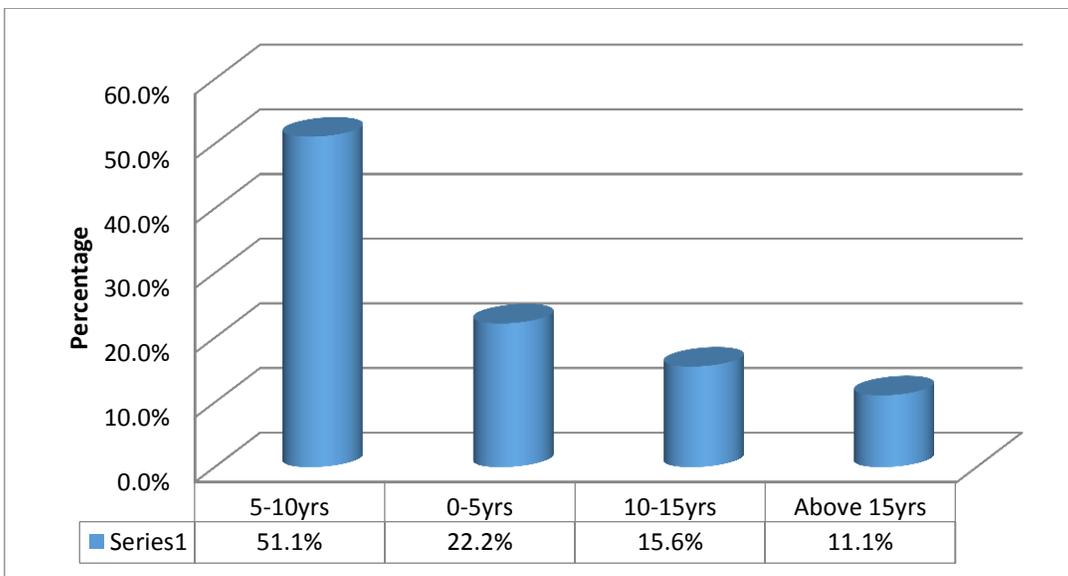


Fig 4.2: Years of working experience of respondents

Source: Field Survey, 2016

4.3: Sustainable Procurement Practices of the firms

As explained by (Leiper *et al.* 2003) sustainable development involves minimizing the negative impacts of our activities (construction activities) to improve the environment and enhance a better quality of life for present and future generations. It is about balancing economic growth and progress while protecting natural resources and promoting social equality. In the current study the respondents were asked about their opinion on the definition of sustainability.

The UNDP Practice series (2008) defines sustainable procurement as the acquisition of works, goods, and services by following a pre-set legal procedures while maintaining the economic, social and environmental goals of the procurement. Most of the respondents in the current study had no or little knowledge about the meaning of SP. For most of the respondent (75%), their definition of sustainability did not fall within the three dimensions (economic, social and environmental dimensions). The above finding gives an indication of the low level of understanding about the concept of sustainable procurement.

4.3.1 Sustainable Construction Practices

Following the questions above, the respondents were asked to indicate the Sustainable procurement practices they implement in their firms. Twelve (12) sustainability issues which are key to the construction industry were selected from literature (Cathy and Shaun 2011) and the respondents were asked to indicate the extent to which they implement those sustainability issues in their company policies and practices. Their responses have been analyzed and presented in Table 4.1. The results revealed that even though, the firms are

implementing all the TQM practices, the level of implementation of some of the practices is very low.

(i) Climate change mitigation and adaption

Climate change is one of the key global issues every country seeks to combat. In all countries over the world the activities of the construction industry is regulated by laws to ensure that there is no negative effect on the ecosystem. The results of the current study reveals that even though most of the construction firms are well informed about climate change issues, the effort of the firms are not enough. That is much attention is not paid to climate change issues in the policies and practices of the firms. As shown on Table 4.2, the 2nd item under this section had a low mean score of 0.2546 whereas the 1st item had a score a little over 3.5.

(ii) Waste

The concept of sustainability requires that material wastage in the construction process is reduced to the barest minimum through reusing and recycling. In the current study the respondents explained that continuous efforts are being made by their firms to ensure that materials wastage on site is reduced. Materials such as timber are reused till such as point that it becomes unfit for its intended purpose. Cutting waste is also prevented by ensuring materials are cut to the proper dimensions. Despite the above, a majority of the respondents alluded to recycling of materials is the only method of waste minimization their firms are lurking behind. From Table 4.2, waste minimization had a mean score of 4.6750.

