# AN ASSESSMENT OF PROJECT COMMUNICATION MANAGEMENT ON CONSTRUCTION PROJECTS IN GHANA

By

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A Thesis to the Institute of Distance Learning, Kwame Nkrumah University of Science and Technology in partial fulfillment of the requirement for the degree of

COMMONWEALTH EXECUTIVE MASTER OF BUSINESS ADMINISTRATION

September, 2012

## Declaration

I hereby declare that, this project report is the result of my own work, except for the literature whose sources have been explicitly stated and that, this thesis has neither in whole nor in party been prescribed by another degree elsewhere.



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Supervisor(s) Name Signature Date

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Head of Dept. Name Signature Date

**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 can not end this work without mentioning the people who give meaning to my life, my parents Mr. and Mrs. Affare, my sister: Maame , my brothers; Papa and Nana and my mentors; Arch. Stewart Gee, Mr. Kofi Asante Bediako, Mr. Degraft Otoo and Mr. Richard Ohene Larbi.

## Acknowledgements



First and foremost, I am grateful to the Almighty God for his guidance and protection.

My sincere gratitude goes to my supervisor Dr. Emmanuel Adinyira for spending ample and quality time supervising, correcting and proof reading my project work.

## Abstract

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. 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. Therefore, using an appropriate communication method and communication medium to resolve construction and design problems is essential. In order to fully appreciate communication in the Ghanaian construction industry, the following questions were articulated for the research: how have project professionals communicated on construction projects in Ghana? How do project professionals value communication on projects. Also, the research sort to find out whether project communication has any effect on project delivery in Ghana. The research sampled 97 professionals working with consultants, project clients and contractors with D1K1 classification. The research established that within the Ghanaian construction industry, there is a strong appreciation of the importance of project communication and its importance within the industry. Indeed, various levels and channels of communications have been established within the construction industry notably the communication between the clients and consultants or consultants and contractors. In spite of that, there have been many hindrances to effective communication on construction projects in Ghana. These includes; poor listeners, poor leadership, unclear communication objectives, unclear channels of communication, ineffective reporting system, ineffective communication between the parties on the project, stereotyping and language difficulties. Finally, the research established that poor communication had resulted in project delays, project cost overrun and project abandonment. Project communications was also shown to strongly affect the performance of professionals within the construction industry.

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# Chapter One

# Introduction

## 1.0 Introduction

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).

## 1.1 Background of Study

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). 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. In other words information must be transferred and understood so that the various aspects of the project can be assembled to realise the design. In Ghana, the construction professionals who are regularly engaged in the industry are Architects, Quantity Surveyors (QS), Geodetic Engineers (GE), Structural Engineers (St.E), Electrical Engineers (EE) and Services Engineers (SE). These entire professional are regulated by their professional institution, namely, Ghana Institute of Architects (GIA), Ghana Institution of Surveyors (GhIS) for the QS and GE and Ghana institution of Engineers (GhIE) for the Engineers.

For the purposes of this research, communication is defined as the exchange and flow of information and ideas from one person to another; it involves a sender transmitting an idea, information, or feeling to a receiver (U.S. Army, 1983).

In recent years the Government of Ghana and international organisation reports (e.g. World Bank 2003 reports on procurement in Ghana) have continued to deplore poor performance within the construction industry with many projects failing to exceed the expectations of clients. As a result, most research work on the industry have focused mainly on the influence of factors such as; procurements, health and safety, access to credit, performance improvement, etc. Beyond these, very little or no work has been done on the 'softer' factors such as construction communication and how it affect the construction industry in Ghana.

## 1.2 Problem Statement

One of the most serious barriers that any company faces is to resolve the problem of information flow – upwards, downwards, and sideways which is often grandly termed communication. Use of appropriate communication and communication medium to resolve construction and design problems is essential. In order to fully appreciate the problem of communication in the Ghanaian Construction Industry, the following questions have been articulated for research: how have project professionals communicated on construction projects in Ghana? How do project professionals value communication and have communication affected project delivery in Ghana in anyway?

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. However, what is not known is how project professionals collect and disseminate timely information when working on a project in Ghana. It is this noticeable gap in construction communication literature in Ghana that this research seeks to fill.

## 1.3 Research Objectives



The research aim is to critically assess project communication within the construction industry in Ghana; however, the specific objectives of this research work are as follows:

1. To determine how project professionals in Ghana value project communication
2. To determine the various communication channels employed by project professionals in Ghana
3. To determine what causes communication barriers on project in Ghana
4. To determine how construction project communication affect project delivery in Ghana

## 1.4 Research Questions

This study aim at addressing the following research questions:

1. How much value do constructional project professionals place on communication?
2. What are the various communication channels used by project professionals on a project?
3. What are the causes of communication barriers on construction projects in Ghana?
4. Does construction project communication affect project delivery in Ghana?

## 1.5 Justification of the Research

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 reveal many of the problems of construction projects have developed at the interfaces between key specialists.

While Some specialists 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 (mental model), hence, communication is extremely relevant in the management of projects. 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 communication planning, information distribution and performance reporting of a project in Ghana. The findings of this research therefore will make these communication challenges available for future project implementation.

## 1.6 Scope of the Study

Communication within the construction industry in Ghana is broad and could involve a lot of work especially if there are no concentrations in the study. Construction industry in Ghana comprises of all players (Contractors, Consultants and Clients) involved in the building of both roads and buildings. The study concentrated on the players within the building sector because of the fact that the building subsector is more developed locally done the road sector. Again, there were further concentration on the bigger firms within the building sector because they were presumed to be using effectively all the possible communication structure this research was likely to deal with.

## 1.7 Brief Methodology

A quantitative survey strategy was adopted in this research due to the fact that quantitative research follows a deductive approach in relation to theory and is concerned with the design measurement and sampling. The selection of professionals (respondents) was limited only to Project Consultancy Firms and / or Agencies as well as D1K1 and A1B1 Contractors representing Building Contractors and Road Contractors respectively. Construction professionals comprised of Quantity Surveyors, Civil Engineers, Structural Engineers, Project Managers and Architects. The choice of this class of building contractors was made on the basis that they were well established firms which engage the services of these professionals. Consultancy Firms included public institutions like the Ministries, Departments and Agencies responsible for infrastructural projects. The decision to focus on Greater Accra region was based on the list obtained from the Associations of both building and road contractors which showed that more than 65% of D1KI and A1B1 contractors have their presence in Accra. In addition, the limited

time available for the study and financial constraints did not allow the researcher to travel to the other regions. Questionnaires were sent to 125 persons, consisting of clients, consultants and contractors of which 97 responses were received for a response rate of 78%. The responses were further analyzed to determine the profile of respondents, the respondents' position and assess; whether respondents were familiar with the term project communication or construction communication.



## 1.8 Synopsis of the Chapters

**Chapter One:** The framework of this piece of study has been structured to gain insights into the above purpose and thus includes five chapters namely the literature review, methodology, results presentation, analysis and discussion, Conclusion and limitations as well as recommendation for future research. A brief outline of each of them is given below:

**Chapter Two:** The literature review which relates to the study of the previous secondary data available on this topic are detailed here. This chapter primarily includes reviews on research areas in communication model, communication channels, communication planning, and overview of Ghanaian construction industry and construction information distribution.

**Chapter Three:** This chapter establishes the method adopted for this study and hence, the appropriateness of quantitative research as compared to qualitative approach. Also the use of questionnaire survey has been reasoned in this chapter as well. Apart from this the criterion for the selection of the sample size is disclosed.

**Chapter Four:** This chapter reveals the analysis and interpretation of the responses which were collected during the interviews. A wide range of sub-topics under this theme has been touched upon; reasons were prescribed as to why some of the results were consistent with the literature review and some opposed.

**Chapter Five:** This chapter is related to the final conclusion where all the findings from the research were summarized. The limitations faced while conducting this research have been well noted in this chapter, as well as direction and recommendations for future research.

# Chapter Two

# Literature Review

## 2.1 Introduction

The right to communication is a basic human right, which points to every human being's basic need to express what he or she thinks about any matter. It is essential to that morality of inter-subjectivity whose prime characteristic is the relationship and also sets freedom, equality, and solidarity above all else. Since all democratic relationships presuppose interactions that are mutual, there can be no relationship without dialogue. To enter into relationships, to establish communities, to survive, people must communicate. Genuine communication is therefore a basic human need like food, clothing and shelter (Fisher and Harms, 1983). Individual members within a group of professionals therefore need to communicate with each other in order to accomplish their production and social functions within the organizations.

## 2.2 Communication Defined

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. It is also important to note that engineers and technical personnel spend 50%-75% of their time in communicating verbally.

### 2.2.1 Characteristics of 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 The Nature of Formal and Informal Communication

Theorists have long recognized that organizations 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 organizational outcomes. At both the organizational 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 organization to accomplish a collective set of tasks" . Explicit coordination is necessary in part because individuals within an organization 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 organizational 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 2.1 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).

