UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION-KUMASI

ENHANCING EFFECTIVE COMMUNICATION IN PROJECT DELIVERY IN THE CONSTRUCTION INDUSTRY IN GHANA: THE PERSPECTIVES OF CONSTRUCTION PROFESSIONALS IN WESTERN REGION

NICHOLAS QUANSAH

(7141190020)

A Dissertation in the Department of CONSTRUCTION AND WOOD TECHNOLOGY EDUCATION, Faculty of TECHNICAL EDUCATION, submitted to the school of Graduate Studies, University of Education, Winneba, in partial fulfillment of the requirements for the award of Master of Technology (Construction) degree.

DECEMBER, 2016

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION-KUMASI

ENHANCING EFFECTIVE COMMUNICATION IN PROJECT DELIVERY IN THE CONSTRUCTION INDUSTRY IN GHANA: THE PERSPECTIVES OF CONSTRUCTION PROFESSIONALS IN WESTERN REGION

NICHOLAS QUANSAH

DECEMBER, 2016

DECLARATION

STUDENT'S DECLARATION

I, NICHOLAS QUANSAH, hereby declare that this dissertation, with the exception of quotations and references contained in published works which have been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE: ……

DATE: …….

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. NONGIBA ALKANAM KHENI

SIGNATURE: …….

DATE: …….

ACKNOWLEDGEMENT

First and foremost, I am grateful to the Almighty God for his guidance and protection. My sincere gratitude goes to my supervisor Dr.Nongiba.A. Kheni for spending ample and quality time supervising, correcting and proof reading my research work.

DEDICATION

I wholeheartedly dedicate this research work to the Lord Almighty through whose guidance and protection I have been able to reach this far in my education. I cannot end this work without mentioning the people who give meaning to my life, my beloved wife, Christiana AboraaDufie, my children: Jessica Badu Quansah, Samuel AnomakoQuansah, Emmanuel PadiQuansah and GiftyAmoabaQuansah.

TABLE OF CONTENT

Content Page

LIST OF TABLES

Table
Page

LIST OF FIGURES

Figure
Page

LIST OF ABBREVIATIONS

UNESCO ……United Nations Educational,Scientific and Cultural Organizations

GDP …….. Gross Domestic Product

GNP …….. Gross National Product

APM ……. Association for Project Management

PMG ……. Project Management Guide

GCS …….Ghanaian Construction Sector

ROG ……. Regulations of Ghana

GHACEM …… Ghana Cement

ABSTRACT

As the project unfolds and the design is realized, information in the form of drawings, specifications and construction methods must be communicated effectively from one professional to another. The aim of this study was to examine effective communication as perceived by construction professionals in project delivery in the Western Region of Ghana. The specific objectives of the study included; to identify factors necessary for enhancing effective communication in construction project delivery in the Western Region in Ghana; to identify constraints to effective communication in construction project delivery in the Western Region of Ghana and to make recommendations for enhancing effective communication in construction projects in the Western Region of Ghana. A cross-sectional descriptive survey with a questionnaire was used to provide data for the research.The sample size for the study was seventy-six (76). The findings of the study revealed that the key factors that enhance effective communication established included;being truly authentic in one's actions and words, listening clearly and correctly to the information relayed on site andeffective planning for improved project performance. Strategies for ensuring effective communication on site included;holding effective site meetings, understanding the real issues within the project team and effective management of conflicts on site.Keylimitations to effective communication in construction projects delivery in the region included:lack of or inadequate training in communication skills, poor listening to project instructions and ordersandinadequate motivation for construction artisans among others.In-service training workshops should be organized for construction professionals in the region,provision of logistics by the Ministry of Local Government among other recommendations stated in the study.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Decades of population growth, migration, and settlement have changed dramatically the face of Sub-Saharan Africa region. By the year 2025, the population is expected to be more than 1 billion people. This rate of rapid population growth with its corresponding industrialization has led to an expansion of infrastructure in the built environment (Ababio, 2014). Naturally this expansion leads to an increase in infrastructural project contributing immensely to the national economy. The construction industry in Ghana, as in other parts of the world, is huge and a crucial segment in economic development. No matter what one does, there is construction as it cuts across all sectors and being among the top drivers of the Ghanaian economy (Ghana National Commission for UNESCO).

Construction is defined as the physical act of carrying out design created by Engineers and Architects (Tipili et al., 2014). The construction industry plays a crucial role in socioeconomic development of any nation. According to Mogbo(2004), it is being used to control the economies of nations. Ahadzie(2009) acknowledged that construction contributes to the national socioeconomic development by providing significant employment opportunities. Beyond that, the industry provides the infrastructure and facilities required for other sectors of the economy to flourish such as; schools for education and trainin l shops for commercial and

business activities, housing for basic human needs, hospitals for health care, buildings for the national communications network and so on. In recent years, it has been identified that some of the fundamental components contributing to the construction industry's poor performance are its ineffective communication practices, its organizational fragmentation and lack of integration between design and production processes. (Dainty et al., 2006).

Construction is the key sector for every economy. Globally, the construction industry constitutes more than half of the national capital of most countries and represents as much as 10% of GNP. This sector accounts for around one-tenth of the world's GDP, and creates at least 7% of its jobs (Halls, 2003). It employed about 2.3 % of the economically active population in 2002 (Amankwa, 2003). The construction industry in Ghana contributed an average of 8.5% of the Gross Domestic Product (Ghana Statistical Service, 2007). In addition to that, the industry's contribution to GDP showed an increasing trend from 8.5 to 11.8 from 2010 to 2013. As Ghana aspires to become a middle income nation by 2020, and with the recent discovery of oil in commercial quantities, the role of the construction industry is absolutely important. It is known that construction contributes to the national socio-economic development by providing significant employment opportunities at non-skilled and skilled levels.

The key stakeholders in the construction industry in Ghana are clients, professional consultants and contractors. In Ghana four main clients are distinguishable: the Government (being the major client), Real Estate Developers, Investors and Owner occupiers. Professional consultants who are regularly engaged by the government and other clients are Architects, Quantity Surveyors (QS), Geodetic Engineers (GE),

Structural Engineers (St.E), Electrical Engineers (EE), Civil Engineers (CE) and Services Engineers (SE).with Geodetic and CivilEngineers often involved in roads construction. (Wusuah, 2012).

Construction industry covers a wide range of projects and every construction project is unique in nature as it involves myriads of interrelated activities, tasks and work packages (Chris 2009).In project environment, project manager's primary responsibility is to achieve project objectives. Merna and Al-Thani (2008) define a project as a unique investment of resources to achieve specific objectives, such as the production of goods or services, in order to make a profit or to provide a service for a community. The project manager, as a leader needs to communicate with the team members, motivate, persuade and encourage the team to execute the project successfully and to get it right (Zulch 2012). According to Ofori(2013) the critical factors that contribute to the success of a project include top management support, effective communication, clarity of project purpose and goals, and stakeholder involvement. The construction industry is wholly reliant upon effective communication between individuals, teams and organizations (Dainty et al. 2006). Alshawi and Ingirige (2002) identified that communication often takes about 75% to 90% of a project manager's time in the construction industry. In view of this, leaders need a different attitude regarding the classic management functions of control, coordination, communication, and the setting of performance standards (Kuala 2014). Communication is important for all business activities. It makes organizing possible, and organizing is part of the communication process.

Effective communication in and between organization supplies a positive contribution to construction projects, that increase production and improve motivation of team

members (Emmitt & Gorse 2003: 11). It plays a vital role in all stages of construction such as design production, organization and management (Mehra 2009).Scope of work and details of construction are communicated by means of drawings, contract documents, addenda and specifications (Mehra 2009).Thus communication is very essential in project execution.Aishawi et al. (1999) some professionals may not be able to understand some aspects of a project if little information is available thus leading into project failure. Therefore, clearly establishing and managing the structures of communication on project must always be on the agenda of team leaders and management before the commencement of every project (Tipili et al. 2014). Moreover, ineffective communication system leads to de-motivated workforce, design errors, slowdown in the entire job and failure in production (Tipili et al. 2014). All of the above-mentioned studies reflect the key role of communications in ensuring effective project delivery in the construction industry. Thus the need for construction professionals to be well-informed and communicate throughout all the stages of construction is inevitable as this strongly affect the performance of professionals within the construction industry.

Efficiency in building depends upon the quality of relationship between the clients, professionals, contractors and sub-contractors. In other words, the problems in construction are a communication problem (Emmerson 1962 as cited in Emmitt & Gorse 2003). All the various stages of construction rely on professionals transferring appropriate and relevant information to develop a buildable design that meets the client's requirements (Higgin and Jessop 1965 as cited in Emmitt & Gorse 2003). Numerous studies have highlighted the importance of effective communications for project success (Biggs 1997 and Tam 1999).It was concluded in a study that the top 30 potential problems contributing to poor project performance could be classified

under five categories, out of which communication problems are listed as the third category and all five categories involve communications to some extent (Thomas et al. 1998). For example, time delays and increased cost in construction projects can be traced back to poor coordination caused by inadequate, insufficient, inappropriate, inaccurate, inconsistent, late information or a combination of them all (Tam 1999). According to BRE (2011), most defects in the construction industry is as the result of poor communication. For example, a poorly detailed drawing, operatives being given incorrect instructions or technical information not being available. Many construction projects suffer from delay which may be largely due to cash flow problems, insufficient communication, mistrust and arbitration (Olaniran 2015).

In a study of evaluating the effects of communication in construction project delivery in Nigeria,Tipili et al. (2014), researched that poor communication had resulted in project delays, project cost overrun and project abandonment. He further identified hindrances to effective communication on construction projects. These include: unclear communication objectives, unclear channel of communication, ineffective reporting system, ineffective communication between the parties on the project, stereotyping and language difficulties. In another study on the needs for standardization of document towards an efficient communication in the construction industry in Malaysia, Vasanthi et al. (2011), recognized that standardization and standard communication instruments play an important role in effective communication. In it was revealed that good document standardization and the usage of communication instruments help facilitate a better understanding among stakeholders in the industry. Moreover, the stakeholders are more likely to depend on each other through the communication process.

In another study by Aulich (2013), the role of effective communication in the construction industry: A guide for Education and Health Clients in Australia, demonstrated the need for a small client based group that can grow in line with any need, to provide the mechanism which expresses the client's anticipated needs and is the structure through which the client can express a clear idea of what is required. He added that it can provide a consistent overseer of the project and allows decision to be made quickly, informed and consistent so that work progress does not falter. In a study on the role of communication in construction projects in Nigeria, Olaniran (2015) established that lack of proper communication between the consultants and contractors has a significant contribution on project success in Nigeria. Therefore the purpose of this research is to examine effectivecommunication as perceived by construction professionals in project delivery in the construction industry in western region of Ghana.

1.2 Statement of the Problem

One of the most serious barriers that any company faces is to resolve the problem of information flow – vertical and lateral which is often grandly termed communication.Efficiency in building depends upon the quality of relationship between the clients, professionals, contractors and sub-contractors. Consequently, the role of communication in construction projects cannot be over emphasized as various professionals in the construction industry must communicate effectively in any given project for it to be successful. In order to fully appreciate the problem of communication in the Ghanaian Construction Industry, the following questions have been articulated for research: What are the factors necessary for enhancing effective

communication in construction project delivery in western region of Ghana?What are the constraints to effective communication in construction project delivery in western region of Ghana? Andhow can communication in project delivery be enhanced for improved project performance in western region of Ghana? As the project unfolds and the design is realized, information in the form of drawings, specifications and construction methods must be communicated from one expert to another Foley (2005); and communication poorly managed will lead to de-motivated workforce, design errors, slowdown in the entire job and failure in production.According to BRE (2011), most defects in the construction industry is as the result of poor communication. For example, a poorly detailed drawing, operatives being given incorrect instructions or technical information not being available. Therefore, using an appropriate communication technique to resolve construction and design problems is essential.

In relation to effective communication in project delivery, Tipili et al. (2014), realized that poor communication had resulted in project delays, project cost overrun and project abandonment. Tipili et al. further identified hindrances to effective communication on construction projects. These include: unclear communication objectives, unclear channel of communication, ineffective reporting system, ineffective communication between the parties on the project, stereotyping and language difficulties. Olaniran(2015) established that lack of proper communication between the consultants and contractors had a significant negative effect on project success. He further indicated that poor and distorted information can have an adverse consequence on the level of work done on site which would slow down project completion and lead to extra cost. In spite of the foregoing, not much is encountered

in literature regarding effective communication in project delivery in the construction industry in western region of Ghana. This void in literature needs to be filled in order to increase our understanding with regards to effective communication in project delivery as perceived by construction professionals in the construction industry in Western Region of Ghana.

1.3 Aim and Objectives of the Study

The aim of the study is to examine effective communication as perceived by construction professionals in project delivery in the Western Region of Ghana. Therefore, the following specific objectives will guide the study:

- to identify factors necessary for enhancing effective communication in construction project delivery in theWestern Region of Ghana;
- to identify constraints to effective communication in construction project delivery in theWestern Region of Ghana; and
- tomake recommendations for enhancing effective communication in construction projects in the Western Region of Ghana.

1.4 Research Questions:

- What are the factors necessary for enhancing effective communication in construction project delivery in theWestern Region of Ghana?
- What are the constraints to effective communication in construction project delivery in the Western Region of Ghana?
- How can communication in project delivery be enhanced for improved project performance in the Western Region of Ghana?

1.5Significance of the Study

The construction industry in Ghana is extremely significant to be ignored, considering its sizeable contribution to Ghana's GDP. Hence, it is a justifiable endeavour to research and add to knowledge in every aspect of the industry. Already, substantial amount of work done elsewhere reveals many of the problems construction projects have developed at the interfaces between key professionals. While Some professionals will be able to visualize aspects of the building with a high degree of accuracy, possibly with little information, other aspects of the building will hold little relevance unless the information is conveyed in a way which allows them to develop an understanding hence, communication is extremely relevant in the delivery of projects in the construction industry. For instance, a delay in recognizing that information is missing, incorrect or conflicting will either cause a delay, adjustment of resources and / or require alteration to incorrectly constructed components. It is essential that communication is effective and that information is understood and processed correctly. However, very little is known about effective communication in project delivery, thefactors necessary for enhancing effective communication in construction project delivery and the constraints to effective communication in construction projectsin western region of Ghana. The findings of this research therefore will make these communication challenges available for future project implementation in the region.