(iii) Equality, diversity, employment and skills

Another area of sustainability proposed by (Carthy and Shaun 2011) is about equality, diversity, employment and skills training by construction firms. They explained that construction firms should consider ways through which they can develop employment opportunities, create a varying business base and workforce. Moreover, they should offer training and skills improvement to their workers. In the current study this was one of the areas the firms were found to pay much attention to. Some of the respondents were of the opinion that training of workers helps to enhance their skills and improve productivity. The sustainability of the business as a whole hinges on increase productivity.

(iv) Health and well-being

Socially, construction firms are required to make the necessary considerations with regards to health and safety requirements for their workers on site and other means to promote healthier lifestyles for their workers. In the current study, it was found most of the firms had good policies in place to promote the health, safety and wellbeing of their workers. Workers were provided with safety shoes, cloths and helmets during construction. According to some of the respondents first aid boxes are provided on site. Warning and directional signs are also provided on site. Food, water and toilet facilities are provided for the workers. As shown on Table 4.2, items under health and safety had a high score (i.e. above 3.5).

(v) Labour standards

Another area the firms were paying much attention to was ensuring that the condition of service of their workers conform to labour standards. Most of the respondents indicated that, their firms have measures in place to ensure that there is no labour exploitation. Moreover the working conditions of the workers are satisfactory and that no illegal labour is used and all relevant employment legislation is complied with. This item had high mean score of 6.4359.

The table below reveals that besides the above, the firms also paid attention to other sustainability issues as shown on the Table. Other items on the other hand were given little attention.

Table 4.1: Ranking of the degree on importance attached to sustainability issues by the respondents

Sn	Sustainability issues		Mean	Std. Deviation	Remarks
1	Climate change mitigation and adaption	(i) In the execution of projects, greenhouse gases (GHG's) produced will be brought to a very low level	3.5500	.90441	Ok
		(ii) During the design stage, adequate considerations are given with respect to flexibility to take care of climate change.	0.2546	0.9781	×
2	Waste	(i) Minimize waste by reducing, reusing, recycling and recovering in the built environment, throughout the construction phase and across the supply chain	4.6750	1.02250	Ok
3	Supporting communities	(i) During the execution of the project, the social, economic and environmental effect of the project on the general public should be considered and also take part in decisions made towards the safety of the three mentioned factors.	4.2250	1.04973	×
4	Water	(i) Minimize water usage in construction and operational use.	3.7000	1.09075	Ok

5	Materials	(i) Materials that are friendly to the environment should be identified and sourced.	3.5000	.98710	Ok
6	Biodiversity and ecology	(i)Protect and improve biodiversity and provide ecological benefits through the project life cycle	3.4750	1.01242	×
7	Land, air, water, noise	(i)Effects that are positive should be encouraged while the negative impacts are discouraged in the execution of the project on land, water, noise and air.	3.2750	1.13199	×
8	Transport and mobility	Consider opportunities for sustainable transport of labour and materials throughout the build phase and to consider opportunities in design to prioritise walking, cycling and public transport in use	2.5750	.84391	×
9	Access	(i) Use the principles of inclusive design i.e. structures to be inclusive to people of all faiths, accessible to disabled people, and provide specific facilities such as baby changing where needed	2.5500	.90441	×
10	Equality, employment, diversity and skills	(i)A fair ground must be established to figure out ways through which opportunities in terms of employment can be achieved.	3.3250	1.02250	ok
		(ii)Refresher programs, training and skills development must be offered to enhance businesses.	3.879	0.8745	ok
11	Health and well-being	(i)Consider the role of design and buildings to promote a healthy environment and lifestyle for users and operators	4.4250	1.00989	ok
		(ii) The safety of all workers on site should be paramount as well as measures established to encourage a healthy lifestyle.	7.945	0.5462	ok
12	Labour standards	(i) Measures must be put in place to make sure that cheap labour is not exploited while a welcoming working condition is established to see to it that necessary employment legalities are complied.	6.4359	1.02070	ok

Source: Field Survey, 2016.

4.4: Drivers to Sustainable Procurement practices

This section sought to find out the factors which drive the construction firms in Ghana to implement sustainable procurement practices in their firms. Based on the literature review seven (7) factors were identified. The respondents were then asked to indicate the extent to which each of the variables drives/motivate/compel them to implement sustainable procurement practices. Their responses have been analyzed and presented in Table 4.2. From the results, the respondents agreed that all the factors drive their firms to some extent in their implementation of sustainable procurement. The factors were explained as follows

(i) Company Reputation

The quest to gain good reputation/image in the construction industry was voted by the firm as the topmost variable which motivates/drives the firms to implement sustainable construction practices. One of the respondents explained that “in the era of global economic crisis, it is important for firms to devise strategies to promote its corporate image and gain competitive advantage in the business setting”. Thus majority of the construction firms aims at promoting their corporate image by implementing sustainable construction practices. The finding above confirms the report by (Seuring and Müller 2008) who noted that since consumers and clients are particular to utilise construction companies with credible record of sustainability, it is to the benefit of contractors to ensure that they adapt strong standards throughout their activities to keep a positive reputation.