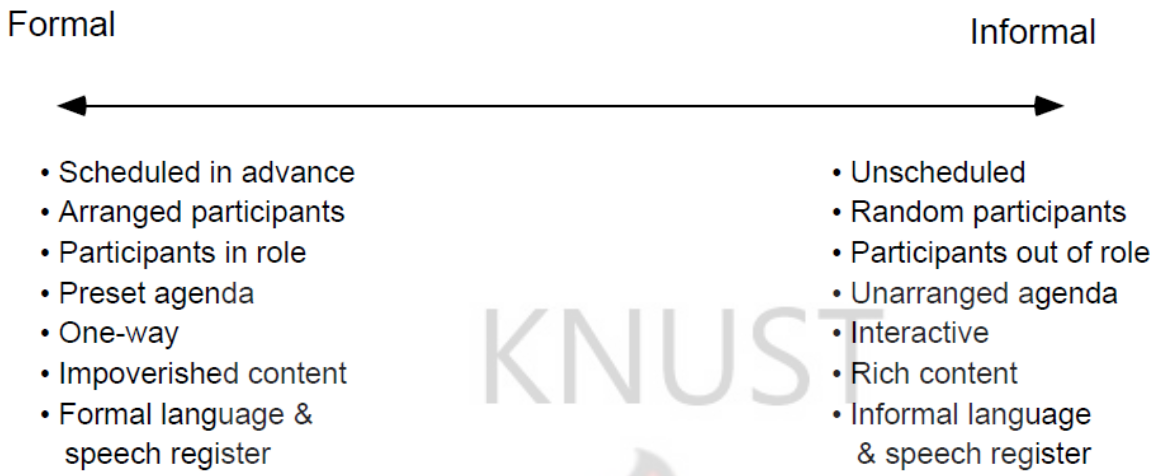



**Figure 2.1 - The formalities dimensions of communication (Source: Kraut et al., 1990)**

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.

Finally, the communication channel itself may partially determine the formality of a communication event. By their nature, for example, telephone and face-to-face discussion are more interactive and richer than a computer mail systems and as a consequence, more informal. Subdividing media more finely, computer generated information systems reports and human generated memoranda are more formal than are scheduled meetings and electronic bulletin boards, which in turn are more formal than telephone calls or hallway chats.

In terms of functional characteristics, formal and informal communication systems seem best suited to different types of activities. Formal communication tends to be used for coordinating relatively routine transactions within groups and organizations. For example, in a large corporation, one might go through a procurement process simply by following the steps specified in the corporate purchasing guide. The material specification, purchase requisition forms, bidding procedures, criteria for selecting one vendor over another, and stages in the approval process would all be specified in advance. In the extreme, the rule book could so totally describe the conditions under which certain actions should occur and the precise ways of executing them that a factory's computerized, just-in-time procurement system could place orders with suppliers without human intervention.

However, these formal coordination mechanisms often fail in the face of novel or unplanned events. Novelty, unexpectedness, and uncertainty are frequent in organizations and are often components of what appear to be routine procedures (e.g., Suchman and Wynn, 1984). Under these circumstances, informal communication seems needed for coordination in the face of uncertainty and equivocality (Daft and Lengel, 1986)

## 2.4 Communication Channels

During a project, communication can occur in various directions depending on who is communicating. There is upward communication to management from your own organization and the customer's organization. Lateral communication takes place with customers and within project teams. Machinery needs to be put in place for further communication to take place, either downward communication (from superior to sub-ordinate), horizontal communication (between colleagues) or upward communication (from sub-ordinates to superior). Mehra (2009) stated that communication will always involve more than one person. In the figures 2.2, the number of communication channels required to communicate with five other team members in a team of six is seen.


**Figure 2.2 - The three communication channels of the project manager** (Adopted from Keyton, 2011)

## 2.5 Communications Models

The communication models summarized in the Table 2.1 and Figures 2.3, 2.4, 2.5 and 2.6 below focuses on project environments. Many models dating from the late 1940s are referred to as *transmission* models 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 summarised in the Table 2.1 below.

**Table 2.1 – the summary of the various models and summarised interpretations**

| **Model** | **Comment** |
|---|---|
| Lasswell formula (1948) | Useful but too simple.<br>It assumes the communicator wishes to influence the receiver and therefore sees communication as a persuasive process.<br>It assumes that messages always have effects.<br>It exaggerates the effects of mass communication.<br>It omits feedback.<br>On the other hand, it was devised in an era of political propaganda<br>It remains a useful introductory model<br>Braddock (1958) modified it to include circumstances, purpose and effect |
| Shannon and Weaver (1949) | Highly influential and sometimes described as "the most important" model (Johnson and Klare)<br>Communication is presented as a linear, one-way process<br>Osgood and Schramm developed it into a more circular model.<br>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.<br>Criticised 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 can be given different shapes depending on the situation it describes.<br>There is a verbal as well as visual formula (like Lasswell): someone perceives an event and reacts in a situation through some means to make available materials in some form and context conveying content with some consequence<br><br>The flexible nature of the model makes it useful.<br>It also allows an emphasis on perception<br>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 reality and the stories given on the news |
| Westley and MacLean (1957) | Another influential model<br>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)<br>It oversimplifies the relationships between participants by not showing power relations between them. |

| | |
|---|---|
| | It makes the media process seem more integrated than it may actually be<br>It doesn't show the way different media may have different interests of the state (e.g. difference between a state broadcaster and private one) |

**(Adopted from Mehra, 2009)**



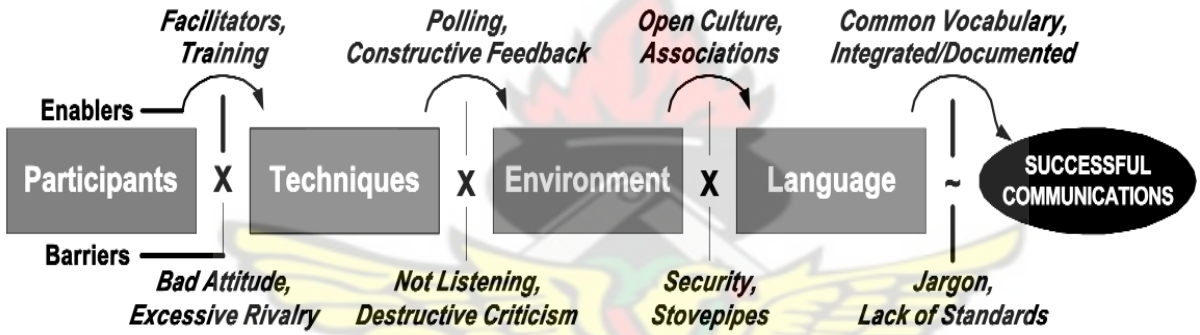



**Figure 2.3: - The project management communication model designed by Shannon-Weaver Model (Adopted from Mehra, 2009)**

The Lasswell Formula (Figure 2.4), 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.

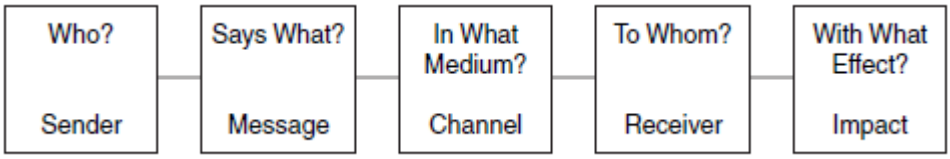



**Figure 2.4: The Lasswell Formula model for communication (Adopted from Mehra, 2009)**



David Berlo, a well-known communication researcher who studied at the University of Illinois with Wilber Schramm, introduced the model in Figure 2.5 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).