A study of effective communication in project delivery in the construction industry in western region of Ghana is important for several reasons. First, examining effective communication in project delivery can allow professionals in the construction

industry develop appropriate strategy to curb ineffective communication practices which do not help enhance the activities of the construction industry. Second, the beneficiaries in the society cannot incur additional cost on project delivery for lack of information flow at construction sites. Thus some of the effects of communication such as inexperience interpretation of working drawings, poor and distorted information, unclear channels of information, and late dissemination of instruction can be minimized if not completely eradicated from the industry. Third, the study can also provide policy makers with ideas about effectiveness relevant to communication in project delivery and may form the basis for the establishment of a competency-based communication in the future. Finally, for researchers in education, the study can stimulate research in effective communication in project delivery by providing areas of further research.

1.6 Limitations of the Study

The study was carried out in the western region of Ghana, with a population according to the population and housing census 2010 of 559,548 people, which do not represent the whole country. Thus further research on other regions in the country should be conducted to make generalization possible.It took more than three months before responses were received from the respondents. Some of the problems that occurred during the administration and retrieval of questionnaires were that some questions were left unanswered and some accepted the questionnaires but failed to respond to them while others lost them.

1.7 Organization of the Study

The report comprised of five chapters. Chapter one deals with the introductory aspect of the student's dissertation report. It presents the background and statement of the problem,aim and objectives, research questions, significance, limitation and organization of the study.Chapter two focuses on the review of related literature while the methodology for the chapter three describes the research design, population and sampling procedures, data collection procedures and methods of data analysis. In chapter four, results are presented, explained and discussed in the study. Finally, the chapter five of the reportentails summary of findings, conclusions, recommendations and suggestions for further research.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter seeks to review literature on topics relevant to the study. It entails the following section headings; an introduction, and stakeholdersin the construction industry.This is followed by the concept of communication in project delivery, definition of project and project management and project delivery processes.Effective communication in construction and its importance, the human and organisation aspects of communication in construction are allrecognized in this review. Moreover, factors essential for effective communication in constructionand limitations to effective communication in construction are found in the review. Models of communication and the project delivery processhave been properly documented.Conceptually, the above are headlines of the various sections chronologically documented in this review chapter.

2.2 The Construction Industry

Construction is defined as the physical act of carrying out design created by Engineers and Architects (Tipili et al., 2014).Typically, a construction industry of any country could be seen as having two main sets of features which make it unique from all others. The first one is the peculiarity of the construction industry which distinguishes it from other industries. The second being the peculiarities of each country's construction industry as defined by its socio-economic level, technological level, culture, institutional and legal frameworks.Construction is the key sector for every

economy. Globally, the construction industry constitutes more than half of the national capital of most countries and represents as much as 10% of GNP.The construction industry in Ghana contributed an average of 8.5% of the Gross Domestic Product (Ghana Statistical Service 2007). In addition to that, the industry's contribution to GDP showed an increasing trend from 8.5 to 11.8 from 2010 to 2013.Reviewing the works of Crown Agents (1998), Westring (1997), and Anvuur and Kumaraswamy (2006), the performance of the construction industry in Ghana is poor and saddled with several problems ranging from contract administration, through complex and lengthy payment procedure, delayed payments to that of project execution.The unskilled labours of the contractors form the largest group and the lack of guaranteed income, despite their commitment to work, shows an unpleasant side of the industry that is seen as one of the largest employer of labour. Due to the representation of construction workers in the working population of the country, such situation reflects on the socio-economic life of ordinary Ghanaians. The reverse is also true. This could be likened to a period of freeze on government projects. To some extent, in Ghana, there are practical reasons to subscribe to the argument that construction industry is a regulator of the economy Ashworth (2004). The stakeholders in the construction industry in Ghana are clients, consultants, contractors, regulatory institution, subcontractors, suppliers etc. which are extensively elaborated below.

2.2.1 Clients

In Ghana four main clients are distinguishable: the Government (being the major client), Real Estate Developers, Investors and Owner occupiers. The government as a client is represented by the Ministry of Road and Transport (for road works) and the

Ministry of Water Resources, Works and Housing in giving out projects. The Real Estate developers are also the other group of clients who undertake large investment in building.Usually, these take loans and undertake speculative buildings for sale. Their performance is usually influenced by the lending situations in the country. An interview with the head of the Ghana Real Estate Developers Association (GREDA) in 2007 revealed that they expect extra assistance from the government to support them in their quest to contribute to solving the housing problem in the country. In particular, they expected the government to have involved their association in its on-going affordable housing programme. Investors are usually financial companies who decide to invest excess capital in building construction. The Social Security and National Insurance Trust (SSNIT) is one of the leading investor in housing in Ghana. Owner occupiers are individuals who decide to build their houses to live in.Some of these owner occupiers also rent out extra rooms in their houses for income. Therefore, some of these owner occupiers are able to progress to the level of being private investors. The owner occupiers, thus, constitute the largest number of clients in Ghana –almost every Ghanaian is a potential owner occupier.It has been the tradition of Ghanaians to buy lands from the chiefs (the chiefs are the custodians and owners of land in Ghana, not the government) and hire skilled and unskilled workers to build their houses for them. This tradition has been entrenched mostly because successive governments failed to meet the housing expectations of individuals.

Between the year 2000 and 2008 the government of Ghana identified construction as a priority sector for foreign and private investment as part of its vision to promote the private sector as the engine of growth. According to World Bank (2003) as provided by Anvuur and Kumaraswamy (2006), an approximate annual value of public

procurement for goods, works and consultant services amount to US$600 million. This represent about 10% of the country's GDP.The government of Ghana, as in many countries, is the major developer and therefore dominates the economic viability of the construction industry. Billions of cedis of the taxpayers' money is committed to construction projects annually through budgetary allocation, donor funded projects and Foreign Direct Investment.

2.2.2 Consultants

Consultants who are regularly engaged by the government and other clients are Architects, Quantity Surveyors (QS), Geodetic Engineers (GE), Structural Engineers (St.E), Electrical Engineers (EE) and Services Engineers (SE). Geodetic Engineers are often involved in roads construction. All these professionals are regulated by their professional institution, namely, Ghana Institute of Architects (GhIE), Ghana Institute of Surveyors (GhIS) for the QS and GE and (GhIE) Ghana Institute of Engineers for the rest respectively.

2.2.3 Contractors

Contractors in Ghana are grouped into eight categories (A, B, C, S, D, K, E and G) according to the type of works they undertake. These are:

(i) Roads, Airports, and Related Structures (A)

(ii) Bridges, Culverts and other Structures (B)

(iii) Labour based road works (C)

(iv) Steel bridges and structures: construction rehabilitation and maintenance (S)

(v) General building works (D)

(vi) General civil works (K)

(vii) Electrical works (E)

(viii) Plumbing works (G).

In each category, they are grouped into 4, 3, 2 and 1 financial classes in increasing order (Vulink2004). In addition, Dansoh (2005) notes a combined category of AB for road contractors. According to Dansoh (2005) Class 4 contractors can tender for contracts up to $75,000; class 3 up to $200,000; class 2 up to $500,000. Class 1 takes contracts of all amounts. The research focused on projects undertaken by category D and K contractors, together with categories E and G being usually engaged as sub-contractors to this main contractor for general building works. Categories E and G contractors act as main contractors when the work is of a specialised nature. The industry is dominated by large number of small and medium-sized firms, that is, classes 3 and 4, especially in the categories D groups, E and G.This is mainly because such firms are able to register with as little equipment as possible. Mostly, they are sole proprietors, (few cases of partnerships) and are characterised by high attrition rate. This is because they are highly influenced by the boom and slum nature of the industry in Ghana. They are the least organised and because they lack the resources to employ and retain very skilled labour, their performance is usually below expectation and they have often been accused of producing shoddy works. This is because there are often more jobs within their financial class than those above their limits and because they form the largest group, their performance impacts greatly on the performance of the industry. Due to this, the classification by the Ministry has been criticised as being too general and obsolete with the registration criteria, list of contractors and monetary thresholds not regularly updated (Eyiah and Cook 2003; World Bank 1996). The two upper classes (D1 and D2) are more organised and hence more stable, taking on both bigger and smaller works. However, these firms

(especially the D2 firms) do not always employ the very qualified workers. The Ghanaian-based foreign contractors are able to do this and hence performed better. Vulink (2004) notes that because of the poor performance of Ghanaian local contractors most of the nation's major projects are usually awarded to foreign contractors. Assibey-Mensah (2008) attributes this to the "non-businesslike culture" with which indigenous firms operate in Ghana.

2.2.4 Subcontractors

The building of any structure requires a number of laborers, artisans and professionals to complete the specific tasks in which they specialize. The general contractor in Ghana estimates the total cost for building a project with the support of a quantity surveyor and places a bid or estimate on the entire project. In turn, construction subcontractors offer bids for their services and are hired by the general contractor based on those bids and their professional reputation. A construction subcontractor may supervise a crew of his or her own or work alone, depending on the scale of the project. In Ghana, plumbers, painters, electricians and other specialists are considered construction subcontractors. Due to the range of different trades, there is no single educational track leading to a career as a construction subcontractor, but licensing may be required. The general contractor has a written agreement with the employer to perform a job. The general contractor oversees the project and delegates work to the subcontractor as indicated earlier on. Subcontractors may also have direct contracts with other subcontractors to perform a portion of the work under contract.Subcontractor rights are governed by the contract. The general contractor and employer are bound by the terms of the agreement they sign. The subcontractor takes responsibility for seeing that his portion of the contract is completed according to the

agreement. If a subcontractor feels that the contractor or employer has violated the contract, he is entitled to sue for damages. The subcontractor can file a mechanic's lien against the property for unpaid wages and expenses. He also has the right to work in a safe and healthy environment. Subcontractors have to comply with the terms of the contract as well. They are held accountable for their work by the contractor and the client.

2.2.5 Regulatory institutions

In construction, the authority having jurisdiction (AHJ) is the governmental agency or sub-agency that regulates the construction process. In most cases, this is the municipality where the building is located. In Ghana, before the foundation can be dug, contractors are typically required to verify and have existing utility lines marked, either by the utilities themselves or through a company specializing in such services. This lessens the likelihood of damage to the existing electrical, water, sewage, phone, and cable facilities, which could cause outages and potentially hazardous situations. During the construction of a building, the municipal building inspector inspects the building periodically to ensure that the construction adheres to the approved plans and the local building code. Once construction is complete and a final inspection has been passed, an occupancypermit may be issued.Ghana has planning and building regulations both of which are based on the UK and the British systems.With reference to legal and regulatory documents such as the Building Regulations (ROG1996), it suggests that the Ghanaian built environment sector is modeled on the UK regulatory system.Environmentalregulations have been developed and enforcement is largely in the hands of the Environmental Protection Agency (EPA) through Environmental Impact Assessments (EIAs). Also, development control is carried out by local

government officials in Metropolitan and District assemblies. There are guidelines (GCS, 2003) covering the submission and approval of plans however, there are numerous examples of informalDevelopment that infringe both planning and building regulations. An operating building must remain in compliance with the fire code. The fire code is enforced by the local fire department or a municipal code enforcement office.Changes made to a building that affect safety, including its use, expansion, structural integrity, and fire protection items, usually require approval of the AHJ for review concerning the building code.

2.2.6 Suppliers

Supply can be defined as the total amount of a product (good or service) available for purchase at any specified price. It can also be defined as the amount of something that is provided or available to be used. It is determined by: Price: producers will try to obtain the highest possible price whereas the buyers will try to pay the lowest possible price both settling at the equilibrium price where supply equalsdemand. Cost of inputs: the lower the input price the higher the profit at a price level and more products will be offered at that price. Price of other goods: lower prices of competing goods will reduce the price and the supplier may switch to more profitableproducts thus reducing the supply. Suppliers are persons or companies that supplies goods. Antis Ltd, a leading supplier of building construction materials in Ghana was established in the year 1997 as Antis Enterprise and became a limited liability company in 1999 under a dynamic management team to render direct services to the general public. As a leader of the industry, it has supplied to large, small and medium scale enterprises, corporations and individuals and welcomes any business of any size.

It has a core business of retailing building products such as cement, iron rods, binding wires, nails, shovels, head pans, quarry dust blocks and other building materials.

Itema Limited, a customer focused company in Ghana, values competence and excellence, commitment and confidence, readiness in service delivery, high performance and integrity, quality service and availability, ready access to information, room for carrier development, utilizing ICT to enhance performance, community and environmental friendliness, fair, firm and faithfulness to all concerns. To focus, build and maintain a high sense of professionalism in service delivery of premium quality building materials, capitalizing on integrity by satisfying the clients and offer them the best retail and wholesale package, delivering on fairness and promptness,Itema knows the importance of being efficient and productive at all times. It does not just supply based on your enquiries, but also makes sure they would do the expected. Dealers in cements (GHACEM & Diamond Cements – Ghana), iron rods (steel, re-enforced bars – all types and sizes), nails, binding wires (all sizes), shovels, head pans, quarry dust blocks and building materials of all kinds. It supplies to all parts of Ghana and the West African sub region.