(ii) A core value in corporate Social Responsibilities

This variable was considered as the second most important point that motivates entities to enhance the sustainability of their supply chain and construction process. Construction firms as part of their corporate social responsibility are required to ensure that their activities do not have any negative social or environmental impact on their community or the environment within which they work. Moreover, it is their corporate responsibility to maximize the positive and minimized the negative effects on land, air, water noise, throughout a project cycle. Furthermore they are required to look at the social, economic and environmental impact of their construction activities on the public, and to engage in the development of how the project can offer positive gains and enhance the communities within which the project is being constructed. The above corporate social responsibilities among others compel/drive most of the construction firms in Ghana to consider sustainability in their activities.

(iii) Government regulations and legislations

Government regulation and legislation also contribute a lot in compelling construction firms to implement sustainability issues in their construction and procurement processes. Sterner (2002) noted that if construction companies are legally required to purchase sustainably, this will force them to look at their supply chain at least to meet the requirements of legislation. In the United Kingdom, the passage of the Sustainable Procurement Action Plan in 2007 was one of the steps by the government to ensure the implementation of sustainable procurement in the country (Department for Environment Food and Rural Affairs, 2007). In the current study they responded unanimously agreed to

Sterner that, government regulations and legislations in Ghana compel them to procure sustainable and to ensure that their construction activities do not have any negative social, environmental and economic impact.

(iv) Value for money considerations

As explained by (Dobers and Wolff 2000) value for money has become important since the contractor is not the end user of a building. They usually do not realise the need to adopt whole life costing methods. In the current study, some of the respondents indicated that value for money considerations sometimes drive them to implement sustainable construction practices. This is considered very significant when the contractor has a stake in the final product (i.e. the building) being constructed. Thus, the above finding confirms that of (Dobers and Wolff 2000).

(v) To gain competitive Advantage/Market Differentiation

Tan-Shen et al. (2011) noted that accepting and using a standard practice for construction may offer a competitive advantage if it sustainable. Yet it is unidentified as to extent to which this is realized. In the current study, the respondents agreed with the statement of (Tan-shen et al. 2011). They explained that the implementation of sustainable construction practices help to promote the positive image for their firms. By so doing it gives them competitive advantage over their competitors. Some clients are enticed by sustainability issues and always want to give contracts to construction firms with good track record in this area.

Table 4.2: Drivers to sustainable construction in the Ghanaian construction Industry

	Drivers to sustainable Procurement	Rating				Total	$\sum W$	Mean	RII	Rank
		1	2	3	4					
1	Company Reputation	1	3	5	36	45	166	3.6889	0.9222	1st
2	A core value in corporate Social Responsibilities	1	5	7	32	45	160	3.5556	0.8889	2nd
3	Government regulations and legislations	3	4	12	26	45	151	3.3556	0.8389	3rd
4	Value for money considerations	5	6	11	23	45	142	3.1556	0.7889	4th
5	To gain competitive Advantage/Market Differentiation	4	8	11	22	45	141	3.1333	0.7833	5th
6	Waste Issues	4	9	12	20	45	138	3.0667	0.7667	6th
7	Client demand/Customer Requirement	14	12	7	12	45	107	2.3778	0.5944	7th

Source: Field Survey, 2016

The current study also sought the opinion of the respondents on the effort of the Ghana government towards sustainability issues. From the results shown in Fig 2.1, majority of the respondents (i.e. 60%) indicated that the effort of the government is not enough. In explaining this, 35.6% of the respondents said the current legislations and government policies on sustainability are inadequate and ineffective (Fig 4.4). 26.7% said the laws are inadequate while 17.8% rated them as ineffective. In an interview with some of the respondents, they explained that even though Ghana has passed laws and formulated policies on sustainability, however there is lack of enforcement of the laws and policies. The laws are weak and hence companies carry on their daily activities without paying much regard to the laws.