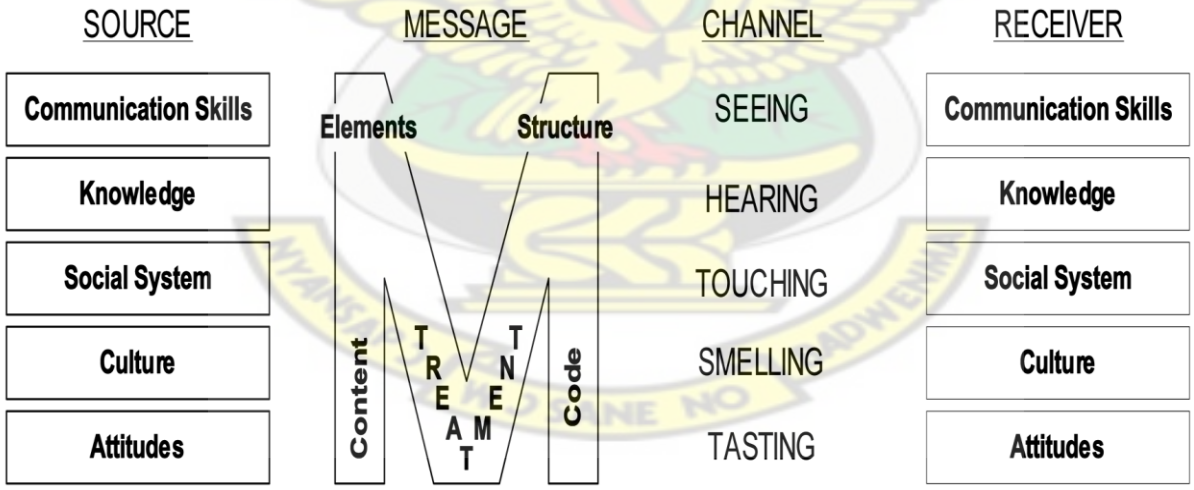



**Figure 2.5: - David Berlo SMCR Model (Adopted from Mehra, 2009)**

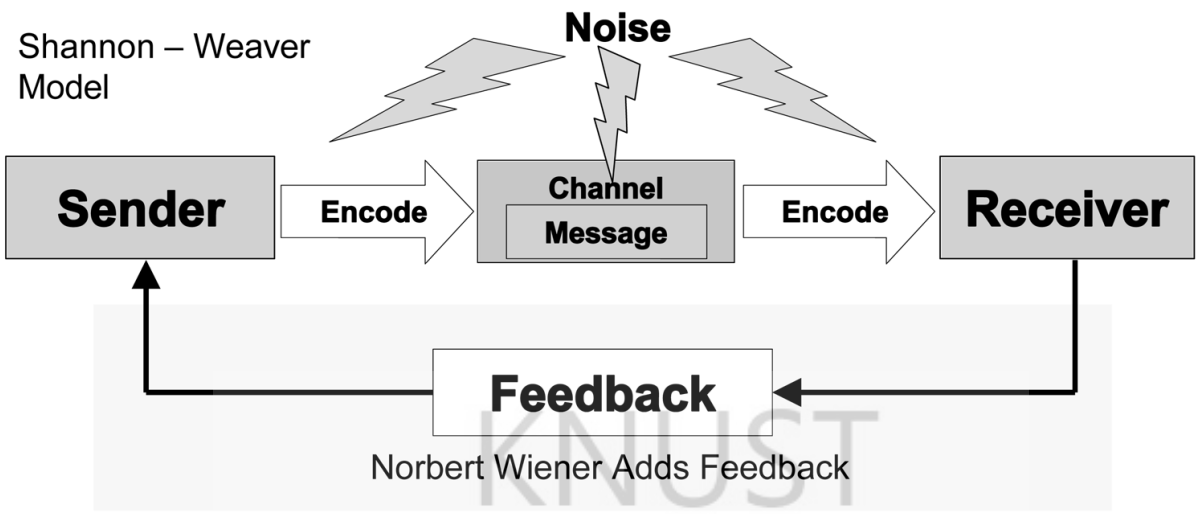



**Figure 2.6: - Shannon-Weaver Model with Weiner's feedback (Adopted from Mehra, 2009)**

Almost all the models described have a sender and receiver as well as encoding and decoding methods.

**Sender** – Is an information source, who initiates communication.

**Encode** – Information is encoded into a message. Sender should make sure that he truly provides understandable information to another project team member. This means that sender must attempt to take the perspective and knowledge of the receiver into consideration and create and present a message that he or she is likely to interpret in the way intended.

**Medium** – Messages may be sent using traditional mail, email, phone call, face-to-face or using gestures alone. Medium is the communication method used to transmit the message.

**Decode** – Message is decoded to understand the information sent by sender. Sender uses his knowledge and understanding of the subject matter to decode this message, hence extra caution is required to interpret the message in right context (sender's context).

**Receiver** – The person to whom the information is sent.

**Feedback** – Receiver sends a feedback to sender to acknowledge that the information is received and understood. Sender may have to act further to ensure that the receiver understood the message by eliciting feedback that helps sender to assess whether receiver interpreted the message as intended.

Sender may use symbols, signs, behaviour, speech, writing, or signals to transfer the information in the message. The purpose is to ensure that both parties understand the perspective (Mehra, 2009).



The project manager has a responsibility to examine communication needs stakeholder analysis and select appropriate communications medium and frequency for information distribution. The Communication Plan should determine how project documents will be organized and distributed. The documents include meeting minutes, status reports, customer requests, forecasts, and change status requests. The guidelines for distribution will be appropriately communicated to project team members.

**Status Reports** – reports that describe where the project stands at a specific point in time should follow the following organization:

I. Accomplishments for week or month

- Describe most important accomplishments. Relate them to project's Gantt chart.
- Describe other important accomplishments, one bullet for each. If any issues were resolved from the previous week or month, list them as accomplishments

II. Plans for following week or 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. Project Changes (Dates and Description): List any approved or requested changes to the project. Include the date of the change and a brief description.

**Meeting Minutes** – document used to convey purpose of meeting, items of importance, crucial decisions, and action items.

Request for Proposal (RFP) – document used to solicit proposals from prospective suppliers.

Request for Quotation – a document used to solicit quotes or bids from prospective suppliers.

Change Status Request – oral or written acts or omissions by someone with actual or apparent authority that can be construed to have the same effect as a written change order.

Forecasts – used to predict future project status and progress based on past information and trends; especially project control and cost.

## 2.6 Communications Plan- Managing Stakeholders

The project manager must understand and build a working relationship with various stakeholders. They should specifically address how communication can satisfy the needs and expectations of the stakeholders. To assist with managing stakeholders and provide the project

sponsor with guidelines to measure scope, time, and cost goals; an expectation management matrix will be created to clarify expectations.

Another tool to help manage stakeholders and also resolve project issues is an issue log. The issue log will be kept on file by the project manager. The issue log will be electronic and a hard copy will be kept as a backup method. The log will include: Issue number, Issue Description, Impact on project, Date Reported, Reported by (Who), Assigned to (Who handled the issue), Priority (H, M, L) High, Medium, Low, Due Date, Status (Open, Closed) and Additional Comments.

**Table 2.2 – A table showing an issue log**

| Issue # | Issue Description | Impact on Project | Date Reported | Reported By | Assigned to | Priority | Due Date | Status | Additional Comment |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Two people left the project | Need to reassign personnel | 11/19 | April Armwood | Project Manager | High | 12/1 | Open | If project manager can't reassign people; then PM should meet with team to search for replacement |

**(Adopted from Mehra, 2009)**

Stakeholders should be notified of changes and progress on a weekly basis. A formal meeting will be held monthly to discuss progress, plans, scope, goals, budget concerns, etc. Stakeholders will be able to access project manager or project sponsor via email and phone. Occasional email chats will be available to discuss issues. Email etiquette is enforced. If immediate attention is needed, the project manager or project sponsor should be notified immediately.

## 2.7 Methods of Communication

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);

1) Formal Writing – This takes the form of Project Plan, Project charter, Specifications, Reports, Metrics

2) Formal Verbal – Presentation and speeches fall under this category

3) Informal Writing – Examples of informal written methods of communication include memos, e-mail, notes, etc.

4) Informal verbal - Meetings, stakeholders and conversations are categorized under informal verbal method.

5) 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.

6) 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.

Effective communication is a two-way process which involves active listening and reflects the accountability of speaker and listener. It also utilizes feedback to confirm understanding which makes it free of stress.

## 2.8 Interpersonal Communication in Construction

There exist numerous studies that have paid attention to the lack of effective communication in the construction industry (Emerson, 1962; Banwell 1964; Latham, 1994; Egan 1998, 2002). Communication carries a special importance within the industry as a result of its project-based structure. Given that construction is such a fragmented, dynamic and disparate sector, effective communication becomes essential "for the successful delivery of performance goals (productivity, profitability and repeat working opportunities" (Dainty et.al, 2006). A review of management literature reveals that studies on communication have focused mainly on the nature

of interpersonal communication. However, there seems to be few empirical studies related to the subject in project-based industries such as construction.

Interpersonal communication in construction projects takes three forms: oral, written (or graphic), and nonverbal communication. Oral communication refers to sending messages by using common spoken symbols. It includes face-to-face, telephone, meetings, and presentations. In a project environment, it is the appropriate medium for "timely exchange of information, rapid feedback, immediate synthesis of message, and timely closure" Carlsson et.al. (2001). Written communication includes e-mails, fax, memos, letters, reports, plans (strategic and tactical), legal documents and other forms of information to be transmitted. Writing bid proposals, progress reports, training manuals etc. is an important part of management of construction projects.

Jergeas and Hartman (1994) suggested keeping good records and communications in order to avoid claims and disputes in construction projects. Gorse et.al, (1999) investigated interpersonal communication behavior between designers and contractors during the construction phase of projects. Their findings reveal that informal approaches such as face-to-face are perceived to be the most effective medium of communication within the industry. Their results are also supported by Carlsson et.al. (2001) who conducted communication research within the Swedish construction industry. Carlsson et.al, (2001) argue that "barriers to effective communication are likely to be broken down by more integrated project delivery systems. In their study, Shohet and Frydman (2003) identified effective patterns of communication at the construction manager level in projects delivered by construction management procurement protocol in Israel. They found that verbal communication continues to be highly important in ensuring adherence to project objectives. Furthermore, Culp and Smith (2001) argue that personality type plays an important

role in determining the success of interpersonal communication. Based on Myers-Briggs Type Indicator, they investigated the impact of personality in interpersonal communication.

Although there has been substantial research in the area of interpersonal communication, little has been done on communication styles in construction industry settings. For this reason, this study focuses on the evaluation of the similarities and differences in communication styles of construction professionals.



Communication style refers to "the way one verbally and Para verbally interacts to signal how literal meaning should be taken, interpreted, filtered, or understood" (Norton1978, p.99). Individuals have a predominant communication style, but it is possible to alter communication styles in regards to a specific situation. Many researchers have argued that situation is an important factor for communication behaviour (Miller, Cody & McLaoughlin, 1994; Oetzel, 1999). Argyle, Furnham & Graham (1981) describe a situation as "the sum of features of the behavior system for the duration of a social encounter" (p. 30). Miller et al. (1994) explain that communication behavior is affected by situational features and that people change their communication styles for conducting interpersonal communication with individuals in group and out-group situations. Review of literature suggests that the styles individuals use vary across and within cultures (Hansford & Hattie, 1987; Hughes, 1996; Hughes & Baldwin, 2002). Hall (1974) explains variations in styles by the notion of high and low context communication. High-context (HC) communication involves using and interpreting messages that are not explicit, minimizing the content of the verbal message, and being sensitive to others whereas low-context (LC) communication involves being direct, precise, and open (Gudykunst et.al.1996). Gudykunts and Ting-Toomey (1988) argue that LC and HC communication are predominant in individualistic and collectivistic cultures, respectively. Members of individualistic cultures (Unites States,

European countries) are "expected to communicate in ways that are consistent with their feelings" (Hall, 1976, p.79) and tend to prefer direct styles. Members of collectivistic cultures (Asian countries) are expected to communicate in ways that "camouflage and conceal speakers' true intentions" (Gudykunts & Ting –Toomey, 1988, p.100) and tend to utilize indirect styles.