2.3 Concept of Communication in Project Delivery

2.3.1 Concept of communication

Cherry (1978) defined communication as the process of interaction between individuals in which meaning is created and shared. Dainty et.al (2006) have recognized that the term "communication is in itself a multifarious and complex term, which can mean different things in different context and situations". This is certainly the case within the construction industry, where each project demands communication between wide varieties of participants. There seems little doubt that communication plays a vital role in the effectiveness of organizations. Although managers in different industries undertake diverse tasks and activities, it has been recognized that they spend most of their time involved in communication. Drucker (1985) emphasizes the importance of communication for managers, and points out that communication ability is essential for success. In project management, the importance of communication is emphasized by Sievert (1986), who says that a high percentage of the problems in working relationships may be attributed to poor communication. Some of the characteristics of communication according to Mehra (2009) are as follows;

- Communication is a process – it is continuous, on-going, and dynamic
- Communication requires a sender and a receiver
- Communication has information (message/content)
- Communication requires a medium (symbols, signs, behaviour, speech, writing, or signals)
- Communication requires shared understanding – all parties understanding the same thing the same way
- Communication is transactional and irreversible.

2.3.2 Definition of project

The shortest and simplest definition, according to Turner (in Knipeet al. 2002), is that a project is "something with a specific beginning and an end".A project, as defined by Wysocki, Beck and Crane (2000), is a sequence of unique, complex, and connected activities having one goal or purpose that must be completed by a specific time, within budget, and according to specification. This can be contrasted from a routine set of activities or daily operations which are intended to be continuous process without a planned end. Projects are also characterized by general attributes such as the purpose, life cycle, uniqueness, interdependencies and conflict (Meredith & Mantel Jr., 2000). Merna and Al-Thani (2008) also define a project as a unique investment of resources to achieve specific objectives, such as the production of goods or services, in order to make a profit or to provide a service for a community. "A project is any planned, temporary endeavour undertaken to create a unique product, service or other complete and definite outcome within a limited time scale and budget" (Steyn 2008).

2.3.3 Definition of project management

The management of construction projects requires knowledge of modern management as well as an understanding of the design and construction process. Construction projects have a specific set of objectives and constraints such as a required time frame for completion.Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, and quality and participation satisfaction.The APM Body of Knowledge (2006) defines project management as the process by which projects are defined, planned, monitored, controlled and delivered in such a manner that the agreed benefits are realized.

"Project management is the skills, tools and management processes required to undertake a project successfully"(PMG 2003).According to the PM guidebook, Project Management comprises:

- A set of skills. Specialist knowledge, skills and experience are required to reduce the level of risk within a project and thereby enhance its likelihood of success.
- A suite of skills. Various types of tools are used by project managers to improve the projects chances of success. Examples include document templates, registers, planning software, modeling software, audit checklist and review forms.

2.3.4 Project delivery process

A project process is defined as the key sequential steps followed in project executions, and the level of detail is dependent of the "development methodology used" (Griffins Enterprise). Smith (1999) suggests processes involved in undertaking a project range between six to twelve steps depending on the type of project. The Design-Bid-Build (DBB) method is most common. The owner first contracts with a Design Professional who provides the design. The basis of this delivery method is that design is completed prior to bidding/pricing and construction. Competitive bidding is a method of determining the least cost for accomplishing the scope of work defined by the bid documents. Once the design is completed, the owner contracts with the Builder who provides the most responsive competitive bid for construction.The Design-Build (DB) method, a single entity provides both design and construction of the project. The Design-Builder is obligated to meet the design criteria and performance requirements specified in the bidding documents. On a design/build project the contractor and

designer work together to serve the owner on cost, schedule and scope of work. Ability for fast track/phased construction. Three types of design-build entities:

- Contractor Led (subcontract design or joint venture)
- Designer Led (subcontract construction or joint venture)
- A single firm with both capabilities internally

The delivering of the project involves eight processes as shown in Figure 1 below. Thus, both Design Build Bid (DBB) and Design Build (DB) systems constitute these processes, but the difference in level of involvement of the project owners in the various stages, distribution of tasks and project management responsibility.

Pre-feasibility » Feasibility » Design » Contract / Procurement » Implementation » Commissioning » Handover » Operation

Figure 1 Stages of a Construction Project Delivery Process

2.4 Effective Communication in Construction

2.4.1 Importance of effective communication in construction

Communication is the glue that holds a project team together. Communication is not just talking. It is also listening. Without clear, timely, unambiguous communication, even a small team working together will have major problems. In the case of a virtual team, poor communication will render an already challenging situation nearly impossible to control. Effective communication is vital to the successful completion of any construction project. Good communication can improve teamwork and lead to better project collaboration. Poor communication can result in misunderstandings, delays and problems down the road. The importance of effective communication to individuals, teams and organisations cannot be overstated. Virtually every text on how to manage people will contain important principles of how to communicate effectively with the workforce. The importance of communication to organisations is succinctly summarized (Armstrong 2001 as cited in Dainty et al. 2006):

- Achieving coordinated results- organisations function by means of the collective actions of people, but independent actions lead to outcomes incongruent with organisational objectives. Coordinated outcomes therefore demand effective communications.
- Managing change- most organsations are subject to continuous change. This, in turn, affects their employees. Acceptance of and willingness to embrace change is likely only if the reasons for this change are well communicated.
- Motivating employees- the degree to which an individual is motivated to work effectively for their organisation is dependent upon the responsibility they have and the scope for achievement afforded by their role. Feelings in this

regard will depend upon the quality of communications from senior managers within their organisation.

- Understanding the needs of the workforce- for organisations to be able to respond effectively to the needs of their employees, it is vital that they develop an efficient channel of communication. This two-way channel must allow for feedback from the workforce on organisational policy in a way that encourages an open and honest dialogue between employees at all levels and the top-level managers of the organisation.

2.4.1.1 The human aspect of communication in construction

The construction project environment presents a particularly problematic arena within which to apply communication practices proven to be effective in other sectors (Dainty et al. 2006). Everyone involved in construction plays a part in a multifaceted communication system. Seeing the project environment as an interconnected system of actors is appropriate because every such venture, no matter how small or well defined can be successful completed without interactions and transactions between people and organisations. Construction is not peculiar in its reliance upon effective communication. Indeed, without the ability to communicate, it is possible that contemporary organisations would cease to exist as we understand them (Katz and Kahn 1978as cited in Dainty et al. 2006). Construction does, however, present a particularly complex environment within which to explore communication phenomena. Because it is project-based, its groups and systems are temporary in nature and relationships and interactions continually change to reflect the dynamic nature of the workplace. Every project has unique characteristics and involves a number of actors, all of whom have a specific and finite involvement with the

endeavour. Overcoming the complex and temporal constraints that projects place on their participants is fundamental to their successful development (Goczol and Scoubeau 2003as cited in Dainty et al. 2006).

2.4.1.2 The organizational aspect of communication in construction

Communication is often treated as a variable determining organisational performance, conceptually related to the structure, culture, leadership and rewards of an organization (Church 1996 as cited in Dainty et al. 2006). Such a definition belies the central importance of communication as an enabler of other organisational activity. Indeed, given its influence over the efficacy of the construction industry's processes and practices, the lack of attention to the organisational aspects of communication within many construction management texts is somewhat surprising. Although information technology solutions can help to relay information rapidly and effectively, understanding of the social, structural and cultural constraints of the organization on the communication process is arguably more important.

2.5 Factors Essential for Effective Communication in Construction

The extentof communications effectiveness is largely dependent on two distinct groups of conditions or factors.The first group consists primarily of external factors, such as the nature of the communication, the method of communication, the target audience, and the venue where the communication takes place. The second group consists of factors intrinsic to the communicator. Depending on the nature of the communication, the more important of these will likely include the proficiency of the communicator at listening with a clear and open mind, their ability to accurately interpret what they are hearing, impartially comparing and evaluating the two

perspectives, and the communicators' skill at speaking.Listening, as opposed to merely hearing, is crucially important to effective communication between two or more individuals. Effective listening sets the foundation for the rest of the communication process that follows(Chatsworth Consulting Group, 2001-2014). Not listening clearly and correctly is a sure recipe for miscommunication and a failed event.Correctly interpreting the feedback, either direct or indirect, received from the communication process is likely the second most important factor in ensuring an effective communication.Misunderstanding or incorrectly interpreting the feedback is likely to result in interesting and unexpected results.Truly authentic in your actions and words,the communicator must impartially evaluate the feedback and compare it to his or her perspective on the subject or information being communicated, or the techniques or processes being used in a presentation(Chatsworth Consulting Group, 2001-2014). It is important to take time to plan and prepare for important communications. The communicator must be prepared to alter their game plan if the feedback suggests that a change may be necessary or beneficial.When a message has too much information, or when it is conveyed in a way that the receiver cannot understand, then that message is ineffective, according to the online employment resource Mind Tools. Communication needs to be condensed down to essential facts and then put into a form that the receiver can understand in order for it to be effective. Once the message is received and understood, then a detailed discussion regarding the topic can begin. People are sent a variety of messages all day long. In order to help your message be understood you need to learn how to properly format it and present it.

Effective communication is done through the right mediums. If it is a short and quick message, then a written medium such as a memo or email would be sufficient. Topics that require longer and more detailed discussion should be done in person or over the phone. Choosing the wrong medium can cause problems with message retention. Discussing the details of a contract in person without using a written back-up means that the information may get lost or forgotten. Selecting the right communication medium has an influence on the effectiveness of a communication.A communication system is only as effective as its ability to deliver the message, according to the educational resource Management Study Guide. The structure of an organization has a profound effect on the effectiveness of organizational communication. By creating clear communication channels that are understood and upheld by the entire organization, you can significantly increase the effectiveness of your company's communication.According to Entrepreneur.com, in order for a message to be effective it needs to be complete. While it is important to keep your message concise, you also need to be certain that all pertinent information is included each time you communicate. Prepare to have a discussion with someone by studying the topic at hand. This will allow you to be able to present all of the information needed to get a resolution.

2.5.1 Methods of communication in construction

There are various ways and methods of communicating information in the construction industry. Although a vast majority of information is exchanged verbally and delegated, most data is exchanged in written format either as hard copy or electronically. Even if information is exchanged verbally such as through project meetings and instructions, this information is well documented and stored for future

reference. Scope of work and details of construction are communicated by means of drawings, contract documents, addenda and specifications (Maslej 2006). Contracts are commonly issued when one entity passes down work to another: for example, when an owner hires a consultant or designer they form a contractual relationship by means of signed contract. Same is true when a consultant, on behalf of the owner, hires a general contractor to execute the work designed by the consultant. The contractor may wish to sub-contract some of his work to subcontractors in which case, again a contractual relationship is formed. Unfortunately, miscommunication is a common occurrence in construction when work is passed down from one entity to another (Maslej 2006). For ease of classification, the forms and methods of communication in the construction industry are outlined below (Mehra 2009);

- Formal Writing – This takes the form of Project Plan, Project charter, Specifications, Reports, Metrics
- Formal Verbal – Presentation and speeches fall under this category
- Informal Writing – Examples of informal written methods of communication include memos, e-mail, notes, etc.
- Informal verbal - Meetings, stakeholders and conversations are categorized under informal verbal method.
- Nonverbal Messages – These are conveyed through our facial expressions as well as our postures and gestures and account for about 55% of what is perceived and understood by others.
- Para-verbal Messages – These include the tone, pitch, and pacing of our voice and account for about 38% of what is perceived and understood by others.

2.5.1.1 The nature of formal and informal communication

Theorists have long recognized that organisations make use of communication methods varying in formality, and that they deploy these different methods for tasks varying in uncertainty. However, matching the informality of the methods with the uncertainty of the task leads to better organisational outcomes. At both the organisational and the small group levels, the coordination of activity is the production-oriented task that has been examined in detail. Coordination is the activity of directing individuals' efforts towards achieving common and explicitly recognized goals (Blau and Scott 1962). As Van de Ven, Delbecq and Koenig (1976) describe it, "coordination means integrating or linking together different parts of an organisation to accomplish a collective set of tasks". Explicit coordination is necessary in part because individuals within an organisation have only partially overlapping goals. Thus, one of the aims of coordination is to insure that the disparate individuals come to share the same goals. But even if these aims were achieved, and their goals were identical, the input-output dependencies among individuals require that their efforts be sequenced and interrelated efficiently.

Informal communication is a loosely defined concept and is often treated as the residual category in organisational theory. According to this perspective, informal communication is that which remains when rules and hierarchies, ways of coordinating activities, are eliminated. More positively, informal communication is the type that is spontaneous, interactive and rich. Coordination by feedback (March and Simon 1958), through organismic communication networks (Tushman and Nadler 1978), or by clan mechanisms (Ouchi 1980) are alternate ways of describing coordination by informal communication. The essence of these informal communication systems is their lack of pre-specification. Information is not pre-

packaged and then shipped intact to a recipient and courses of action are not pre-computed and then executed without modification. Rather, information is often exchanged interactively, through meetings and conversations, and courses of action are worked out in the context of the circumstances into which the actions must fit. Figure 2 illustrates several variables that distinguish formal from informal communication.

At the heart of informal communication is an ad lib nature. Conversations take place at the time, with the participants and about the topics at hand. None of these characteristics - timing, participants and agenda - is scheduled in advance. Moreover, during its course, the communication changes to take into account the participants' current interests and understanding. In this sense, informal communication is truly interactive, with all participants in the communication being able to respond to what they perceive to be the current state of affairs, including the communication up until that point and their perception of the other participants' reactions to it. Through the feedback mechanism, informal communication can be more effective than formal channels, as participants in the conversations elaborate or modify what they have to say in order to deal with someone else's objections or misunderstandings (Kraut, Lewis and Swezey 1982).