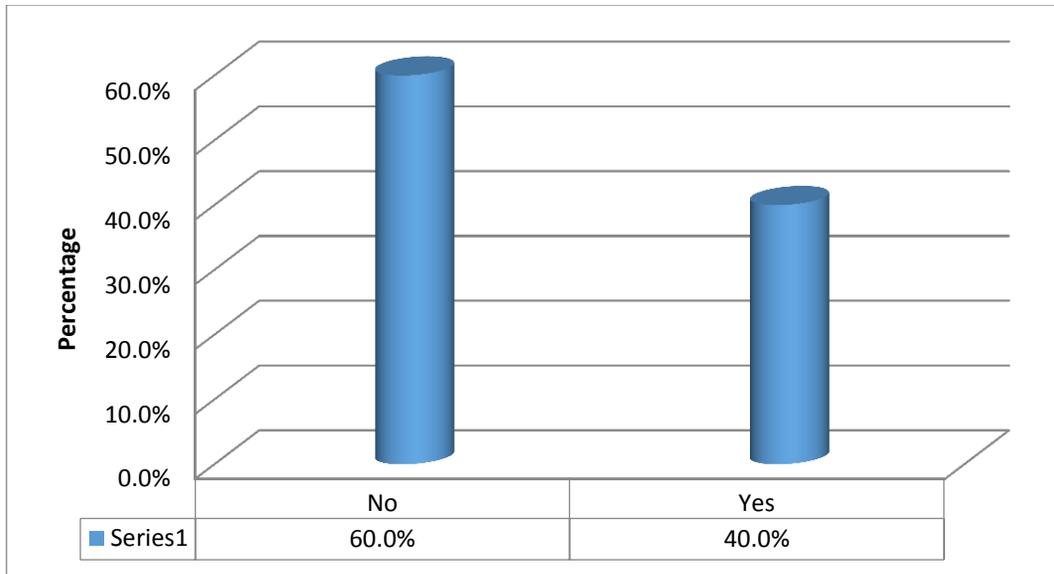


Fig 4.3: Opinion of the respondents as to whether the government is doing enough to ensure the implementation of Sustainable procurement

Source: Field Survey, 2016

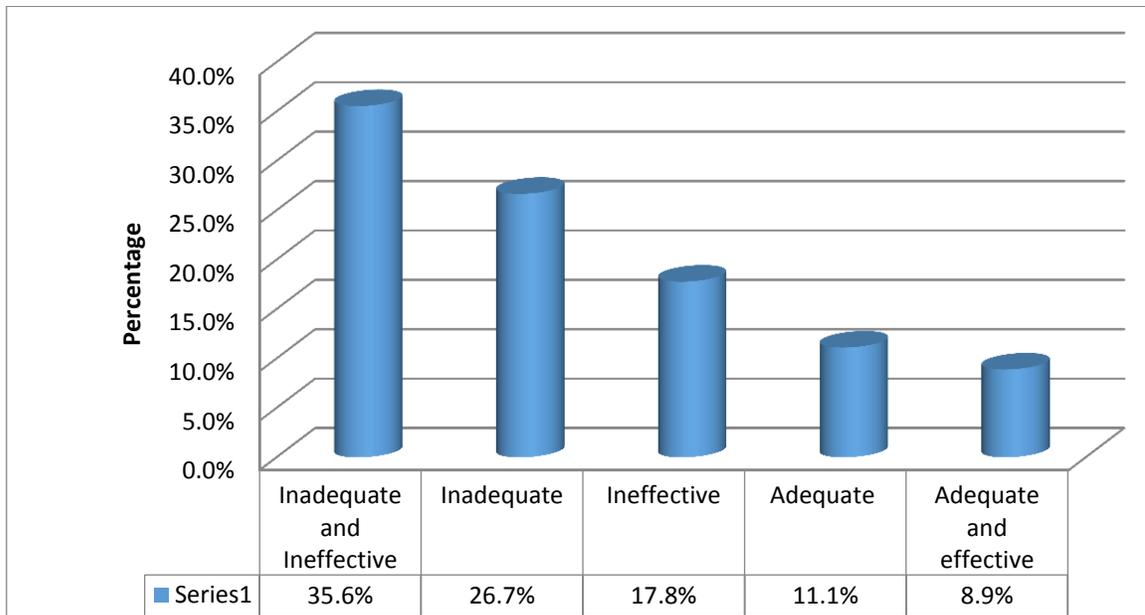


Fig 4.4: Rating of the current legislations and government policies on Sustainability

Source: Field Survey, 2016

4.5 Challenges with the Implementation of Sustainable Construction practices in Ghana

There is no denying fact that the implementation of sustainable construction (SC) practices has social, economic and environmental benefit to a community and the country as a whole. Both the present and future generations stand to benefit from SC practices. As the saying goes “nothing good comes easy” research have found that there are several barriers which impede against the successful implantation of sustainable construction practices. The current study as one of its objectives sought to find out the challenges construction firms in Ghana face in their effort to integrate sustainability in the business operations. Through literature review, thirteen (13) factors were identified and the respondents were asked to indicate how significant each of the variables served as a barrier to the implementation of SC practices. Their responses were analyzed and presented in Table 4.3. It was found that the top 6 challenges were: lack of basic education about SP (1st); lack of understanding of the SP Concept (2nd); Low stakeholder Education (3rd); Lack of social drive (4th), lack of client awareness (5th) and the absence of governmental interest in ensuring the promotion of SP

(i) Lack of understanding and education about sustainable procurement

The successful implementation of a concept begins by educating all stakeholders about the concept. After the people have totally understood the concepts they can then implement it. In the current study it was revealed by the respondents that most Ghanaians do not understand the concept of sustainability (its meaning, benefits among others) hence they do not see the need to waste time on sustainability. The lack of knowledge stems from the fact

that there is barely no education of the populace about the concept. This according to some of the respondents is seriously affecting the implementation of the concept. The respondents noted that building clients/customers have the same problem and this affect the effort of the construction firms in implementing the concept.