## 2.9 Patterns of Communication within the Construction Industry

Good communications is one of the main prerequisites for the smooth and profitable running of any organisation. This is particularly so in the construction industry as communication in the industry according to Shutt (1992) is often hampered for the following reasons:

a) Lack of co-operation and early consultation between the various stages of construction, i.e client's conception stages, design stages, planning and other legislative approvals, erection stage.

b) The increasing proportion of subcontract labour (if nominated) over which the main contractor has no direct control.

c) The problem of the erection site being far from the specialist head office functions often leads to instructions being issued by phone, rather than more concise written instructions being given.

## 2.10 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 earlier 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.

## 2.11 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.

### 2.11.1 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).



### 2.11.2 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 not 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).

## 2.12 Communication between Design Team and Building Team

On nearly every job, certain difficulties arise, usually practical difficulties in construction to certain detailed drawing. These problems in many cases could have been overcomed, 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.

On the other hand, many builders cause a lot of delays. There are many situations where it is obvious to the builder or site agent that he is going to have to seek the architect's advice or ask for details about certain points, but it is not mentioned until such a late stage that delay occurs.



## 2.13 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. This can sometimes lead to overload "in" trays with the majority of the information being irrelevant to the particular department.

## 2.14 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.



## 2.15 Stakeholders in the Construction Industry

Communication according to Maslej (2006) is said to be effective within the working group in the construction industry only when the transmitted ideas achieve their desired action or reaction, as the operations involve the team effort of the client, quantity surveyor, architect, consulting engineer, specialists and the contractor's organization with the main objective of getting things done through human beings.

Maslej (2006) noted that to better understand the concept of communication in the construction industry, it is important to acknowledge the roles, responsibilities and the authority of various participants on a typical construction project and how information gets exchanged.

## 2.16 Roles of Participants in Construction Projects

The roles of participants in construction projects as stated by Sompura and Viramgami (2005) are outlined below:

Project Manager

- ✓ Conceptual Planning of the Project
- ✓ Overall administration of the Project.
- ✓ Bills and reconciliation of material.
- ✓ Minimize wastage of Construction Material.
- ✓ Liaison with Client / Consultants
- ✓ Coordination with architects and consultants.
- ✓ Motivating and managing site personnel as team leader.
- ✓ Planning day to day activities of Project.
- ✓ Timely completion of project within the given time frame and maintaining quality
- ✓ Attending major site coordination meetings with client, reviewing site progress and resolving pending problems for various projects under execution.
- ✓ Leadership, delegation, communication, interfacing and presentation skills. Experience in handling multi-functional management role is mandatory

Structural Engineer

- ✓ Serve as the Senior Site Representative for all matters related to construction quality assurance of structural works.
- ✓ Monitor the structural works for conformance with the provisions of the contract documents and the procedures manual.
- ✓ Liaise with Local Authorities and Ministerial Agencies having jurisdiction over the project.
- ✓ Review contractor's structural change order proposals.
- ✓ Review contractors' claims related to structural works and prepare recommendations for claims approval or rejection.
- ✓ Assist in negotiations with contractors regarding the value of claims or changes in schedules.
- ✓ Review of structural drawings for projects designed by others
- ✓ Perform all other duties that may be requested by the Resident Engineer

Architect

- ✓ Furnishing the contractor with drawings and information and certifying them for code compliance and safety.
- ✓ Nomination of sub-contractors and suppliers
- ✓ Suspension of the works

- ✓ Issue of variation orders altering extent, nature or quantity of the works
- ✓ Carrying out feasibility studies together with other consultants

Quantity Surveyor

- ✓ Sees to the cost implication of the project and ensures that the project is still within the approved budget
- ✓ Prepares the Bill of Quantity for the project
- ✓ Recommends action to the client through a tender report for the purpose of selecting the most suitable contractor
- ✓ Examines the Bill of Quantity and helps in deciding the best for the purpose of the project
- ✓ Managing the tendering process
- ✓ Assessing capital and revenue expenditure over the whole life of a facility
- ✓ Managing and analysing risk
- ✓ Giving advice on the avoidance and settlement of disputes.
- ✓ Valuing construction work for interim payments, valuing change, assessing or compiling claims for loss and expense and agreeing final accounts
- ✓ Negotiating with interested parties

- ✓ Control construction costs by accurate measurement of the work required, the application of expert knowledge of costs and prices of work, labour, materials and plant required, an understanding of the implications of design decisions at an early stage to ensure that good value is obtained for the money to be expended.
- ✓ Advising clients on ways of procuring the project.



Construction (Resident) Engineer

- ✓ Directs the affairs of a construction project
- ✓ Provides technical advice to all parties involved with the project
- ✓ Inspecting the site to ensure that the building which will be erected can be accommodated by that area.
- ✓ Provides information to the pertinent parties and general public to keep them informed and in the case that any issues arise before, during and after the construction

## 2.17 Communication Structure in the Construction Industry

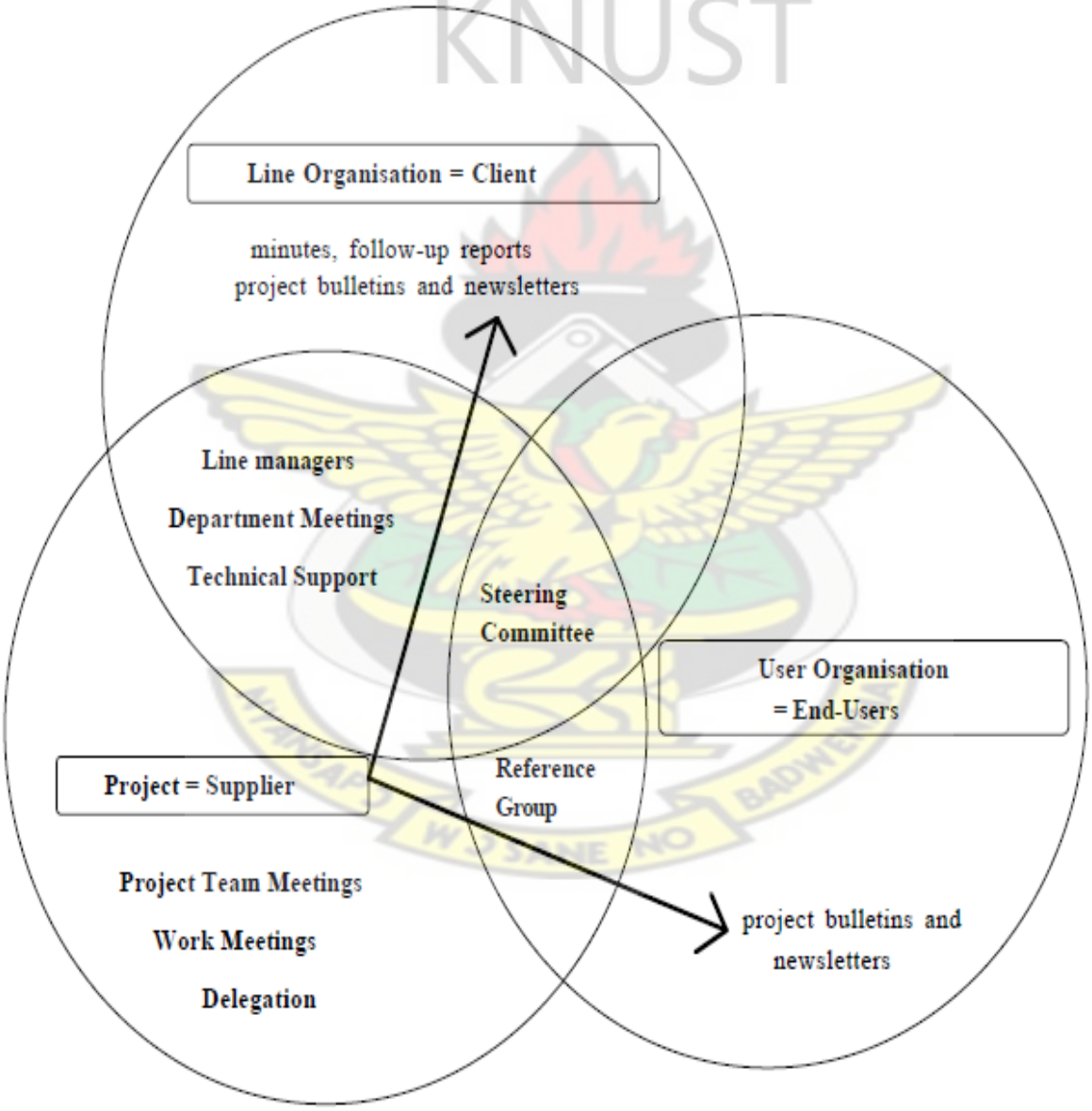



**Figure 2.7 - Communication Channels in a Project (Adopted from Ruuska, 1994)**

The three circles in figure 2.7 which was adopted from Ruuska, (1994) illustrate a project, a client and an end-user. In the intersections we can see the organisational parts through which the official collaboration between these three groups usually takes place. The arrows show how a project deals with written information to the line and end-user organisations. Together these elements can be regarded as the project's official communication channels.



### 2.17.1 A Reporting System

A project's reporting system in figure 2.8 which was adopted from Sell, (1980) has basically two tasks: it serves the project's internal management process and an outward information channel. A reporting system can also be seen as a feedback control system that tries to keep the work process in balance by reacting to deviations.