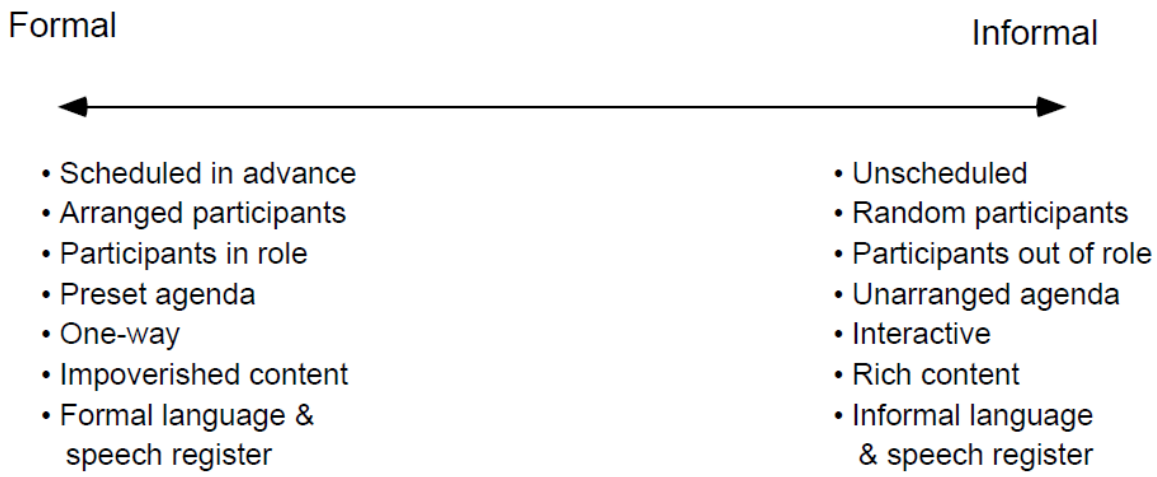


Figure 2 - The Formalities Dimensions of Communication (Source: Kraut Et Al. 1990)

There are both structural and functional characteristics of communication occasions that cause the communication to be more or less formal. Among structural characteristics, the nature of the relationship among the participants and their social roles influences its formality. For example, conversations among strangers or among those with highly unequal status will be more formal than conversations among close friends or among peers. Similarly, conversation among people acting in their official roles will be more formal than conversation among the same people out of role. The frequency of communication also influences its formality. If communication partners have the ability to communicate with each other in multiple times a day, they need not stand on ceremony in their communication and communication moves from a formal to informal style (Brown and Fraser 1979). The nature of the communication setting also influences the formality of communication in it. A discussion in a board room is likely to be more formal than one in the corporate fitness centre.

2.5.2 Communicating design changes in construction

In general, communication can be considered as the process of transmitting information from one point to another. In construction industry, this transmission

process may occur between one individual and another, or between one organization and another. Because of managing construction projects requires collaboration and coordination between the stakeholders and communication between all the members, in order for each project to be delivered successfully, effective communication is vital. (William, 2012). Just as in an organization, during a construction project, achieving coordinated results, managing change, motivating employees and understanding the needs of the workforce depends on effectiveness of the communication.(William, 2012).

2.5.2.1 Construction change order and variation

Project failures occur in the whole spectrum of the project life cycle. It erupts from conception, formation, planning and control until implementation. (William, 2012). It is an open secret that many projects often delay and most of the contract figures at the beginning of project turns up to swell more than double of the original tender figure all in the name of variation.Changes in scope occur as projects progress from design through practical completion and this requires effective communication.(William, 2012). In fact, initial site works can be in motion long before all necessary planning permits have been obtained, designs have been finalized and construction contracts have been negotiated.Design and construction teams follow a number of interdependent processes to communicate changes and variations in project scope. Many of these processes have been standardized throughout the industry as commonly accepted tools for raising, clarifying and resolving issues. Examples include construction change orders, requests for information (RFIs), instructions, and variation requests.(William, 2012).

2.5.2.1.1 Change orders and variation requests

A change order or variation request identifies a possible change in scope from what is documented in the project contract. Each request should succinctly state the extent and implications of the change in design or scope of works. This provides a clear baseline for the ensuing discussions between project participants.(William, 2012).Change orders most often originate with the project manager or design team and are directed to the project owner which is possible with effective communication. Variation requests come from the contractor or subcontractors and go to the design team and from there to the owner. It is common for variation requests to follow change orders as contractor responses to alterations in design or project scope.Change orders can result from design reviews and other project processes involving the owner and/or the design and construction teams. (William, 2012). Changes can also emerge from the RFI process, due to missing information, inability to build as specified, or procurement issues in sourcing a required product.Typically, the lead consultant is responsible for notifying the contractor of any changes. The lead consultant may be an architect, an engineer or a project or construction manager. Change requests are named accordingly – architect's instruction (AI), engineer's instruction (EI), project manager's instruction (PMI), or construction manager's instruction (CMI). (William, 2012).

2.5.2.1.2 Change order and variation workflows

After receiving an instruction regarding a change, the lead consultant collaborates with the other primary disciplines – structural or civil, mechanical, electrical, and plumbing – as well as the quantity surveyor or cost control consultant. Together, this team reviews the potential impact of the request on the project's technical feasibility,

schedule and budget. (William, 2012). The lead consultant then summarizes the findings and recommendations for the owner.After the owner approves the expected project impact, the design team revises the project documentation as needed, and then packages and issues it to the contractor as an instruction by means of effective communication. The contractor reviews the instruction and replies within a contractually specified period of time, including implications for feasibility, timelines and cost.Documents related to these instructions are either attached directly or issued separately under a transmittal that is cross-referenced to the instruction. For example: 'In reference to Engineer's Transmittal No. 1234, we hereby instruct the following changes to your scope of works.' (William, 2012).The instruction to the contractor may state that the scope changes are not expected to have any impact on project timing or cost. In the event of a disagreement, the contractor can respond with a variation request or notice of a time extension or claim. Depending on the contract, the contractor may file a claim for time-related costs through effective communication.(William, 2012).

2.6 Limitations to Effective Communication in Construction

2.6.1 Communication problems in construction

Problems in construction often times emanate from communication problems (Latham, 1994) because of the fragmented, dynamic and project- based nature of the industry and this forms a complex communication environment because many of the players operate in frequently changing sets of relationships which are contractually driven (Dainty et.al, 2006). Jargons, semantics and the potential for misunderstandings – the industry's fragmented structure and culture and its technical nature have led to the creation of both formal and informal languages developing around its processes and people. For example, the vocabulary and glossaries used by project management practitioners can lead to communication problems (Delisle and Oslon, 2004 as cited in Dainty et al 2006). The use of technical language and jargon (written and spoken) are common within many occupations. In construction this may be evident in drawings, specifications method statements and other project documentation (Dainty et al, 2006).

Communication is essential to all business activities; it enables an organization, and is an integral part of the construction process.Beyond the argument, any improvement in communication can advance an organization's operating effectiveness. Good communication within an organization and between organizations contributing to the construction project can improve motivation levels and improve the processes. Conversely, inadequate communication can result in a demotivated workforce and lead to problems in production.Poor co-ordination and communication of design information lead to design problems that cause design errors.Often problems in construction are referred to as communication problems.Given that construction is such a fragmented,

dynamic and disparate sector, the challenges of communicating effectively are greater than in most other production environments.Contractually driven relationships, conflict and lack of mutual respect and trust, all combine to hinder open communication and render the role of the project manager extremely demanding and problematic.Communication is the one aspect of the management of projects that pervades all others. The culture shows a reality of conflicts and lack of mutual respect and trust [Dainty et al 2006].

2.6.2 Barriers to effective communication in construction

Most people would agree that communication between two individuals should be simple. It is important to remember that there are differences between talking and communicating. When you communicate, you are successful in getting your point across to the person you are talking to. When we talk, we tend to erect barriers that hinder our ability to communicate. There are seven of these types of barriers to effective communication and this includes: Physical barriers; Perceptual barriers; Emotional barriers; Cultural barriers; Language barriers; Gender barriers; and, Interpersonal barriers.Most common barriers to effective communication are:

- Physical Barriers: this has to do with poor or outdated equipment used during communications, background noise, poor lighting, temperatures that are too hot or too cold.
- Language: this can seem like an easy one, but even people speaking the same language can have difficulty understanding each other if they are from different generations or from different regions of the same country. Slang, professional jargon and regional colloquialisms can even hurt communicators with the best intentions.

- Physiological Barriers: ill health, poor eyesight or hearing difficulties, pain.
- Problems with Structure Design: companies or institutions can have organization structures that are not clear, which can make communications difficult. Also to blame for faulty communications are bad information systems, and lack of supervision or training of the people involved.
- Lack of Common Experience: it is a great idea to use examples or stories to explain a point that is being discussed. However, if the speaker and the audience cannot relate to these examples because they do not have the same knowledge or have not shared the same experiences then this tool will be ineffective.
- High cost of communication technology (hardware and software) : Technological equipments such as computers, mobile phones etc.
- Lack of or inadequate training in communication skills: Professionals not receiving sufficient training.
- Ambiguity and Abstractions Overuse: leaving things half-said, using too many generalizations, proverbs or sayings, can all lead to communications that are not clear and that can lend themselves to misinterpretations.
- Information Overload: it takes time to process a lot of information and too many details can overwhelm and distract the audience from the important topics.
- Assumptions and Jumping to Conclusions: This can make someone reach a decision about something before listening to all the facts.
- Filtering: A sender's manipulation of information so that it will be seen more favorably by the receiver.

- ❖ Selective Perception: People selectively interpret what they see on the basis of their interests, background, experience, and attitudes.
- ❖ Having a distorted focus: Focusing on the negative aspects of a conversation or a situation is a habit common to many people. Even though we may recognize the positive things, we often give more weight to the negative, allowing one negative comment to overshadow numerous positive ones.
- ❖ Assuming similar interpretations: Not everyone will draw the same conclusions from a given situation or set of information.
- ❖ Lacking clarity: Avoid abstract, overly-formal language, colloquialisms, and jargon, which obscure your message more than they serve to impress people.
- ❖ Lacking Confidence: Lacking confidence can be a major barrier to effective communication. Shyness, difficulty being assertive, or lack of self-worth can hinder your ability to make your needs and opinions known. Also, a lack of awareness of your own rights and opportunities in a given situation can prevent you from expressing your needs openly.

2.6.3 Construction communication management plan

All projects are subject to limitations and constraints as they must be within scope and adhere to budget, scheduling, and resource requirements. Project planning and documentation are no exception to this rule. There may also be legislative, regulatory, technology, or organizational policy requirements which must be followed as part of communications management. These constraints must be clearly understood and communicated to all stakeholders. While communications management is arguably one of the most important aspects of project management, it must be done in an effective manner and within the constraints of the allocated budget, time, and

resources.All project communication activities will occur within the project's approved budget, schedule, and resource allocations. The project manager is responsible for ensuring that communication activities are performed by the project team and without external resources which will result in exceeding the authorized budget. Communication activities will occur in accordance with the frequencies detailed in the Communication Matrix in order to ensure the project adheres to schedule constraints. Any deviation of these timelines may result in excessive costs or schedule delays and must be approved by the project sponsor.Constraints of cost and time; it is an inevitable reality that all project-based working is constrained by time and cost limitations (Turner, 1998 as cited by Dainty et al 2006). This requires that the project manager develops a communication strategy which conveys the required information rapidly and precisely in order to ensure that timely and cost appropriate actions are undertaken throughout the project.

2.7 Models of Communication

The communication models summarized in the Table1 and Figures 3, 4, 5 and 6 below focuses on project environments. Many models dating from the late 1940s are referred to as transmissionmodels since they approach communications as a means of information transfer problem based on some variation of four fundamental elements:

- Sender (or Source) →Message →Channel (or Medium) →Receiver

One of the most popular models was created when Warren Weaver, a distinguished mathematician, applied Claude Shannon's concept of information transmission loss over telephone wires to interpersonal communication. Shannon was a research scientist at Bell Telephone Laboratories trying to achieve maximum telephone line capacity with minimum distortion. Though he had never intended for his

mathematical theory of signal transmission to be used for anything but telephones, the Weaver adaptations were very influential in information theory. Norbert Wiener, a renowned mathematician and founder of cybernetics, added the feedback loop to the Shannon-Weaver Model. The various models have been summarized in the Table 1 below.

Table 1 – The Summary of the Various Models and Summarized Interpretations

Model	Comment
Lasswell Formula 1948	Useful but too simple It assumes the communicator wishes to influence receiver and therefore sees communication as a persuasive process. It assumes that message always have effects. It exaggerates the effects of mass communication. It omits feedback. On the other hand, it was devised in an era of political propaganda. It remains a useful introductory model Braddock (1958) modified it to include circumstances, purpose and effect.
Shannon and Weaver (1949)	Highly influential and sometimes describe as 'the most important' model (Johnson and Klare) Communication is presented as a linear, one-way process Osgood and Schramm developed it into a more circular model. Shannon and Weaver made a distinction between source and transmitter, and receiver and destination- i.e. there are two functions at the transmitting end and two at the receiving end. Criticized for suggesting a definite start and finish to the communication process which in fact is often endless.

Gerbner (1956)	Special feature of this model is that it being given different shapes depending on the situation it describes. There is a verbal as well as visual formula like (Lasswell): someone perceives an event and react in a situation through some means to make available materials in some form and context conveying content with some consequence The flexible nature of the model makes it useful. It also allows an emphasis on perception. It could explain, for example, the perceptual problems of a witness in court and, in the media, a model which helps us to explore the connection between the reality and the stories given in the news.
Westley and MacLean (1957)	Another influential model The authors were keen to create a model which showed the complexities of mass communication- hence the emphasis on having to interpret a mass of Xs (events which are communicated in the media) It oversimplifies the relationship between participants by not showing power relations between them. It makes the media process seem more integrated than it may actually be It doesn't show the way the different media may have different interest on the state (e.g. difference between a state broadcaster and private one)

(Adopted from Mehra 2009)

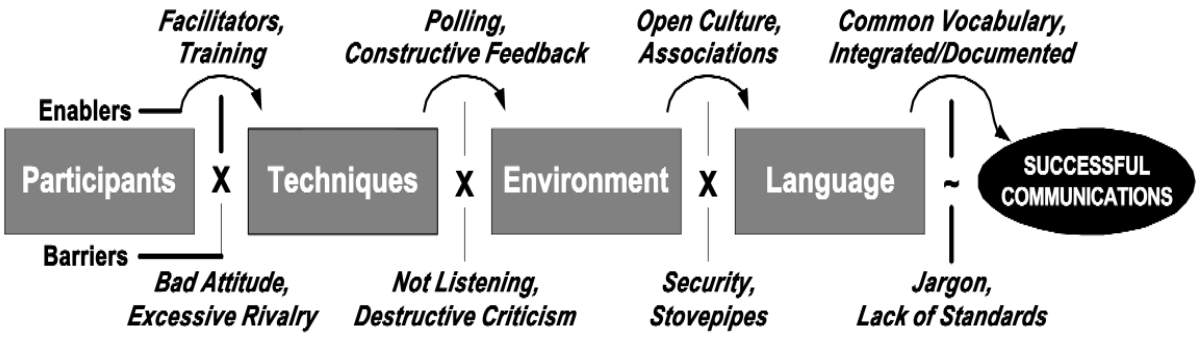


Figure 3-The Project Management Communication Model Designedby Shannon-Weaver Model (Adoptedfrom Mehra, 2009)

The Lasswell Formula (Figure 3), another popular transmission model introduced a year later by sociologist Harold Lasswell, added the idea of impact or effect. The transmission models have also influenced early studies of human communication, but many theorists now consider them to be misleading. These models and their derivatives focus more on the study of message-making as a process, rather than on what a message means and on how it creates meaning.