(ii) Lack of client awareness

Where the client fails to initiate the process (due to ignorance or lack of understanding of sustainability) it will not be implemented. The above problem is reported by the respondents as one of the main barriers to the implementation of sustainability issues in the construction industry. The respondents explained that due to lack of understanding or ignorance about the concept of sustainability some building client do not agree to proposals on sustainability.

(iii) Low social drive

Another key barrier is lack of social drive. It is suggested that motivation of individual staff members in an organization is a very important step toward improving sustainability performance. Resistance from employees could work to undermine efforts of the company at a higher level. This resistance could come as a result; for example, of staff feeling that they are being given extra work or having extra pressures put on them. In this case, they may be reluctant to change their practices if they do not see significant reward for their efforts. In the current study it also agreed among the respondents that lack of social drive or commitment is one of the key barriers to the implementation of sustainable construction practices.

Table 4.3: Challenges with the implementation of Sustainable construction practices

	Challenges	Rating				Total	ΣW	Mean	RII	Rank
		1	2	3	4					
1	Lack of basic education about SP	0	4	9	32	45	163	3.6222	0.9056	1st
2	Lack of understanding of the SP Concept	1	2	15	27	45	158	3.5111	0.8778	2nd
3	Low stakeholder Education	2	2	17	24	45	153	3.4000	0.8500	3rd
4	Lack of social drive	2	3	15	25	45	153	3.4000	0.8500	4th
5	lack of client awareness	3	5	11	26	45	150	3.3333	0.8333	5th
6	The absence of governmental interest in ensuring the promotion of SP	1	10	10	24	45	147	3.2667	0.8167	6th
7	Lack of political will	2	9	16	18	45	140	3.1111	0.7778	7th
8	Lack of capacity of small scale suppliers /contractors	2	13	10	20	45	138	3.0667	0.7667	8th
9	Higher initial associated costs	5	6	18	16	45	135	3.0000	0.7500	9th
10	Absence of internal management structures	5	16	10	14	45	123	2.7333	0.6833	10th
11	Low technical and management capacity	14	6	7	18	45	119	2.6444	0.6611	11th
12	Low Multi-stakeholder approach	12	10	12	11	45	112	2.4889	0.6222	12th
13	Increased cost	16	14	7	8	45	97	2.1556	0.5389	13th

Source: Field Survey, 2016

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The current study was designed to investigate into the sustainable procurement practices of construction firms in the Ghanaian construction industry. Based on the questionnaire survey administered to 30 construction firms in the Sekondi-Takoradi Metropolis, the following were the key conclusions drawn from the findings of the study:

Objective 1: To identify the sustainable procurement practices adopted by construction firms in Ghana

The following are some of the key findings to the sustainable procurement practices.

- (i) Climate change mitigation and adaption: The results of the current study reveals that even though most of the construction firms are well informed about climate change issues, the efforts of the firms are not enough. That is much attention is not being paid to climate change issues in the policies and practices of the firms.
- (ii) Waste: The concept of sustainability requires that material wastage in the construction process is reduced to the barest minimum through reusing and recycling. In the current study it was found that continuous efforts are being made by construction firms to ensure that materials wastage on site is reduced.
- (iii) Equality, diversity, employment and skills: Most construction firms provide training and skills enhancement to their workers. Training of workers is seen as a means of enhancing the skills of workers and improve their productivity.

- (iv) Health and well-being: It was found that most of the firms have policies in place to promote the health, safety and wellbeing of their workers. Workers were provided with safety shoes, cloths and helmets etc. during construction.
- (v) Moreover, most of the construction firms are committed to ensuring that the conditions of service of their workers conform to labour standards. The firms have measures in place to ensure that there is no labour exploitation and that the working conditions of their workers are satisfactory.

Objective 2: To identify the drivers to sustainable procurement among construction firms

From the study a number of factors were found to drive construction firms in Ghana to implement sustainable procurement practices. They included the following:

- **Company Reputation:** Majority of the construction firms see the implementation of sustainability as a means of creating a positive corporate image for their firms.
- ***A core value in corporate Social Responsibilities:*** The construction firms as part of their corporate social responsibility are required to ensure that their activities do not have any negative social or environmental impact on their community or the environment within which they work.
- ***Government regulations and legislations:*** Government regulations and legislations in Ghana compel construction firms to implement sustainability issues in their practices.
- The prospect of achieving value for money also drives some of the firms to implement SP

- Moreover, most construction firms sees the implementation of SP as a means of promoting their company image and consequently gain competitive advantage over their colleagues in the business setting.