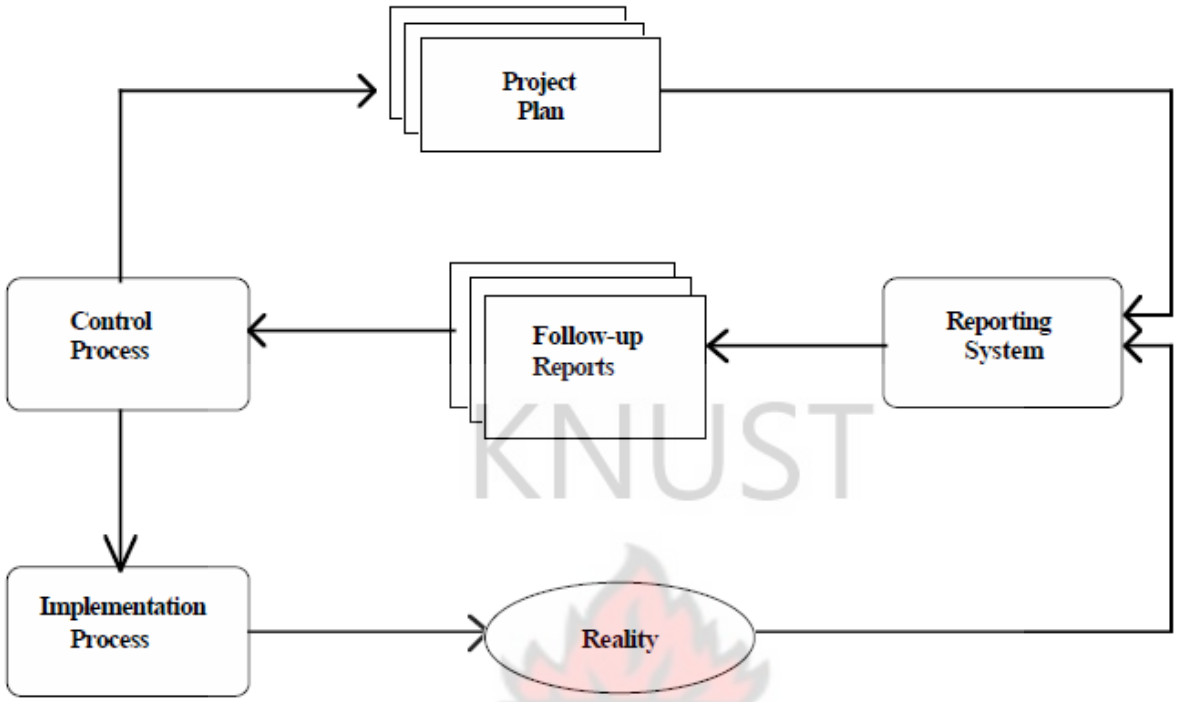



**Figure 2.8 - A project's reporting system (Adopted from Sell, 1980)**

When building up a reporting system a project manager should carefully consider to whom the messages will be addressed. The guideline is that, the higher in the organisation the reader sits, the more compressed the information should be.

According to the figure 2.9 which was adopted from Pelin, (1990), the amount of information and the frequency required decrease when we go upwards in the organisation. The problem of functional management is seldom the lack of information but its overload causes information losses. Functional management is usually interested only in the outline of the time schedule (milestones), accumulated costs and the quality of the end product in general level. Details are not needed. In the worst case they may cover up more important issues and thus decrease the informativeness of the report (Love 1989).

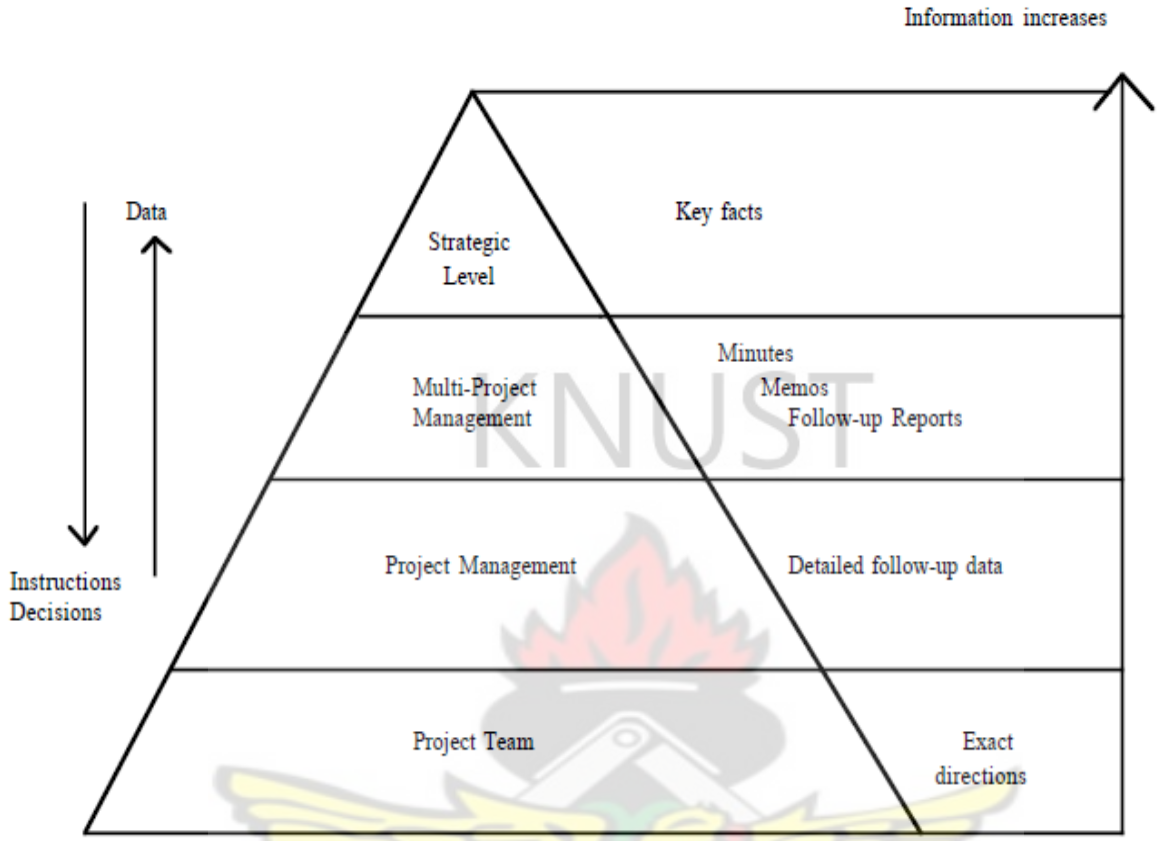



**Figure 2.9 - Information exchange in the organisation (Adopted from Pelin, 1990)**

### 2.17.2 External Communication

External communication in projects means the communication between the project and its relevant environment, typically the client and end-user organisation. Management of the functional organisation is important for a project in order to achieve and maintain the organisational commitment. It is not so exceptional for the functional organisations to have resistive forces that don't support the project. Often resistance and negative attitudes are a result of the lack of information. People simply don't know why the project has been founded and at

where it is aiming. To create a positive profile for itself a project should keep the stakeholders well informed on its goals and operations. Insufficient communication creates a news vacuum that will be filled with rumours **(**Choudhury, 1988**)**.

### 2.17.3 Internal Communication

Internal communication has two emphases in a project: the steering committee and the project team. A steering committee is the top decision making forum in a project. Its task is to control and support the project manager. Interpersonal information exchange between the project and the client organisation and also the end-user organisation takes place in the steering committee. Although the majority of the official decision making takes place in the steering committee, the cooperation between the project manager and the steering committee should not be limited only to the meetings. By also keeping contact to the steering committees key members between meetings, a project manager can ensure that steering committee is up-to-date on the project's performance and that the decision making mechanism will progress smoothly when it is needed. Within the project group effective communication is based on the key factor of the project leadership: manage by walking and talking. More official ways to communicate are the regular project team meetings, memos and follow-up reports. Although a follow-up report can also serve a project's external communication goals, it still has more importance as an internal communication channel.

## 2.18 The Ghanaian Construction Industry

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. The first one has been generally addressed in the preceding sections. This section, therefore, focused on the second aspect. It discusses the set-up of the industry, its project execution situations and how efforts are required at improving performance through systematic measurement and management.



## 2.19 The Construction Industry Set-up

The key stakeholders in the construction industry in Ghana are clients, professional consultants and contractors.

### 2.19.1 Clients

In Ghana four main clients are distinguishable: the Government (being the major client), Real Estate Developers, Investors and Owner occupiers. Between 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. This amount forms part of the bulk of the expenditure of all government agencies, namely, the Ministries, the Assemblies, Departments, Institutions and other Agencies. Procurement of contracts must strictly follow the rules and regulation of the Public procurement law as stipulated in the Procurement Act, 2003 (Act 663). The main

procurement arrangement is the traditional competitive bidding. 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. 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. 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. They usually, do not engage professional consultants.

### 2.19.2 Professional Consultants

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) and Services Engineers (SE). Geodetic Engineers are often involved in roads construction. All these professional 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.

### 2.19.3 Contractors

Contractors in Ghana are grouped into eight categories (A, B, C, S, D, K, E and G) according 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 (Vulink, 2004). 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 take 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.

## 2.20 Construction Procurement

Following the procurement law, construction activities in Ghana (government projects) are organised essentially as a tripartite arrangement between the client, professional consultants and the contractor. The clients, upon taken a decision to build, calls on the chief consultant, usually, the Architect and the other consultants. They provide professional advice to the government during the briefing stage. They then provide design, appoint the qualified contractor, supervise the execution and advice for payment and finally, conclude the project.

The table below describes the usual process of project procurement in Ghana using the traditional system.