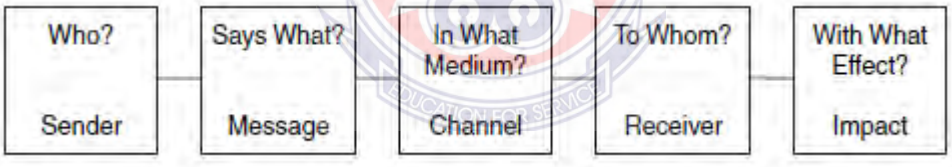


Figure 4,TheLasswell Formula Model for Communication (Adopted From Mehra2009)

David Berlo, a well-known communication researcher who studied at the University of Illinois with Wilber Schramm, introduced the model in Figure 4 in 1960. Further emphasizing encoding and decoding, he defined five verbal communication skills: speaking and writing (encoding skills), listening and reading (decoding skills), and thought or reasoning (both encoding and decoding).

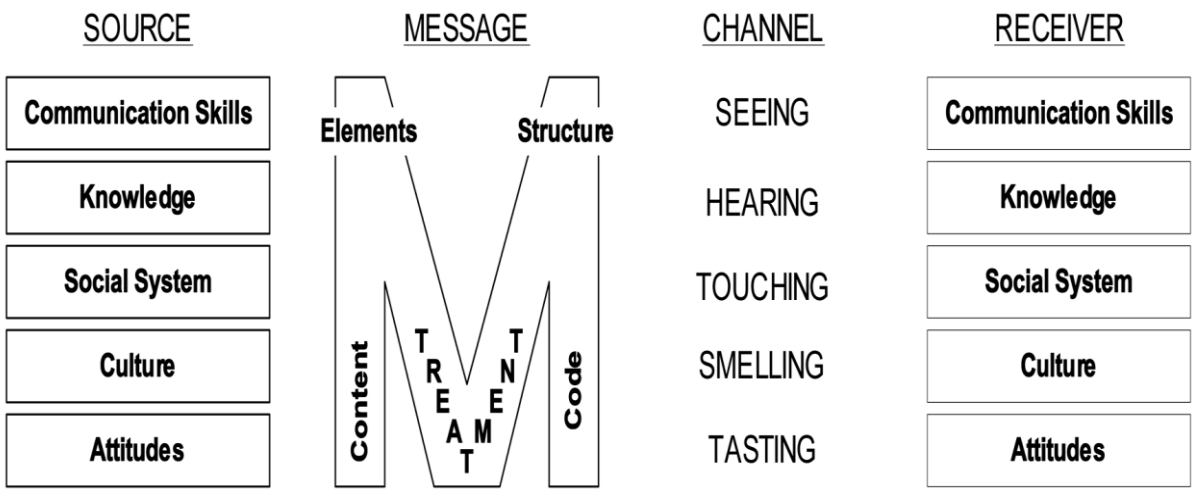


Figure 5-David BerloSMCR Model (Adoptedfrom Mehra, 2009)

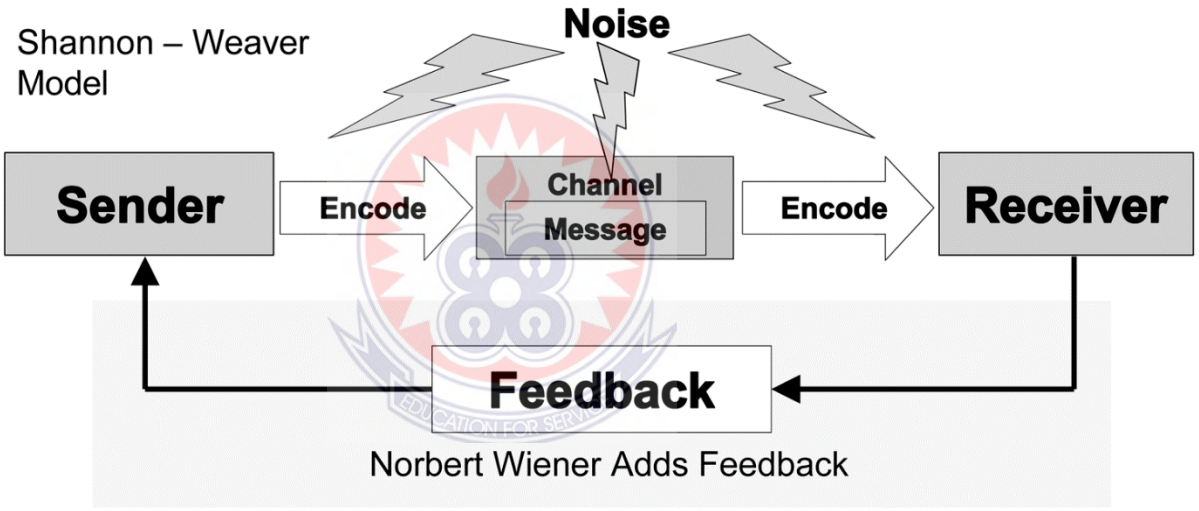


Figure 6-Shannon-Weaver Model with Weiner's Feedback (Adoptedfrom Mehra2009)

Almostallthe modelsdescribedhaveascenderandreceiveraswellasencodinganddecoding methods.Sender–Isan information source, who initiates communication.Encode–Informationisencodedintoamessage.Sendershouldmakesurethathe trulyprovides understandable information to another projectteammember. This means that sendermust attempttotake theperspectiveandknowledgeofthereceiverintoconsiderationandcreateand present a messagethat heor sheis likelyto interpret in the wayintended. Medium–Messagesmay

besent using traditionalmail,email,phonecall,face-to-faceorusing gestures alone. Mediumis thecommunication method used to transmit themessage.Decode– Messageisdecodedtounderstandtheinformationsent by sender.Senderuseshis knowledgeandunderstandingofthesubjectmattertodecodethismessage, henceextracaution is required to interpret themessagein right context (sender'scontext).StatusReports– reportsthatdescribewhere theprojectstandsata specific pointintime should follow the followingorganization:

I. Accomplishments forweek or month

- ❖ Describemostimportantaccomplishments.Relatethemtoproject'sGanttchart.
- ❖ Describe other important accomplishments, one bullet for each. If any issues were resolved from the previous week or month, list the mass accomplishments

II. Plans for followingweekor month

- ❖ Describe most important items to accomplish in the next month. Again, relate them to project's Gantt chart.
- ❖ Describe other important items to accomplish, one bullet for each.

III. Issues: Briefly list important issues that surfaced or are still important.

IV. ProjectChanges(DatesandDescription):Listanyapprovedorrequestedchanges to theproject.Includethe date ofthechange andabrief description.MeetingMinutes– documentusedtoconvey purposeofmeeting,itemsofimportance,crucial decisions, and action items.Request forProposal (RFP)– document used to solicitproposals from prospectivesuppliers. Request forQuotation –adocument used to solicit quotes or bids from prospectivesuppliers.ChangeStatusRequest–oralorwrittenactsoromissionsby someonewithactualorapparent authoritythat can beconstrued to havethe sameeffectas

a writtenchangeorder.Forecasts– usedtopredictfutureprojectstatusandprogressbasedonpastinformationand trends; especiallyprojectcontrol and cost.

2.8 Communication and the Project Delivery Process

2.8.1 Communication at conception/design stage

At this stage, communication is between the client (owner) and the consultants and is a continuous process from inception to completion of the project. The client's statement of

requirements which include information such as the size of the building, nature of the building, funds available, building function and time limitation of the project will be made available to the consultants. As stated by Shutt (1992), it is the lack of early consultation and co-operation that has hampered communication and subsequently timely project delivery. The architect prepares a general outline of client requirements after carrying out feasibility studies with the other consultants and communicates it to the rest of the members of the design team for collective action. As soon as the client approval is obtained, the Architect and Engineer start preparing the working drawings, schedule and specification and at the same time seeking the opinion of the Quantity Surveyor who sees to the cost implication of the project to see if the project design is still within the approved budget.

2.8.2 Communication during approval by the planning authority

The role of the construction industry in the society is to satisfy the wants of the consumers in terms of construction projects, whether they are houses, places of work,

entertainment, or transportation routes (Shutt 1992). To this end, approval from the planning Authorities can be considered at two levels.

2.8.2.1 Structure plans

These look at the overall area in relation to its surroundings and lay down policies within the areas of employment, transport, recreation, housing, industry, population and education. These plans are not detailed, but tend to be proposed statements of policy for the area with regard to the various considerations (Shutt 1992).

2.8.2.2 Local plans

These are prepared to examine in detail the local area under construction and to prevent problems that might arise from complications due to conflicts on planning applications. It would be imprudent, for example, to proceed with a planning application for a roadside extension to a client's factory, if there is a local plan proposing a road widening scheme in the future, which will affect the factory. All development plans are available for inspection at Local Authority Planning offices to forestall problems with certain clauses in the Building Regulations (Shutt 1992).

2.8.3 Communication during project execution (Traditional procurement system)

On nearly every job, certain difficulties arise, usually practical difficulties in construction to certain detailed drawing. These problems in many cases could have been overcome, had there been consultation between the architect and builder at an earlier stage. Shutt (1992) stated that builders are seldom aware of many such problems until the job has progressed considerably, because of the usual procedure of issuing detailed drawings long after the project has started. This point alone raises

communication problems, in that the builder may have to order purpose-made component, and the project could be delayed during their manufacture.

2.8.3.1 Communication within contractor's organisation

Within a building company, the type of communication system and the speed with which it works are to a large extent a function of the size of the organisation (Shutt 1992). The smaller the company, the faster information will be disseminated. With large companies, a communication network has to be developed that ensure that the information necessary for decision-making gets to where it may be wanted.

2.8.3.2 Communication between parties on site

The construction site is the place where the efforts made by the design team in visualizing the client's requirements will be put into practice and the client's dream made a reality. Generally, site meetings are the regular meetings held on site to discuss the progress of the project to date, the difficulties and delays arising from the project at hand. According to Shutt(1992), communication on site between the parties can be greatly improved with the aid of site meetings. All the relevant parties like the architect, contract manager, general foreman, clerk of works, main subcontractors, etc could be in attendance. Other methods of communication on site include weekly reports, which are a complete record summarizing daily happenings on site for the week and recorded by the clerk of works.

2.9 Summary

The review provides an insight into the construction industry in Ghana with emphasis on stakeholders such as clients, contractors, consultants, subcontractors, regulatory institutions and suppliers. Communication in project delivery has been recognized as

very essential in organizations efficacy. As a result, project managers' capability in encoding and decoding play a crucial role to achieving results. It has been released that majority of information is exchanged verbally and delegated but most data is exchanged in written format. The design and construction teams follow a number of interdependent processes to communicate changes and variations in project scope. Many of such processes have been standardized throughout the industry as commonly accepted tools for raising, clarifying and resolving issues. Most often change orders originate with the project manager or design team and are directed to the project owner whereas variation requests come from the contractor or subcontractor to the design team and to the owner.

It has been released that Poor coordination and communication of design information lead to design problems that cause design errors. Conflict and lack of mutual respect and trust combine to hinder open communication and render the role of the project manager extremely demanding and challenging. Communication is the one aspect of the management project that pervades all others but, in conversation we tend to erect barriers that hinder our ability to communicate. For example, physical, attitudes, language, physiological couple with problems with structural design. Moreover, projects are subject to limitations and constraints since they must be within scope; adhere to budget, scheduling, and resource requirements. The communication models summarizedfocuses on project environments. These include LasswellFormula, Shannon and Weaver, Gerbner, Westley and MacLean and others such as project management communication and David Berlo SMCR models.It is evident that there is communication between the client and the consultants at the conception stage and this is a continuous process from beginning to end of the project. This is where the client

statements of requirements are made available to the consultants. It is clear that information within the contractors' organization disseminates faster when the company is small. It is also realized that communication between parties on site can be improved with the aid of effective site meetings.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the procedures of the study. It entails the availability and selection of appropriate research design, the population of the study, the sample size determination and sampling procedures, the data collection procedures and the methods of data analysis that helped address the key questions raised for the study.

3.2 Research Design

The review of the literature and analysis of studies on effective communication in project delivery by Vasanthi and Abu Hassan (2011), WusuahAffare (2012), Aulich (2013) and Tipili, Ojeba and Ilyasu (2014) showed that most of the work done was descriptive surveys. Similar studies made the most use of researcher-designedquestionnaire for data collection. In view of this, a cross-sectional descriptive survey with a questionnaire was used to provide data for the research. A survey study was deemed appropriate for this research for the following reasons: survey research involved data collection from a group, generalizing the result of study to predict the attitude of the population of interest; the survey questionnaire may be structured to elicit information from the population of interest in a systematic and unbiased manner; and they permit statistical analysis of data and generalisation to a larger population, which makes them suitable to construction management research. Frechtling and Sharp (1997) as cited by Naoum (2002),characterised the common data collection techniques used in quantitative research as questionnaires, tests and existing databases. Hard and reliable data are often collected in quantitative research and, therefore, emphasises on quantification. The samples collected are often large

and representative. This means that quantitative research results can be generalised to a larger population within acceptable error limits. The question which this research sorts to explore was how construction professionalsin western region perceive communication as effective in construction project delivery.