Objective 3: To identify the barriers to the implementation of sustainable procurement in the Ghanaian construction industry.

From the study, the key barriers which impede the implementation of sustainable procurement in the Ghanaian construction industry were:

- Lack of basic education about SP
- Lack of understanding of the SP Concept
- Low stakeholder Education
- Lack of social drive
- lack of client awareness
- The absence of governmental interest in ensuring the promotion of SP
- Lack of political will

5.2 Recommendations

- **Public Education on sustainability.** One of the key challenges that was cited by the respondents as a barrier to the implementation of sustainable procurement practices in the construction industry is the lack of basic understanding of the concept of sustainability. Most Ghanaians appears to be ignorant about the benefits of sustainable procurement. It is therefore recommended that the government and all institutions of the built environment (i.e. Ghana Institution of Architects, Ghana Institution of

Surveyors, Ghana institution of Construction and Ghana Institution of Engineers) must intensify education on the concept of sustainable procurement.

- **Enforcement of legislations:** It is also recommended that government laws, legislations and policies must be enforced. Without enforcement these laws and policies will be white elephants.
- **Competitive bidding:** must be encouraged to ensure fairness and eliminate bribery, corruption and other activities that do not achieve value for money and sustainability.
- Firms should avoid risk, manage waste and use Information Communication Technologies and Electronic Procurement as part of their practices to achieve sustainable procurement.

5.3 Areas for further study

One limitations of the current study was that the respondents were limited to construction firms in the Sekondi-Takoradi metropolis. This limits the extent of generalization of the results of the study. It is therefore recommended that further studies should be conducted which will look at construction firms in other parts of the country such as Accra, Kumasi, Tamale and the rest.

REFERENCES

- Addis, B. and Talbot, R. (2001), Sustainable construction procurement: a manual to delivering environmentally accountable projects, *CIRIA C571*, London, CIRIA
- Adetunji, I., Price, A., Fleming, P. and Kemp, P. (2003), Sustainability and the United Kingdom construction industry: a Review, *Proceedings of the Institute of Civil Engineers, Engineering Sustainability 156*, Issue ES4 pp.185-99.
- Beheiry, S.M.A., Chong, W.K. and Haas, C.T. (2006) Examining the business effects of owner obligation to sustainability, *Journal of Construction Engineering and Management*, 132(4), 384-92.
- Bennett, J. and Crudgington, A. (2003), Sustainable development: current thinking and activities in the United Kingdom. *Proceedings of the Institution of Civil Engineers, Engineering Sustainability 156*: 27–32.
- Benslimane Y., Plaisent M., Bernard P. (2005): Electronic Procurement; International Journal of Procurement Management – January 2005
- Brandon, P. S. and Lombardi, P. (2011), *Appraising Sustainable Development in the Built Environment*, Second edition, Oxford: Wiley-Blackwell
- Brundtland, G. H. (1987), *Our Common Future: Report of the world Commission in Environment and Development*, Oxford: Oxford University Press
- Cathy B and Shaun M (2011): Manual to sustainable procurement in construction. Published by CIRIA, Classic house, 174–180 Old Street, London, EC1V 9BP, United Kingdom
- DEFRA (2006). Procuring the future - the sustainable procurement task force national action plan. Department for environment, food and rural affairs, London

- DEFRA (2007). Securing the future: United Kingdom Govt. Sustainable Procurement Action Plan Integrating the Government feedback to the report of the Sustainable Procurement Task Force. London: DEFRA
- DETR (2001), *Building a Quality Life: A strategy for sustainable construction*, London: Department of the Environment, Transport and Region (DETR).
- Department of Trade and Industry "DTI (n.d.) 'Strategy for Sustainable Construction consultation events: Procurement and whole life costs.'" Retrieved 4th May, 2016, from <http://www.bis.gov.uk/files/file37179.pdf>.
- Dobers, P. and R. Wolff (2000). "Competing with 'soft' challenges - managing the environment to sustainable business schemes." *Business Strategy & the Environment* (John Wiley & Sons, Inc.) 9(3): 143-150.
- Doppelt, B. (2003), *Leading Change toward Sustainability: A Change management Guide for Business, Government and Civil Society*, Greenleaf Publishing, Sheffield.
- Fellow and Lui (2008): "Research methods for construction" third edition Wiley Blackwell Publishing Ltd.
- Hall, M. and Purchase, D. (2006), Building or Bodging? Attitudes to Sustainability in United Kingdom Public Sector Housing Construction Development, *Sustainable Development*, Volume 14, No.3, pp. 205 to 218
- Jones, T., Shan, Y. and Goodrum, P. M. (2010), An assessment of corporate approaches to sustainability in the United States engineering and construction industry, *Construction Management and Economics*, 28: 9, 971 to 983.
- Lehtonen, M. (2004): The environmental social interface of sustainable development: competence, social capital, institutions, *Ecological Economics* 49, pp.199 to 214