**Table 2.3 Procuring a Public Construction Project in Ghana**

| Stakeholder | First Action | Second Action | Third Action | Fourth Action | Fifth Action |
|---|---|---|---|---|---|
| Client | Conceptualise | Initialise | * * * * * | * * * * * | Use the product |
| Practitioners (consultants) | * * * * * * | Design client's concepts | Manage the project | Manage the project | * * * * * |
| Contractor | * * * * * * | * * * * * * | Execute the project | Complete the project | * * * * * |

**(Adopted from World Bank, 2003)**

*Stakeholder has no active role

This has meant that after the initial stage, the client's role is often limited to expecting the finished product. The consultants, led by their team leader (usually, the Architect,

Quantity Surveyor or Civil Engineer depending on the project, or project manager where applicable) traditionally become not only the managers of the project ensuring that the right thing is done by the contractor but also the sole judge assessing and giving the verdict as to the state of performance and satisfaction of the project to the client



## 2.21 Ghanaian Construction Industry Performance

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. It is noteworthy that clients' delay in payment to service providers (contractor and practitioners) also affects payments of salaries and wages of their staff. This is because sometimes these delays run into several months and thus, these employers find it difficult to continue paying their staff.

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).

# Chapter Three

# Research Methodology



## 3.1 Introduction

This chapter explains the procedures of this study. It entails the availability and selection of appropriate research design, strategy and method that helped address the key questions raised

## 3.2 Research Strategy

A quantitative strategy was adopted in this research due to the fact that quantitative research follows a deductive approach in relation to theory and is concerned with the design measurement and sampling (Naoum, 2002). The strategy employs the use of statistical techniques to identify facts and casual relationships. Quantitative research is also objective in nature and based on testing a hypothesis or theory composed of variables (Naoum 2002). 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 professionals working on a constructional project communicate.

### 3.3 Research Design and its Justification

Researchers collect evidence when they ask for someone's opinion. Further attempts are then made to determine the prevailing opinion within a particular group.

A survey study was deemed appropriate for this research for three 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.

### 3.4 Sample Design Process

The purpose of sample is to gain information about the population by observing only a small proportion, i.e. the sample size. This research intended to understand how project professionals communicate on construction project in Ghana. As a result, the researcher's focus was on the professionals who work with the various project organisations in Ghana i.e. Contractors, Consultants etc.

### 3.4.1 Population Definition

The selection of professionals (respondents) was limited only to Project Consultancy Firms and or Agencies as well as D1K1 and A1B1 Contractors representing Building Contractors and Road Contractors respectively. Construction professionals comprised of Quantity Surveyors, Civil Engineers, Structural Engineers, Project Managers and Architects. The choice of this class of building contractors was made on the basis that they were well established firms which engage the services of these professionals. Consultancy Firms included public institutions like the Ministries, Departments and Agencies responsible for infrastructural project.

The decision to focus on Greater Accra region was based on the list obtained from the Associations of both building and road contractors which showed that more than 65% of D1KI and A1B1 contractors have their presence in Accra. In addition, the limited time available for the study and financial constraints did not allow the researcher to travel to the other regions.

### 3.4.2 Sampling Techniques Used

The non-probability sampling technique was used in this study. In probability sampling, the decision as to whether a particular element is included in the sample or not, is governed by chance alone. The technique allows each individual to be chosen randomly by chance.

Purposive sampling which is an example of the non-probability sampling technique was used in identifying the key respondents who were professionals in these project organisations; Contractors, Agencies and Consultants. This was because the researcher required certain

categories of respondents who had been involved in a lot of construction projects and therefore had more experience with communication on constructional project to answer the questionnaires.

Snowball sampling technique, which is an example of a non - probability technique was also used to get the number of clients for the study due to the different types of professionals who are working with project clients such as the Ministries, Departments, Agencies, Municipal, District Assemblies and Financial institutions. This sample technique was initially used to contact few potential respondents who are then asked to give names of persons or organisations with the characteristics sought for so that the sample size will be reduced with less costs. As a result of this, the professionals working with the D1 contractors and the consultants gave the names of clients they deal with. The list obtained from them was sorted out and the names of thirty (30) professionals working with project clients were obtained and targeted for the research.

### 3.4.3 Sample Size Obtained

According to Israel (1992) there are several approaches used in determining the sample size. These, include using a census for small populations, imitating a sample size of similar studies, using published tables, and lastly applying formulas to calculate a sample size. For this study the first and the latter were applied.

The total number of contractors with A1B1 and D1K1 status working in Accra area is 65 and according to their associations (Building and Road Contractors); each employs a minimum of three project professionals. Therefore, the population of the professionals working with these construction companies in Accra is one hundred and ninety-five (195).

The sample size was determined using the formula (Kish, 1965).

$$n = \frac{n^1}{1 + \frac{n^1}{N}}$$

Where **n = sample size**

$$n^1 = \frac{s^2}{v^2}, s^2 = p(1-p)$$



N = Total population = **195**

s = Maximum standard deviation in the population elements

p = proportion of the population elements that belong to the defined category

i.e. p = 0.5 (95% confidence level)

v = standard error of the sampling distribution i.e. v= 0.05

Hence solving for $n^1$

$s^2 = p(1-p)$ = 0.5(0.5) = 0.25

$v^2$ = $0.05^2$ = 0.0025

$n^1 = \frac{s^2}{v^2}$ , $n^1 = \frac{0.25}{0.0025}$ = **100**

$$n = \frac{n^1}{1 + \frac{n^1}{N}}$$

**n = 100/ (1+100/195)**

***n* = 66**

The sample size formulae like the one used above, provides the minimum number of responses to be obtained. From previous works done, researchers such as Cochran (1963), and Israel (1992) commonly add 10% to the sample size to compensate for persons the researcher is unable to contact. Therefore, approximately, 7 which represent 10% of 66 would be added to the sample size.



Thus a total of seventy-three (73) questionnaires were personally sent to professionals who work at the contractors offices in Accra.

This is because the population of construction professionals working in the consultancy firms as well as government agencies were difficult to come by, a sample sizes (**n**) for the professionals working with clients and consultancy firms in Accra targeted for this study was 30 each. This was purely considered in the remits of convenient sampling method. The total sample size used for this research was one hundred and thirty-three (133).

### 3.5 Data Collection

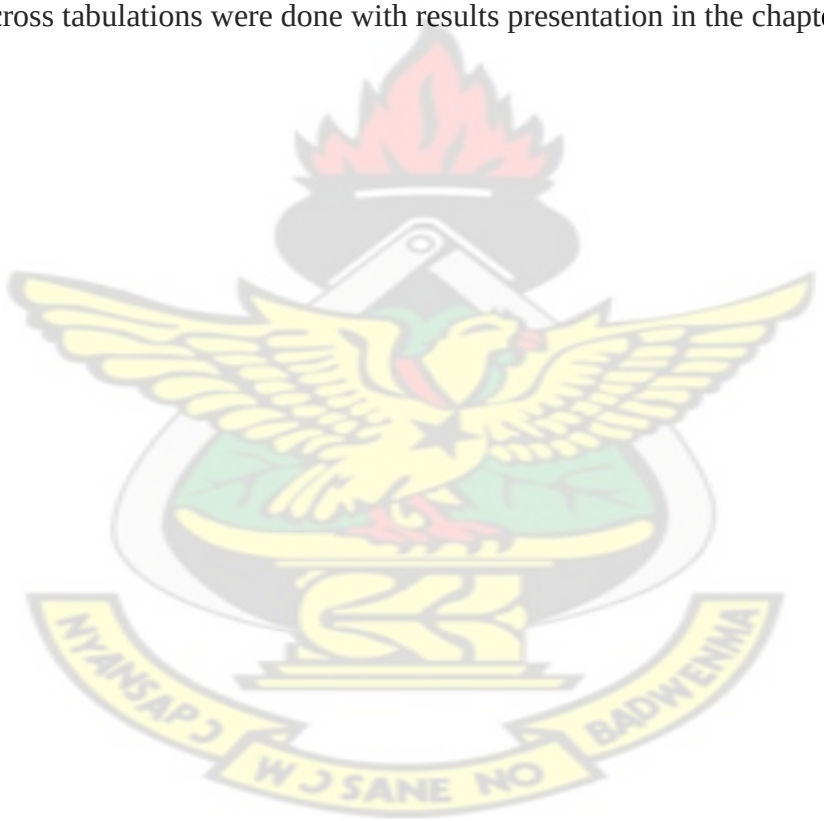
Based on the objectives and the research questions, a questionnaire was developed to obtain an extensive, as practicable, from these project professionals. A questionnaire was therefore prepared and self-administered to the various respondents. The questionnaire consisted of closed ended questions. For the purpose of the study, the questions were grouped under three categories. 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 related to the communication in the construction industry.

A 5-point ranking system and a three-level scale of low, moderate, and high were utilized where the respondents were asked to indicate from the list of how communication is achieved currently on site, how important each is and how frequent those occurs.

### 3.6 Method of Analysis



Data analysis tool SPSS 17 for windows was used to analyse the data obtained. Frequency tables, tabulations and cross tabulations were done with results presentation in the chapter four.



# Chapter Four
# Data Presentation and Discussion

## 4.1 Introduction

The purpose of this study is to find out how communication has been managed on construction projects in Ghana. In order to achieve the purpose of study, a methodology consisting of a review of literature and a survey of the main construction practitioners to obtain how project communication is conducted in the preceeding chapters. This chapter therefore presents the survey results, analyses of the results and findings of the study.

## 4.2 Survey Results

Questionnaires were sent to 125 persons, consisting of clients, consultants and contractors of which 97 responses were received for a response rate of 78%. The responses were further

analyzed to determine the profile of respondents, the respondents' position; whether respondents were familiar with the term project communication or construction communication.