3.3 Population of the Study

The population of the study was made up of construction professionals (respondents) in the public andprivate built environment consultancy firms in Western region. Construction professionals comprised of Quantity Surveyors, Structural Engineers, Project Managers,Architects,Civil Engineers, Electrical Engineers and Clerk of works. Public institutions such as Ghana Highways Authority, Urban roads, Assemblies (Metropolitan, Municipal and District), Public Works Department,and Private Consultancy Firms such as Architectural and Engineers Services Limited and Pro consult Limited were targeted for the study. The target population (N=76) comprised of 10 professionals with Ghana Highways Authority, 10 with Urban roads, 20 with Assemblies (Metropolitan, Municipal and District), 20 with Public Works Department (PWD), 10 with Architectural and Engineers Services Limited (AESL) and 6 with Pro consult Limited.

3.4 Sample Size Determination and Sampling Procedures

The researcher used purposive sampling techniques to determine the sample size for the study. This was to make sure all subgroups such as project managers, architects, quantity surveyors;electrical engineers, structural engineers, civil engineers and clerk of works presented in the sample are approximately the same as they are presented in the population. The total sample size for the study comprised of 10 professionals with the Ghana Highway Authority, 10 professionals with the urban roads, 20 professionals with the Assemblies, 20 professionals with the Public Works Department (PWD), 10 professionals with the Architectural and Engineers Services Limited (AESL) and 6 with the Pro consult Limited. Hence the total sample size for the study was seventy-six (76).

Table 2Distribution of Sample used in the Study

Number	Firms/OrganisationsNumber of Questionnaires	
1.	Ghana Highway Authority	10
2.	Urban Roads	10
3.	Metropolitan/District Assemblies	20
4.	Public Works Department (PWD)	20
5.	Architectural and Engineers Services Limited (AESL)	10
6.	Pro Consult Limited	6
Total		76

3.5 Data Collection Procedures

The main study was preceded by a pilot study in June 2016 using twenty masters of technology students in construction class of the University of Education, Winneba-Kumasi. These students were randomly selected to complete the questionnaire. The main aim of the pilot was to improve upon the items of the pilot questionnaire, which also had two main sections as the final questionnaire, used, namely: section onrespondents profile and this was intended to find out the background and experience of respondents and section related to effective communication inconstruction project delivery. The administration of the questionnaire covered a period of three months. It was done through personal visits to the offices of the construction professionals. Upon gaining access to a respondent, the instrument was given out and the respondent was left alone to complete. On the average, it took about twenty minutes for a respondent to complete the instrument. Some of the respondents had to spend weeks in completing the questionnaire due to their busy schedule in the workplaces.

- **Development of Instrument**

  Questionnaire was used in data collection (Appendix A). Walliman (2005) asserts that questionnaires are meant to help researchers in the organization of their research questions in order to receive replies from respondents without actually having to talk to each of them. Same fixed set of questions are administered on every respondent. Based on the set objectives, a well-designed close and open-ended questionnaire which was set in line with the specific objectives of this research study was developed to elicit information from the targeted respondents. The researcher used construction professionals

in the public and private built environment consultancy firms in western region. The instrument had a number of features described below. The questionnaire contained sixty-eight (68) items. All of these were of the likert-type. For purposes of this study, the questions were grouped under five (5) sections. The first series of questions related to respondent's profile. This was intended to find out the background and experience of respondents.The second group of questions on factors enhancing effective communication in construction projects was on scales from 'very important to not important'. The third group of questions on constraints to effective communication in construction projects was on scales from 'strongly agree to strongly disagree'. The fourth group of questions on methods to enhancing effective communication for project performance was on scales from 'very important to not important'. The fifth question was open to the construction professionals to state ways of improving communication on construction sites.

All the likert-type items used a 5-point scale which encouraged respondents to make forced decisions from a number of responses. Ordinal values of 5,4,3,2 and 1 were assigned to the different responses of the scaling statements. The responses were 'strongly disagree', 'disagree', 'uncertain', 'agree', and 'strongly agree' and were assigned values 1,2,3,4 and 5 respectively for constraints to effective communication in construction projects. Concerning questionnaire items on factors enhancing effective communication in construction projects and strategies enhancing effective communication for project performance, the responses were 'very important', 'important',

'moderately important', 'Quiet/low important' and 'not important' and were assigned values of 5,4,3,2 and 1 respectively.

- **Validity and reliability of instruments**

The purposes of this section is to assess the instrumentof measures as being valid if it measures what it is intended to measure. Assessing the validity of a measure is crucial to the credibility of this research finding. Failure to assess the validity of measures may result in research findings that are at best misleading. The necessary condition for validity is reliability. In this study, it is important to see how reliable the results of all the statistical analyses are, because the scale data that has been used and the choice of sample scale could affect the validity. The following discussion focuses on the validity of measurement issues as they apply to the data on communication. Peter (1981) maintains that construct validity refers to the correspondence between measures and unobservable construct the measure is attempting to assess.Reliability istheabilityofaninstrumenttomeasurewhatitisintendedtomeasure.Degreetowhichtheresearcherhasmeasuredwhathehassetouttomeasure (Smith,1991). Arewemeasuringwhatwethinkwearemeasuring?(Kerlinger,1973).Extenttowhichanempiricalmeasureadequatelyreflectsthereal meaningoftheconceptunderconsideration(Babbie,1989). Reliability means the researcher would get similar results if he/she repeated the questionnaire soon afterwards with the same workers and it concerns the consistency among the questions. In other words, reliability means that responses to the questionnaire are consistent.

- **Ethical issues in questionnaire**

  Some ethical issues in relation to the use of questionnaires are also about good research practice more generally. For example, thequestionnaires items should beclearly worded and understood by all potential respondents or participants. In other words, questionnaire items should be simple and not confusing or ambiguous. Accessibility of the research questions to people with low levels of literacy or people who can speak English as an additional language, would there be the need to translate into other languages? The necessity of all questionnaire items being asked for the study andthe period expected fromrespondents to spend completing the questionnaire. Moreover, the researcher must ensure that the information provided by the respondent is kept confidential. This means questionnaires are good for researching sensitive topics as respondents will be more honest when they cannot be identified. Keeping the questionnaire confidential should also reduce the likelihood of any psychological harm, such as embarrassment. Respondents must provide informed consent prior to completing the questionnaire, and must be aware that they have the right to withdraw their information at any time during the study.

3.6 Methods of Data Analysis

The data collected were analyzed using the Statistical Package for Social Science (SPSS) software and Microsoft Excel 2007, thus allowing credible inferences to be drawn from the information provided. Data obtained from the questionnaires feedback were presented in the form of Table, Bar Chart and Pie Chart to generate findings. Here the data was converted into percentages to make findings more understandable. The opinion or response with the highest percentage was considered as the general opinion of respondents with regards to that point.The relative importance index method (RII) was also used in this study to determine from construction professionals, factors enhancing effective communication in construction projects and strategies enhancing effective communication for project performance. The relative importance index is computed as (Cheung et al, 2004; Iyer and Jha, 2005):

$$\text{RII} = \frac{\Sigma W}{A \times N}$$

Where: W is the weight given to each factor by the respondents and ranges from 1 to 5

A = the highest weight = 5

N = the total number of respondents

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

The purpose of this study is to find out how construction professionals perceive communication as effective in project delivery in Western region of Ghana. In order to achieve the purpose of study, a methodology consisting of a review of literature and a survey of the main construction professionals to obtain how communication is perceived as effective in the preceding chapters. This chapter therefore presents the survey response rate, demographic characteristics of respondents,analysis and discussion of results of the study.

4.2 Survey Response Rate

Questionnaires were sent to seventy-six construction professionals consisting of Architects,Quantity Surveyors, Structural Engineers, Project Managers, Civil Engineers, Clerk of works and others of which fifty-four responses were received.The response rate achieved wasseventy-one percent. The responses were further analyzed to determine the profile of respondents.

4.3Demographic Characteristics of Respondents

Table 3 shows that ninety-four percent of the respondents were males and six percent were females. It seems to suggest that men play a major role in construction industry towards infrastructural development. Hence it appears to suggest that construction activities are meant for persons with physiological aptitude since it is a male

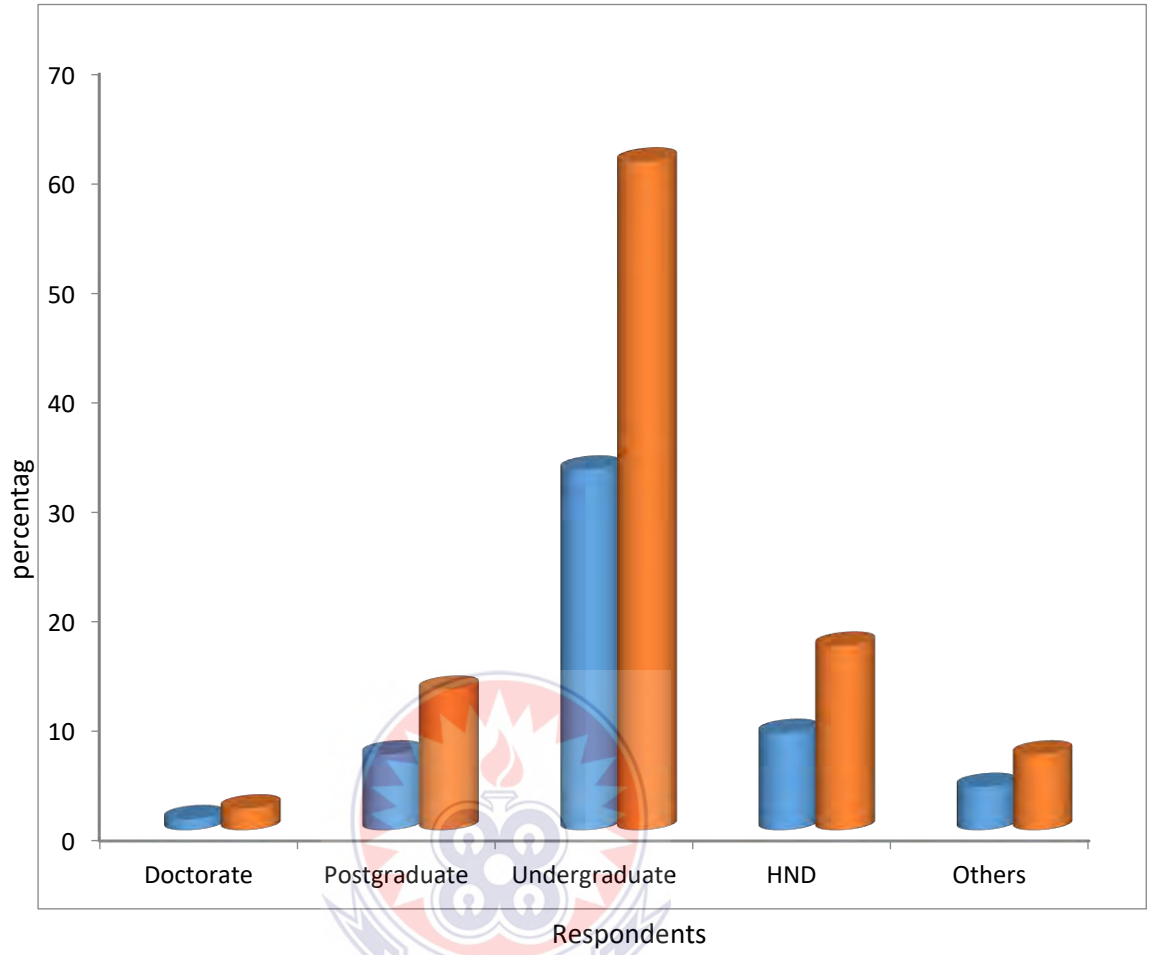
dominated organization. This might have accounted for only six percent female construction professionals in the region.

Table 3Gender of Respondents

Gender	Frequency	Percentage
Male	5194%	
Female	36%	
Total	54	100%

According to Figure 7, two percent of the respondents had attained doctorate degrees, thirteen percent of the professionals had attained post graduate degrees, sixty-one percent of the respondents had attained first degrees, and seventeen percent had attained Higher National Diploma (HND), with others recording seven percent as the highest educational attainment. The Figure also points to the fact that more than half of the respondents have had the education up to the first degree level and this demonstrates a high education background of the respondents.

Figure 7Highest Educational Attainments of Respondents



From Figure8,46% of the professionals represented Quantity Surveyors, 20%represented Project Managers, 9%represented Architects, 6%of the respondents represented Civil Engineers,2%represented Structural Engineers, 6%represented Clerk or works and 20% represented Electrical Engineers. From the Figure, almost half of the professionals were quantity surveyors and this shows that a lot of the jobs done in the construction industry in Western region were related to construction estimates.