- Leiper, Q., Fagan, N., Engstrom, S. and Fenn, G (2003), A scheme for sustainability. Proceedings of the Institution of Civil Engineers, *Engineering Sustainability* 156, Issue ES1, pp. 59 to 66.
- Meehan, J. and D. Bryde (2011). "Sustainable procurement practice." *Business Scheme & the Environment* (John Wiley & Sons, Inc.) **20**(2): 94-106.
- Morgan S. (2010). Annual report and accounts 2010
- Norman, W. and C. MacDonald (2004). "Getting to the Bottom of "Triple Bottom Line"." *Business Ethics Quarterly* 14(2): 243-262
- Odhiambo W and Kamau, P. (2003). *Public Procurement: Lessons from Kenya, Tanzania and Uganda*. OECD Development Centre: OECD Working Paper NO. 208
- Opoku A. and Fortune C. (2011): Leadership in Construction organizations and the promotion of Sustainable Practices; Management and Innovation for a Sustainable Built Environment, – 23 June 2011, Amsterdam, The Netherlands; ISBN: 9789052693958
- Parkin, S., Sommer, F., and Uren, S (2003), Sustainable development: understanding the concept and practical challenge, *Proceedings of the Institution of Civil Engineers, Engineering Sustainability*, 156(1), pp.19-26.
- Porter, T. B. (2008), Managerial applications of corporate social Responsibility and systems-Thinking for achieving sustainability outcomes, *Systems Research and Behavioural Science*, 25, pp 397- 411
- Seuring, S. and M. Müller (2008). "From a literature review to a conceptual framework for sustainable supply chain management." *Journal of Cleaner Production* **16**(15): 1699-1710.
- Sev, A. (2009), How can the construction industry contribute to sustainable Development? A conceptual framework, *Sustainable Development*, 17, pp 161-173.

- Soreide, T. (2002). *Corruption in Public Procurement: Causes, Consequences and cures (Report R 2002:1)*. Norway: Chr. Michelsen Institute
- Sustainable Procurement Task Force (2006): Green Alliance, Eden Project Seminar – 30th January 2006, London, United Kingdom (Sir Neville Simms report)
- Sterner, E. (2002). "'Green procurement' of buildings: a study of Swedish clients' considerations." *Construction Management and Economics* 20(1): 21 - 30.
- UNDP Practice series (2008) Environmental Procurement obtained [online]
<http://www.undp.org/procurement/documents/UNDP-SP-Practice-Guidev2.pdf>
- Wood, G. D. and R. C. T. Ellis (2005) "Main contractor experiences of partnering relationships on United Kingdom construction projects." *Construction Management and Economics* 23(3): 317 to 325.

APPENDIX: QUESTIONNAIRE

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI
COLLEGE OF ARTS AND BUILT ENVIRONMENT
DEPARTMENT OF BUILDING TECHNOLOGY
Questionnaire for Students**

**Appraisal of Sustainable Procurement by Construction Firms in Ghana.
Case Study of Sekondi-Takoradi**

I am a final year student of the Kwame Nkrumah University of Science and Technology (KNUST), Department of Building Technology conducting research to investigate into the sustainability procurement practices of construction firms in the Ghanaian construction industry.

Your response to the following questions would be highly appreciated for the success of the project. Any information given would be treated with utmost confidentiality.

Instructions

- Please tick (√) or circle (○) the most appropriate answer to each of the questions.
- Where applicable, tick all the answers which apply

For further information kindly contact the researchers on the following Address:

Researcher student: Sanful Benjamin

Tel: +233244099484/+233201728443

Email: suchimiyagi@gmail.com

SECTION A: BACKGROUND OF RESPONDENTS

1. Position of respondents

Project manager, Quantity surveyor Procurement officer/assistant

2. Years of experience

0 – 5 years 5 – 10 years 10 – 15 years above 15 years

3. In your opinion which of the following best defines sustainable procurement?

- i. It is an investment or expenditure process through which public agency meet their needs for goods services and works
- ii. Setting lasting value for money, avoiding or reducing environmental damage, delivering social and economic benefits
- iii. Use of capital so that needs are met with a view of maximizing net benefits
- iv. Procurement that can be consistently maintained in maximum transparency, fairness, quality and participation
- v. Procurement that integrates specification and requirement for improvement of quality of products and services
- vi. Type of procurement that integrates requirements, specifications and criteria that are geared towards sustaining and protecting the environment
- vii. Procurement is sustainable when it integrates requirements to the environmental factors in support of development