### 4.3 Demographic variables

The demographic variables are presented in the table 4.1 below. The survey as presented in the Table 4.1 shows that 56.7% of the questionnaires were filled by Quantity surveyors, 9.3% by Project Managers, 7.2% by Architects, 10.3% by Principal Consultants, 1.0% by Managing Directors, 9.3% by the Main Contractors and 6.2% by Others (Project Engineers, Clerk of works). An overwhelming majority of 77.3% of the respondents had more than 5-years of experience in the construction industry. It was necessary to find out the working experience of the respondents so as to be able to obtain practical and convincing answers to the questions asked. Overall, 97.9% of all the respondents were familiar with the term project communication or construction communication.

**Table 4.1 – Profile of Respondents**

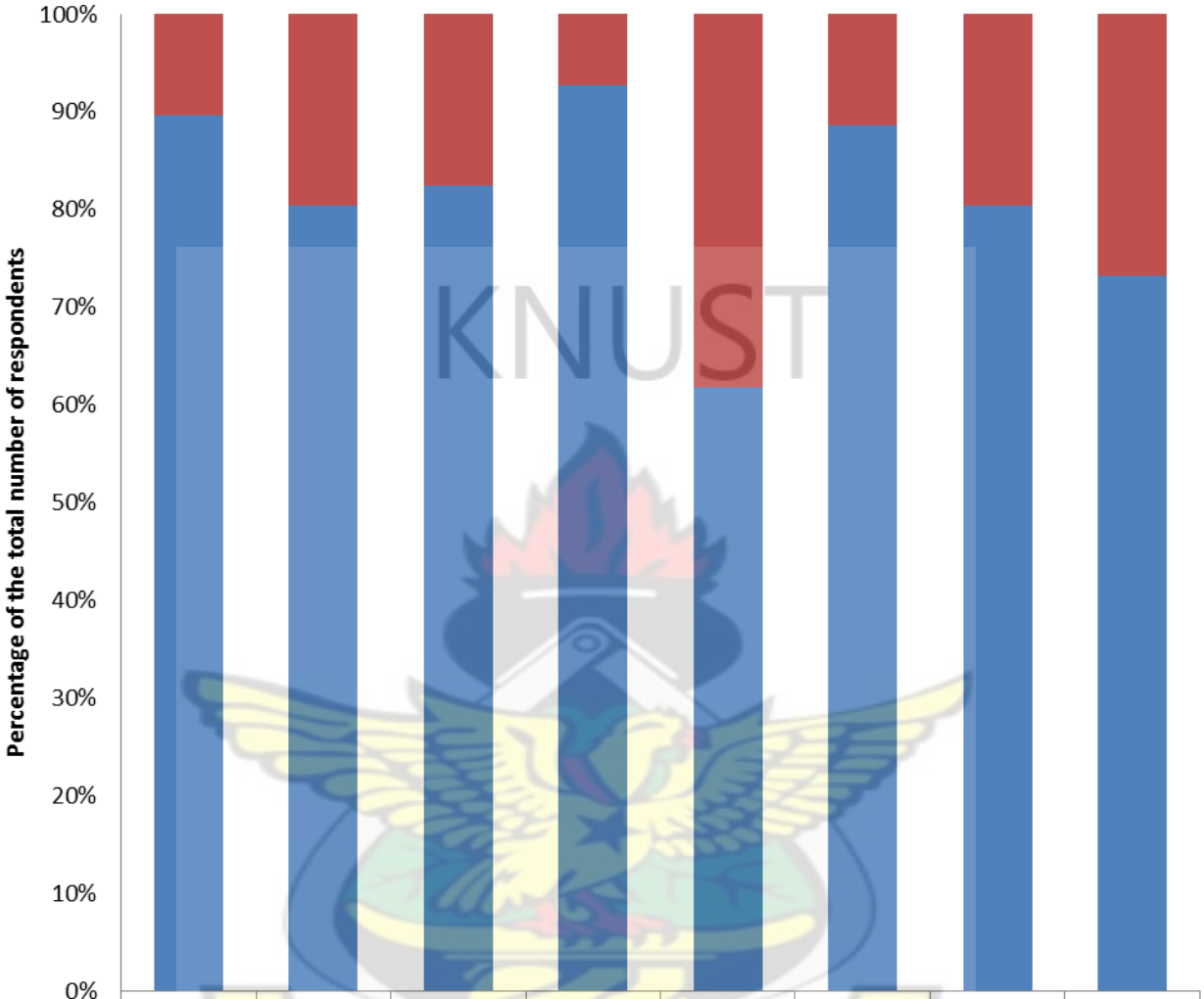
| | CLIENTS | | CONTRACTOR | | CONSULTANTS | | Overall % response |
|---|---|---|---|---|---|---|---|
| | Frequency | Percent | Frequency | Percent | Frequency | Percent | |
| **Position** | | | | | | | |
| Quantity Surveyor | 10 | 50% | 15 | 55.6% | 30 | 60% | 56.7 |
| Project Manager | 5 | 25% | 2 | 7.41% | 2 | 4% | 9.3 |
| Architect | 2 | 10% | - | - | 5 | 10% | 7.2 |
| Principal Consultant | - | - | - | - | 10 | 20% | 10.3 |
| Managing Director | - | - | 1 | 3.7% | - | - | 1.0 |
| Contractor | 1 | 5% | 8 | 29.6% | - | - | 9.3 |
| Others | 2 | 10% | 1 | 3.7% | 3 | 6% | 6.2 |
| TOTAL | 20 | 100% | 27 | 100% | 50 | 100% | 100 |
| **Years of experience in the industry** | | | | | | | |
| Less than 5 years | 5 | 25% | 7 | 26% | 10 | 20% | 22.7 |
| 5-10years | 4 | 20% | 10 | 37% | 18 | 36% | 33 |
| 10-15years | 7 | 35% | 7 | 26% | 12 | 24% | 26.8 |
| Above 16years | 4 | 20% | 3 | 11% | 10 | 20% | 17.5 |
| TOTAL | 20 | 100% | 27 | 100% | 50 | 100% | 100 |
| **Are you familier with the term** | | | | | | | |
| **Project** | 20 | 100% | 25 | 92.5% | 50 | 100% | 97.9% |
| **Communication or** | 0 | 0% | 2 | 7.5% | 0 | 0% | 2.1% |
| **Construction** | | | | | | | |
| **Communication** | 20 | 100% | 27 | 100% | 50 | 100% | 100 |
| Yes | | | | | | | |
| No | | | | | | | |
| TOTAL | | | | | | | |

### 4.4 The significance of project communication management in construction industry in Ghana

Professionals were asked to assess how true or otherwise the following statement were with regards to project communication in the construction industry in Ghana:

- Site meetings are an important channel of communication between the consultants and contractor on site.
- Training of operatives is necessary for onsite communication.
- Poor communication often results into delay, increase in cost, abandonment, amongst other problems.
- Poor and distorted information will affect the level of work done on site.
- Inexperience interpretation of working drawings can cause a failure in building components.
- Poor means of communication leads to distorted information on site.
- The importance of language used among operatives is very essential for effective communication on site.
- Late dissemination of information will affect output on site negatively.

**Figure 4.1 - A Chart Showing how the respondents in the construction industry rated the significance of communication on a project**




| | Site meetings | Training of operatives | Poor communication | Poor and distorted information | Inexperience interpretation | Poor means of communication | Importance of language used | Late dissemination of information |
|---|---|---|---|---|---|---|---|---|
| FALSE | 10 | 19 | 17 | 7 | 37 | 11 | 19 | 26 |
| TRUE | 87 | 78 | 80 | 90 | 60 | 86 | 78 | 71 |

*Source: Fieldwork, 2012*

From the Figure 4.1 above, 87% of all the respondents said that site meetings are an important channel of communication between the consultants and contractor on site. Only 10% said that site meetings are not important communication channel or forum between the contractors and the