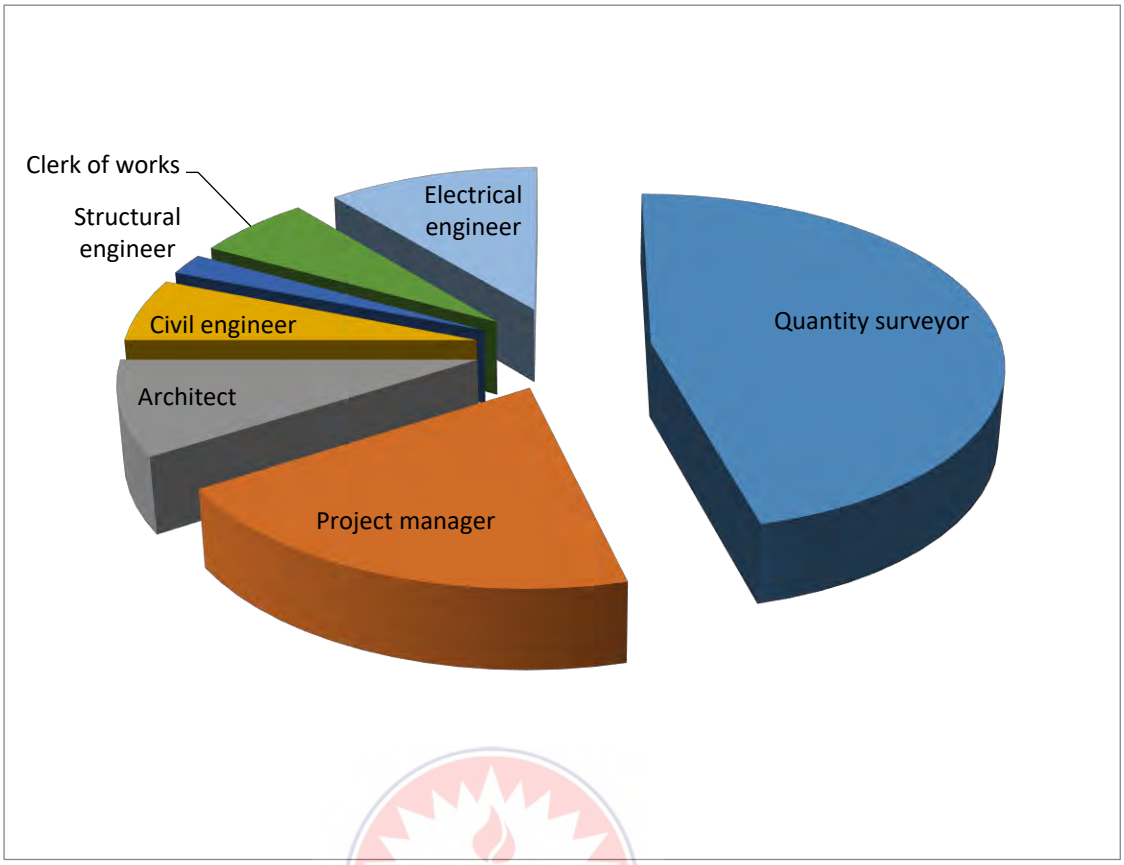


Figure8PositionsofRespondents

According to Table 4, thirty-nine percent of the professionals had had between 11-15 year works experiences, twenty percent had had between 5-10 year works experiences, nineteen percent had worked above twenty years, eleven percent had worked below five years and another eleven percent had had between 16-20 year works experiences. According to the table, sixty-nine percent of the respondents had gained over ten years works experiences in the construction industry. This shows that more than half of the respondents had worked for over ten years in the construction industry. It appears to suggest that, professionals in the construction industry within the region have adequate work experienced.

Table 4,Work Experience of Respondents

Number of years	Frequency	Percentage
Below 5 years	611%	
5-10 years	11 20%	
11-15 years	2139%	
16-20 years	6 11%	
Above 20 years	1019%	
Total	54	100%

4.4 Factors enhancing effective communication in construction projects

In this study, results from highest educational attainment of respondents (Figure 7) indicate that a considerable number of construction professionals had first degrees and more than ten years working experience in the industry (Table 4). This might have accounted for the evidence of useful communication in construction projects within the region. The results of the study showed that items dealing with factors that enhance effective communication in construction projects were found to be genuine. They saw as factors that being truly authentic in ones actions and words, listening clearly and correctly to the information relayed on site, effective planning for improved project performance, good human relation on construction project sites, clear presentation of information on construction projects, correctly interpreting the feedback from project consultants,organization of site meetings for professionals, clear communication channels that are understood by professionals, good employee relation on site, good business relations between project partners, submission of monthly project report to consultants and selecting the right communication medium for communication. Others were complete and concise message in project

communication, nature of communication in project delivery,building trust within relationship with construction professionals, good listening in construction project delivery,understanding your professionals to yield better relationship, clearly think through the outcomes received from communication, the method of communication on construction projects, accepting responsibility for the communication and its outcome, impartial evaluation of feedback from project consultants, evaluation of professionals on construction projects, enhancing effective communication on site with notice boards,developing clear intentions of communication in project delivery, expanding your perspective to include the perspective of other professionals,construction projects change orders and suspension of personal judgment and perspective.

Table 5Factors Enhancing Effective Communication

FACTORS	RII	RANK
Truly authentic in your actions and words	0.9407411	
Listening clearly and correctly to the information relayed on site	0.9259262	
Effective planning for improved project performance	0.866667 3	
Good human relation on construction project sites	0.866667	4
Clear presentation of information on construction projects	0.8666675	
Correctly interpreting the feedback from project consultants	0.8518526	
Organization of site meetings for professionals	0.822222	7
Clear communication channels that are understood by professionals	0.8148158	
Good employee relation on site	0.814815 9	
Good business relations between project partners	0.807407	10
Submission of monthly project report to consultants	0.80000011	
Selecting the right communication medium for communication	0.80000012	
Complete and concise message in project communication	0.79259313	
The nature of communication in project delivery	0.79259314	

Building trust within relationship with construction professionals	0.792593	15
Good listening in construction project delivery	0.792593	16
Understanding your professionals to yield better relationship	0.792593	17
Clearly think through the outcomes received from communication	0.777778	18
The method of communication on construction projects	0.762963	19
Accepting responsibility for the communication and its outcome	0.75555620	
Impartial evaluation of feedback from project consultants	0.740741	21
Evaluation of professionals on construction projects	0.72592622	
Enhancing effective communication on site with notice boards	0.72592623	
Developing clear intentions of communication in project delivery	0.72592624	
Expanding your perspective to include the perspective of other professionals	0.68888925	
Construction projects change orders	0.67407426	
Suspension of personal judgment and perspective	0.62222227	

Source: field work

In the study of Chatsworth Consulting Group, (2001-2014) there were specific approaches and actions that a person or an organisationcould take in order to communicate more successfully and added that it was important to be truly authentic in ones actions and words. In essence,it isimportant to take time to plan and prepare for important communication.With this time, effort, attention, and at times support from someone with an outside perspective, it is possible to communicate effectively to achieve your goals(Chatsworth Consulting Group, 2001-2014).

4.5 Constraints to effective communication in construction projects

Despite the fact that most of the professionals 61% have attained first degrees (Figure 7), and69% have worked for more than ten years in the industry (Table 4), the entries that related tolack of or inadequate training in communication skillsandpoor listening to project instructions and ordershad the samehighest mean rating of 3.59.This might

have accounted for theprofessionals appearing to be confusing facts with inferences(Table 6). The results of the study are an indication that among the thirty entries dealing with the constraints to effective communication in construction projects, professionalsestablished seventeen to be very real. They saw as challenges the lack of or inadequate training in communication skills, poor listening to project instructions and orders, inadequate motivation for construction artisans, wrong channel of communication by professionals, organizational guiding principle, professionals not responding to a comment, poor knowledge on the subject of communication, failure to discuss construction projects, ambiguity and abstractions overuse, low incentive for construction professionals and similar interpretation assumed by professionals. Others were: late dissemination of information, use of jargons by professionals, high cost of acquiring education, professionals ignorant of communication methods, Information overload and mistrust in task delegation.

Table 6:The Constraints to Effective Communication in Construction Projects

Constraints	Mean	Std. Deviation	Rank
Lack of or inadequate training in communication skills	3.59	0.87	1
Poor listening to project instructions and orders	3.59	0.91	2
Inadequate motivation for construction artisans	3.56	1.13	3
Wrong channel of communication by professionals	3.48	1.03	4
Organizational guiding principle	3.44	0.96	5
Professionals not responding to a comment	3.33	1.07	6
Poor knowledge on the subject of communication	3.33	0.86	7
Failure to discuss construction projects	3.33	1.12	8
Ambiguity and abstractions overuse	3.30	0.81	9
Low incentive for construction professionals	3.30	1.18	10
Similar interpretation assumed by professionals	3.26	0.95	11
Late dissemination of information	3.26	1.01	12
Use of jargons by professionals	3.26	0.97	13
High cost of acquiring education	3.22	1.13	14

Professionals ignorant of communication methods	3.15	1.04		15
Information overload	3.111.03	16		
Mistrust in task delegation	3.110.99	17		
Professionals having distorted focus	2.96	0.92		18
Lack of mutual respect and trust	2.93	0.94		19
Legislative requirements for construction projects	2.89	0.99		20
Filtering by professionals	2.85	0.97		21
Lack of interest by construction professionals	2.78	0.99		22
Professionals confusing facts with inferences	2.781.10	23		
Semantic problem by professionals	2.700.99	24		
Poor understanding by construction professionals	2.63 1.09		25	
Professionals inexperience in project delivery	2.63	1.22		26
Cultural differences between workers or project participants	2.631.16	27		
Professionals lacking confidence	2.591.18	28		
Perception about information	2.56	0.81		29
High cost of communication technology (hardware and software)	2.410.8130			

Source: field work

The lack of or inadequate training in communication skillsand poor listening to project instructions and ordersare quiet disturbing. Training in communication skills which is an integral feature of effective communication in construction projects can hardly take place when construction professionals are not exposed to an in-service training in communication.Olaniran(2015) established that lack of proper communication between the consultants and contractors had a significant negative effect on project success. He further indicated that poor and distorted information can have an adverse consequence on the level of work done on site which would slow down project completion and lead to extra cost.On the contrary, the respondents did not see as a challenge the high cost of communication technology (hardware and software). The finding that high cost of communication technology (hardware and

software) was insignificant in project delivery, however, contradicts that of Turner (1998)who noted that, it is inevitable reality that all project-based working is constrained by time and cost limitations.

4.6 Strategies for enhancing effective communication

In this research, results from the strategies for enhancing effective communication (Table 7) indicate that running effective site meetings is very important in construction projects in the western region of Ghana. Other strategies which were found to be real in the industry included: understanding the real issues within the project team, effective management of conflicts on site, clearly articulate the vision of construction projects, motivating the human resource, the ability of the leadership team to communicate with professionals, regular reporting of the project's progress and status andthe development of better communication skills. Also,the effective communication methods employ on site,conceiving communication strategy at project planning stage,being in touch with the real project challenges,and available photograph of records of construction projects, professionals promoting interpersonal communication on site, use of templates for project communications and effective use of e-mail in construction project communications.

Table 7Strategies for Enhancing Effective Communication in Project Delivery

METHODS	RII	RANK
Run effective site meetings	0.874074	1
Understanding the real issues within the project team	0.866667	2
Effective management of conflicts on site	0.851852	3
Clearly articulate the vision of construction projects	0.829630	4
Motivation of the human resource	0.829630	5

Ability of the leadership team to communicate with professionals	0.807407	6
Regular reporting of the project's progress and status	0.8074077	
Development of better communication skills	0.8000008	
Effective communication methods employ on site	0.7777789	
Conceiving communication strategy at project planning stage	0.777778	10
Being in touch with the real project challenges	0.755556	11
Available photograph of records of construction projects	0.75555612	
Professionals promoting Interpersonal communication on site	0.75555613	
Use of templates for project communications	0.71851914	
Effective use of e-mail in construction project communications	0.63703715	

Source: field work

According to the construction professionals (Table 7), site meetings are an important approach to effective communication between professionals in the construction industry inthe region. The results clearly indicate that organization of site meetings helps improve effective communication between construction professionals in construction project site.This statement agrees with Shutt (1992) maintaining that, communication on site between the parties can be greatly improved with the aid of site meetings.Ofori (2013) also confirms that the critical factors that contribute to the success of a project include effective communication, clarity of project purpose and goals, and stakeholder involvement.Thus effective communication in construction project delivery can be sustained by effectual site meetings.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of the findings, the conclusions of the study and suggests appropriate recommendations which seek to direct future research. The objectives of this research were to identify factors necessary for enhancing effective communication in construction project delivery in western region and to identify constraints to effective communication in construction project delivery in western region of Ghana. Also the research was to make recommendations for enhancing effective communication in construction projects.

5.2 Summary of Findings

The conclusions as follows were therefore presented as per the objectives of the research.

5.2.1 Factors necessary for enhancing effective communication in construction project delivery in Western region of Ghana

Construction professionals were of the opinion that factors essential for effective communication were paying proper attention to information communicated on site, being truly genuine in your actions and words in project communication as a profession and effective planning for improved project performance. These contribute positively to enhance effective communication in construction project delivery in western region. For instance, professionals confusing facts with inferences and inaccurate information given in communication will lead to distortion of facts in

construction projects. Again, the research established that communication in construction projects would be very successful when professionals have good human relation on construction project sites; professionals present information on construction projects clearly and correctly, interpreting the feedback from project consultants as well as organizing effective site meetings. Regular site meetings to discuss construction projects appropriately and clearly and good human relation reduces perception about information. It was also gathered that clear communication channels that are understood by professionals, good employee relation on site, good business relations between project partners, submission of monthly project report to consultants and selecting the right communication medium for communication were issues construction professionals in the region considered appropriate to improve communication in construction project delivery.

Moreover, professionals in the industry said complete and concise message in project communication, the nature of communication in project delivery, building trust within relationship with professionals, good listening in construction project delivery and understanding your professionals to yield better relationship were considered as suitable for a successful communication in construction projects. Other factors considered to promote and enhance effective communication in project delivery were: the method of communication on construction projects, accepting responsibility for the communication and its outcome, impartial evaluation of feedback from project consultants, clearly think through the outcomes received from communication, evaluation of professionals on construction projects, enhancing effective communication on site with notice boards and developing clear intentions of communication in project delivery.

5.2.2 Constraints to effective communication in construction project delivery in Western region of Ghana

Responses gathered from professionals within the construction industry in western region, showed that lack of or inadequate training in communication skills, poor listening to project instructions and orders, inadequate motivation for construction artisans and wrong channels of communication by professionals were some limitations to effective communication in construction project delivery. For instance, poor training of professionals in communication skills resulting in poor listening to project instructions and orders and incorrect channels of giving information negatively affect communication in construction projects. Construction professionals were again of the opinion that low incentive for construction professionals, organizational guiding principles, professionals not responding to a comment, poor knowledge on the subject of communication, failure to discuss construction projects and ambiguity and abstraction overuse were some restraints to effective communication in construction project delivery. Similar interpretation assumed by professionals, late dissemination of information, use of jargons by professionals, high cost of acquiring education, professionals ignorance of communication methods, information overload and mistrust in task delegation were limitations respondents identified in the study.