**SECTION B: SUSTAINABLE PROCUREMENT PRACTICES BY
CONSTRUCTION FIRMS**

4. The following are key sustainability issues which the construction industry seeks to address. Which of them do your organization consider very important and for that matter incorporate it in its practices. Use the scale 1 = Not Important 2 = Neutral 3 = Important 4 = Very Important

Sn	Sustainability issues		1	2	3	4
1	Climate change mitigation and adaption	(i) Minimize greenhouse gases (GHG's) emitted in the built environment, the construction process and in the manufacture/delivery of associated goods, works, services (embodied carbon) (ii) Consider and maintain flexibility in design to cater for climate change adaption				
2	Water	(i) Minimize water usage in construction and operational use. (ii) Consider embodied water in manufacture of materials, works and services				
3	Waste	(i) Minimize waste by reducing, reusing, recycling and recovering in the built environment, throughout the construction phase and across the supply chain				
4	Materials	(i) Identify, source and use environmentally and socially responsible materials				
5	Biodiversity and ecology	(i)Protect and improve biodiversity and provide ecological benefits through the project life cycle				
6	Land, air, water, noise	(i) Maximize the positive and the minimized the negative effects on land, air, water noise, throughout the project				
7	Supporting communities	(i) Consider the social, economic and environmental effect of the project on the community, and to get involved with and establish how the project can provide benefits and improve the area				
8	Transport and mobility	Consider opportunities for sustainable transport of labour and materials throughout the build phase and to consider				

		opportunities in design to prioritise walking, cycling and public transport in use				
9	Access	(i) Use the principles of inclusive design ie structures to be inclusive to people of all faiths, accessible to disabled people, and provide specific facilities such as baby changing where needed				
10	Equality, diversity, employment and skills	(i)Consider ways construction can create new employment opportunities, build a diverse business base and workforce. (ii)Provide training and skills enhancement and stimulate businesses locally, regionally and nationally				
11	Health and well-being	(i)Consider the role of design and buildings to promote a healthy environment and lifestyle for users and operators (ii) Consider the health and safety requirements of all site workers and other ways to promote healthy lifestyles for construction workers such as eliminating hazardous materials, offering healthy food on site, health checks and education programmes				
12	Labour standards	(i) Steps are taken to ensure no exploitation of cheap labour, acceptable working conditions for all and that no illegal labour is used and all relevant employment legislation is complied with				
	Others (Please specify)					
	(i)					
	(ii)					
	(iii)					
	(iv)					
	(v)					

**SECTION C: DRIVERS TO THE IMPLEMENTATION OF SUSTAINABLE
PROCUREMENT PRACTICES**

5. What drives your organization to pursue sustainable procurement practices?

Sn	Drivers	1	2	3	4
(i)	Company reputation/Brand Reputation				
(iii)	Government regulation and legislation				
(iii)	To gain competitive advantage (Market differentiation)				
(v)	Clients demand/Customer requirement				
(vi)	A core value in corporate social responsibility				
(vii)	Waste issues				
(viii)	Value for money considerations				
	<i>Others (please specify)</i>				
(ix)					
(x)					
(xi)					
(xii)					

6. Do you think the government is doing enough to ensure the implementation of sustainable procurement practices in the construction industry? Yes No

7. How do you rate the current legislations and government policies on sustainability of the Ghanaian construction industry?

- Ineffective Inadequate Adequate Inadequate and Ineffective
 Adequate and effective

**SECTION D: BARRIERS TO THE IMPLEMENTATION OF SUSTAINABLE
PROCUREMENT PRACTICES**

8. Which of the following factors serve as barrier to the implementation of sustainable procurement practices in your firm. Rank the barriers on a 5 point Likert scale where 1 = Less significant 2 = Neutral 3 = Slightly significant 4 = Very significant

Sn	Barriers	1	2	3	4
(i)	Absence of internal management structures				
(ii)	Lack of social drive				
(iii)	Low technical and management capacity				
(iv)	Lack of understanding of the SP Concept				
(v)	The absence of governmental interest in ensuring the promotion of SP				
(vi)	Lack of political will				
(vii)	Low stakeholder Education				
(viii)	Corruption existing among procurement practitioners				
(ix)	Lack of basic education about SP				
(x)	Lack of capacity of small scale suppliers/contractors				
(xi)	Higher initial associated costs				
(xii)	Low Multi-stakeholder approach				
(xiii)	lack of client awareness				
	Increased cost				
	<i>Others (please specify)</i>				
a					
b					
c					