5.2.3 Recommendations for enhancing effective communication in construction projects.

The study established that effective site meetings, understanding of the real issues within the project team, effective management of conflicts on site, clearly articulating the vision of construction projectsability of the leadership team to communicate with

professionals, regular reporting of the project's progress and status, development of better communication skills and motivation of the human resource were strategies professionals suggested for enhancing effective communication in construction projects. Others included establishing clear lines of communication, clear and concise instructions giving targets and deadlines, sticking to the facts, choosing appropriate communication methods, strong leadership in project implementation (from inception to completion), and contractors developing high skills for effective communication. Moreover, available notice boards for information, regular tool box talks, developing good communication strategy at the planning stage of the project, the use of contracts clearly defined methods such as progress report, variation orders, material test reports, payment certificates, site diary, As-built drawings, photographs, safety and accident report and progress charts. In the end, construction professionals responded that effective site meetings are one of the important ways of improving communication on construction sites.

5.3 Conclusion

Within the Ghanaian construction industry, there is a strong appreciation of effective communication in construction projects and its significance within the industry. Indeed, various factors of effective communication have been established within the construction industry, for example truly genuine in actions and words, listening clearly and correctly to the information relayed on site, effective planning for improved project performance, good human relation on construction project sites, clear presentation of information on construction projects among others were recognized in the study. In spite of that, there have been many limitations to effective communication in construction project delivery in the region. These include: lack of

or inadequate training in communication skills, poor listening to project instructions and orders, inadequate motivation for construction artisans, wrong channel of communication by professionals, organizational guiding principle among others have been established in the research. Finally, the study also recognized strategies for enhancing effective communication in construction projects in western region. These included: effective site meetings, understanding the real issues within the project team, effective management of conflicts on site, clearly articulate the vision of construction projects, motivation of the human resource among others were recognized in the study. This research has shown that, effective communication strongly affect the performance of construction professionals within the construction industry. Therefore, the establishment and management of structures to promote and enhance effective communication in construction projects must always be on the agenda of all stakeholders within the industry prior to the beginning of construction projects.

5.4 Recommendations

The ministry of local government and rural development must provide the required logistics to enable construction professionals discharge their duties efficiently. Also, in-service training workshops should be organized for construction professionals to enable them communicate effectively in construction projects. Construction professionals and project consultants in the industry should be well motivated to enable them discharge their duties professionally in construction projects.

5.5 Further studies

- Effective use of communication methods to address disputes in construction projects in Western region
- The design of an appropriate communication model for the construction industry in Ghana
- Factors essential for effective communication in construction project delivery in Western region

REFERENCES

Ahadzie, D. (2007), A Model for Predicting the Performance of Project Managers in Mass House Building Projects in Ghana, a PhD Dissertation for the University of Wolverhampton, UK.

Ahadzie, D. (2009), "Ghana in Need of Construction Industry Development Agenda", GhanaHomePage,http://www.ghanaweb.com/GhanaHomepage/feature/artikel.ph ?ID.

Ashworth, A. (2004), Cost Studies of Buildings, 4th edition, Pearson Prentice Hall.

Aulich (2013), The role of effective communication in the construction industry. Journalof construction economics and building. Available at http://dx.doi.org/10.5130/AJCEB.v13i4.3740

Aishawi M, Underwood J (1999). The application of Information Technology in the Management of Construction, RICS Research, London.

Anvuur, A., Kumaraswamy, M. (2006), "Taking Forward Public Procurement Reforms in Ghana", CIB W107 Construction in Developing Economies International Symposium "Construction in Developing Economies: New Issues and Challenges" Santiago, Chile.

Benita Zulch, (2012) "Leadership communication in project management," Journal of Social and Behavioral Sciences, 27th IPMA World Congress Procedia – Social and Behavioral Sciences 119(2014), pp. 172 – 181.

Biggs, M (1997). Why choose a web-based project management solution? (Buyers Guide), PC World, 15 (10).

BRE (2011) BRE guidance on construction site communication. Access from the website: http://porjects.bre.co.uk/site communication /pdf/ communication guidance. pdf

Cherry, C. (1978) On human communication: A review, a survey, and a criticism Cambridge and London: The MIT Press, 3rd ed.

Chris, M. (2009).Business Organization for Construction, *Taylor and Francis Group*, London and New York.

Dainty A, Moore D, Murray M (2006), Communication in Construction Theory and Practice. London, Taylor and Francis

Dansoh A, 2005. Strategic Planning for Construction Firms in Ghana. Construction Managementand Economics, 23 (2): 163-168.

Druker, P. (1985). Management, Harper, New York. NY

Emmitt, S. & Gorse, C. (2003) construction communication, Blackwell Publishing Ltd.

Emmitt, S & Gorse, C.A.(2007) communication in construction Teams. Span Press, London.

Iyer KC, Jha KN, 2005. Factors affecting cost performance: evidence from Indian construction projects. International Journal of Project Management, 23: 283-295

Maslej, M. (2006) ―Communication in the Construction Industry.‖ (Online). Available at <:http:gbrown.com.ca/E-journal/theses/pdf/final/marcin_maslej.pdf

Mehra S (2009) Project communication Management. Accessed from the website: http://www.scribd.com/doc/7875707/Project-Communication-Summary-by SachinMehra.

Mogbo, T.C. 2004. Construction and National Integration Strategies for achieving National Unity through the Redesign, Construction and privatization of New Road and Railway Networks in Nigeria:1-2.

Naoum, S, G (2002). Dissertation research and writing for construction students, Butterworth Heinemann.

N.J. Smith (1999), Managing risk in construction projects. Oxford and Northampton: Blackwell Science Ltd.

Ofori D.F (2013), Project Management Practices and Critical Success Factors- A Developing Country Perspective.International Journal of Business and Management.Vol (8) 21;2013

Olaniran, H.F (2015) The role of communication in construction projects. International journal of science and technology research volume 4.

Peter, J. Paul (1981) "Construct Validity: A Review of Basic Issues and marketing Practices" Journal of Marketing Research, 18:133-176. Journal of construction division, ASCE Vol. 107, No C04:551-557.

Priyadharchini N.S and Satheesh Kumar S (2015), Project communication, International Journal of Science, Technology and Management. Volume (4) 2394-1537

Tam, C.M. (1999). "Use of the internet to enhance construction communication: total information transfer system". International Journal of project management Vol. 17/2.

Thomas, S.R., Tucker, R.L. Kelly, W.R. (1998). Critical communication Variables in Journal of construction Engineering and management Vol. 124, No. 1

Tipili, L.G, Ojeba, P.O. and llyasu, M.S. (2014).Evaluating the effects of communication in construction project delivery in Nigeria.Global Journal of EnvironmentalScience and Technology 2 (5): 048-054.

Vasanthi R.P and Abu Hassan Abu Bakar (2011), The needs for standardization of document towards an efficient communication in the construction industry. World Applied Sciences Journal 13(9):1988-1995

Watson, G., Gallagher, K. (2005). "Managing for Results". 2nd ed. London: Chartered Institute of Personnel and Development.

Walliman, N. (2005) ―Your Research Project', 2nd Edition.‖ London: Sage Publications

Wysocki, R. K., Beck, Jnr. R., & Crane, D. B. (2000). Effective Project Management

(2nded.). New York: John Wiley & Sons, Inc.

Yang, J., Ahuja, V., Shankar, R. (2007). "Managing Building Projects through Enchanted Communication – An ICT Based Strategy for Small and Medium Enterprises." (paper presented at the CIB World Building Congress, Cape Town, South Africa, May, 2007):2344-2357.

https://www.modernghana.com/news/659499/1/ghana-construction-awards contractors.html

http://www.projectmanagementdocs.com/project-planning-templates/communications management-plan.html#ixzz49KDTYNzf

http://www.skillsyouneed.com/ips/barriers-communication.html#ixzz48y53OyDj

www.chatsworthconsulting.com

www.google.com/chrome

www.constructiondatacompany.com

https://www.scribd.com/doc/76280768/Importance-of-Communication-in-the Construction-Industry

https://www.scribd.com/doc/33566978/Effects-of-Communication-in-Project-Delivery doc.utwente.nl/58078/1/06_Hoezen.pdf

ir.knust.edu.gh/bitstream/123456789/.../Maame%20Aba%20Wusuah%20Affare.pdf

https://www.linkedin.com/pulse/daimler-just-removed-top-executive-and-taught-major lesson-bariso

http://theibbsconsultinggroup.com/uploads

APPENDIX 'A'

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

FACULTY OF VOCATIONAL AND TECHNICAL EDUCATION

DEPARTMENT OF CONSTRUCTION AND WOOD TECHNOLOGY

QUESTIONNAIRE

Research Topic: Enhancing Effective Communication in Project Delivery in the Construction Industry in Ghana: The Perspective of Construction Professionals in Western Region.

Introduction

Statistics show that seventy-four percent (74%) of projects are unsuccessful. One of the many factors that contribute to the failure of these projects is ineffective communication. For this reason, there is a need to examine effective communication as perceive by construction professionals in project delivery in the construction industry in Ghana. All information given shall be treated as confidential. I would be grateful if could spend 10 minutes of your time to complete it. Thank you.

Section A - Respondent Profile

Please tick (√) in the box where appropriate

1. What is your gender? Please tick (√) Male ☐ Female ☐
2. What is your highest education qualification? Please tick (√)

HND ☐ Bachelor Degree ☐ Master's Degree ☐ Doctorate Degree ☐

Others (specify) ----------

3. Which of the following describes your position?

a) Quantity Surveyor ☐ Project Manager ☐ Architect ☐

d) Civil Engineer ☐ Structural Engineer ☐ Clerk of Works ☐

Others (specify) …….....

4. How many years of experience do you have in the construction industry?

a) Below 5years ☐ b) 5 - 10years ☐ c) 11 - 15 years ☐

d) 16 - 20 years ☐ e) Above 20 years ☐

Section B – Questions Relating to Effective Communication in Construction Project Delivery in Ghana

5. Which of the following factors do you consider important in enhancing effective communication on construction projects. Please select an option by ticking (√) in the right column box. **Relative importance:** 1 – Not important, 2 – Quiet/Low important, 3-Moderately important, 4 – Important, 5 – Very important.

No.	Factor	Relative Importance				
		1	2	3	4	5
1.	Listening clearly and correctly to the information relayed on site					
2.	Correctly interpreting the feedback from project consultants					
3.	Impartial evaluation of feedback from project consultants					
4.	Clear presentation of information on construction					

	projects					
5.	Complete and concise message in project communication					
6.	Selecting the right communication medium for communication					
7.	Clear communication channels that are understood by professionals					
8.	The method of communication on construction projects					
9.	The nature of communication in project delivery					
10.	Building trust within relationship with construction professionals					
11.	Developing clear intentions of communication in project delivery					
12.	Good listening in construction project delivery					
13.	Understanding your professionals to yield better relationship					
14.	Suspension of personal judgment and perspective					
15.	Accepting responsibility for the communication and its outcome					
16.	Evaluation of professionals on construction projects					
17.	Clearly think through the outcomes received from communication					
18.	Expanding your perspective to include the perspective of other professionals					
19.	Truly authentic in your actions and words					
20.	Effective planning for improved project performance					
21.	Enhancing effective communication on site with notice boards					
22.	Submission of monthly project report to consultants					
23.	Good human relation on construction project sites					
24.	Organization of site meetings for professionals					

25.	Good employee relation on site					
26.	Construction projects change orders					
27.	Good business relations between project partners					

6) To what extent do you agree or disagree with the following statements on constraints to effective communication in construction projects. Please indicate your level of agreement or disagreement by ticking (√) in the right box.Key: 1 – Strongly Disagree, 2 – Disagree, 3 – Uncertain, 4 – Agree, 5 – Strongly Agree

Statement	1	2	3	4	5
High cost communication technology (hardware and software)					
Lack of or inadequate training in communication skills					
Cultural differences between workers or project participants					
Low incentive for construction professionals					
Poor knowledge on the subject of communication					
High cost of acquiring education					
Professionals ignorant of communication methods					
Poor understanding by construction professionals					
Lack of interest by construction professionals					
Professionals confusing facts with inferences					
Professionals not responding to a comment					
Professionals lacking confidence					
Professionals having distorted focus					
Similar interpretation assumed by professionals					
Late dissemination of information					
Professionals inexperience in project delivery					

Inadequate motivation for construction artisans					
Poor listening to project instructions and orders					
Organizational guiding principle					
Lack of mutual respect and trust					
Information overload					
Failure to discuss construction projects					
Mistrust in task delegation					
Semantic problem by professionals					
Use of jargons by professionals					
Perception about information					
Legislative requirements for construction projects					
Filtering by professionals					
Ambiguity and abstractions overuse					
Wrong channel of communication by professionals					

7) Enhancing effective communication for project performance? Please select an option by ticking (√) in the right column box. **Relative importance:** 1 – Not important, 2 – Quiet/Low important, 3-Moderately important, 4 – Important, 5 - Very important.

No.	**Methods of improving effective communication**	**Relative Importance**				
		1	**2**	**3**	**4**	**5**
1.	Effective communication methods employ on site					
2.	Professionals promoting Interpersonal communication on site					
3.	Ability of the leadership team to communicate with professionals					

4.	Clearly articulate the vision of construction projects					
5.	Motivation of the human resource					
6.	Regular reporting of the project's progress and status					
7.	Conceiving communication strategy at project planning stage					
8.	Effective management of conflicts on site					
9.	Development of better communication skills					
10.	Use of templates for project communications					
11.	Effective use of e-mail in construction project communications					
12.	Being in touch with the real project challenges					
13.	Run effective site meetings					
14.	Understanding the real issues within the project team					
15.	Available photograph of records of construction projects					

8) Please state ways for improving communication on construction sites. Please write below.