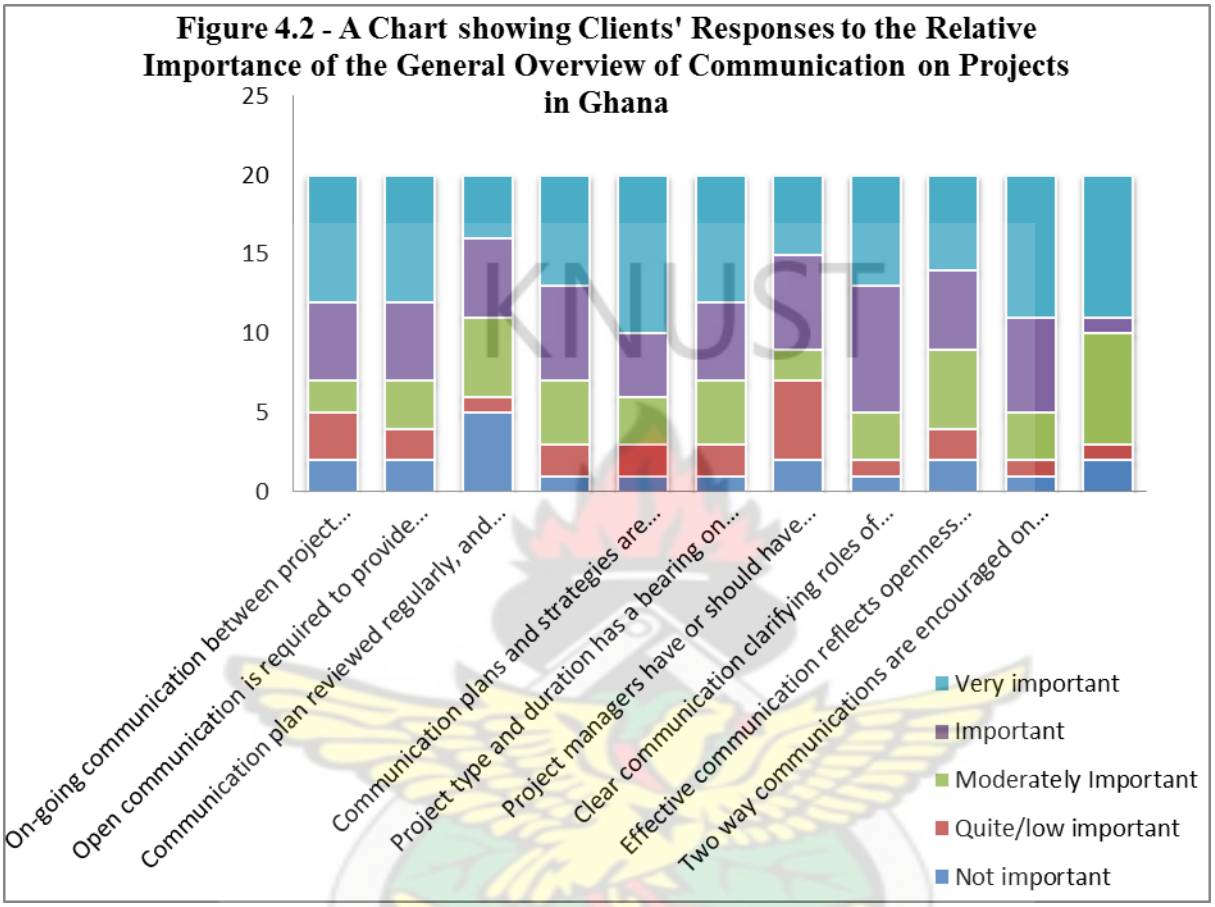
consultants. With regards to training of operatives being necessary for onsite communication, 78% answered the affirmative. 80% of total respondents of 97 said that poor communication had often resulted in project delays, project cost overrun, project abandonment etc. however, 17% said disagreed with that statement. A majority of 90% agreed that poor and distorted information relayed do affect the level of work done on site. With regards to inexperience interpretation of work drawings can cause a failure in building components. 60% of the respondents said that that statement was true, with 37% saying that the statement was false. 86% of the respondents said that poor means of communication leads to distorted information on site. Also 78% of the respondents said that the sort of language used among operatives is very essential for effective communication on site. Finally, 71% of the respondent also said that late dissemination of information will affect work output on site negatively.

**Table 4.2 - Clients' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana**

| CONTACT GROUP 1 | | Degree of relative importance quoted by the respondents | | | | | N |
|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | |
| 1 | On-going communication between project proponents and its stakeholders improve project success | 2 | 3 | 2 | 5 | 8 | 20 |
| 2 | Open communication is required to provide management with some control | 2 | 2 | 3 | 5 | 8 | 20 |
| 3 | Communication plan reviewed regularly, and adjusted it becomes necessary | 5 | 1 | 5 | 5 | 4 | 20 |
| 4 | Meetings help overcome communication barriers and increase performance level | 1 | 2 | 4 | 6 | 7 | 20 |
| 5 | Communication plans and strategies are determined /established at the outset of projects | 1 | 2 | 3 | 4 | 10 | 20 |
| 6 | Project type and duration has a bearing on communication strategy and structure | 1 | 2 | 4 | 5 | 8 | 20 |
| 7 | Project managers have or should have excellent communication skills to ensure | 2 | 5 | 2 | 6 | 5 | 20 |
| 8 | Clear communication clarifying roles of stakeholders are drawn in the project Plan | 1 | 1 | 3 | 8 | 7 | 20 |
| 9 | Effective communication reflects openness and tolerance of cultural differences on projects | 2 | 2 | 5 | 5 | 6 | 20 |
| 10 | Two way communications are encouraged on construction projects in Ghana | 1 | 1 | 3 | 6 | 9 | 20 |
| 11 | Appropriate communication media for specific purposes/audiences are necessary | 2 | 1 | 7 | 1 | 9 | 20 |

The table 4.2 above and figure 4.2 below show the Clients' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana. The measuring keys are as follows:

1 – Not important, 2 – Quite/low important, 3– Moderately Important, 4 –Important, 5 - Very important.




*Source: Fieldwork, 2012*

### 4.4.1 On-going communication between project proponents and its stakeholders improve project success

Out of a total of 20 respondents who were clients in the construction industry in Ghana, 13 of them said that an on-going communication between the project proponents (team) and its stakeholders is important or very important in improving project success. Only 5 clients' respondents said that an on-going communication between the project proponent and its stakeholders are either not important or its importance is insignificant.

### 4.4.2 Open communication is required to provide management with some control

With a total of 20 respondents who were clients in the construction industry in Ghana, 13 of them said that an open communication is important or very important to provide management with some control. Only 4 clients' respondents said that an open communication is not important or not insignificantly important to provide management with some control.



### 4.4.3 Communication plan reviewed regularly and adjusted becomes necessary for project success

A total of 20 respondents who were clients were interviewed in the construction industry in Ghana, 9 of them said that communication plan reviewed and adjusted regularly is important or very important to achieve a project success. Only 6 clients' respondents said that communication plan reviewed and adjusted regularly is not important or not insignificantly important to project success.

### 4.4.5 Meetings help overcome communication barriers and increase performance level

A total of 20 respondents who were clients were interviewed in the construction industry in Ghana, 13 of them said that meetings are important or are very important in overcoming communication barrier and increasing performance level of a project. However, 4 clients' respondents said that meetings are not important or insignificantly important in overcoming communication barriers and increase project performance. There were also 4 respondents who said that the effect on meetings in overcoming project communication barrier is moderate.

### 4.4.6 Communication plans and strategies must be determined / established at the outset

**of projects**

Out of a total of 20 constructions industry clients' respondents, 14 of them said that it is important or very important to setup or establish communication plans and strategies at the onset of projects to ensure project success. Only 3 clients' respondents said that setup or establishment of communication plans and strategies at the onset of projects is neither important or its importance is insignificant.



### 4.4.7 Project type and duration has a bearing on communication strategy and structure

Out of a total of 20 respondents who were clients in the construction industry in Ghana, 13 of them said that Project type and duration of the project is important or very important in determining the communication strategy and structure of the project. Only 3 clients' respondents said that Project type and duration of the project is neither important or its importance is insignificant.

### 4.4.8 Project managers have or should have excellent communication skills to deliver an effective communication on a project

Eleven (11) of the 20 clients' respondents said that it is important or very important for a Project manager(s) to have excellent communication skills in order oversee an effective communication on a project. Seven (7) of that number also said that for a Project manager(s) to have excellent communication skills in order oversee an effective communication neither important or its importance is insignificant.

### 4.4.9 Clear communication clarifying roles of stakeholders are drawn in the project Plan

Out of a total of 20 respondents who were clients in the construction industry in Ghana, 15 of them said that it is either important or very important to have a clear communication clarifying roles of stakeholders drawn out in the project communication plan. Only 2 clients' respondents said that to have a clear communication clarifying roles of stakeholders, drawn out in the project communication plan is not important or its importance is insignificant.



### 4.4.10 Effective communication reflects openness and tolerance of cultural differences on projects

Out of a total of 20 respondents who were clients in the construction industry in Ghana, 11 of them said that it is important or very important to have an effective communication reflect openness and tolerance of cultural differences on projects. On the other hand, 4 clients' respondents said that it is not important or its importance is insignificant to have effective communication reflect openness and tolerance of cultural differences on projects.

### 4.4.11 Two way communications must encouraged on construction projects in Ghana

Out of a total of 20 respondents who were clients in the construction industry in Ghana, 15 of them said is important or very important to encourage two way communications on construction projects in Ghana in order to improve project success. Only 2 clients' respondents said that two way communications on construction projects in Ghana is not important or its importance is insignificant.

### 4.4.12 Appropriate communication media for specific purposes/audiences are necessary

A total of 20 respondents who were clients who interviewed in the construction industry in Ghana, 10 of them said that it is important or very important to have appropriate communication media for specific purposes/audiences. Only 3 clients' respondents said that appropriate communication media for specific purposes/audiences is not important or not insignificantly important.



**Table 4.3 – Contractors' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana**

| CONTACT GROUP 2 | | Degree of relative importance quoted by the respondents | | | | | N |
|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | |
| 1 | Communication plans and strategies are determined /established at the outset of projects | 1 | 3 | 3 | 8 | 12 | 27 |
| 2 | Communication plan reviewed regularly, and adjusted it becomes necessary | 1 | 5 | 3 | 9 | 9 | 27 |
| 3 | Project managers have or should have excellent communication skills to ensure | 1 | 3 | 4 | 11 | 8 | 27 |
| 4 | Meetings help overcome communication barriers and increase performance level | 1 | 4 | 3 | 7 | 12 | 27 |
| 5 | Project type and duration has a bearing on communication strategy and structure | 0 | 4 | 6 | 10 | 7 | 27 |
| 6 | Clear communication clarifying roles of stakeholders are drawn in the project Plan | 0 | 1 | 5 | 12 | 9 | 27 |
| 7 | Effective communication reflects openness and tolerance of cultural differences on projects | 2 | 9 | 4 | 2 | 10 | 27 |
| 8 | On-going communication between project proponents and its stakeholders improve project success | 0 | 3 | 7 | 10 | 7 | 27 |
| 9 | Two way communications are encouraged on construction projects in Ghana | 0 | 0 | 4 | 10 | 13 | 27 |
| 10 | Open communication is required to provide management with some control | 1 | 1 | 9 | 5 | 11 | 27 |

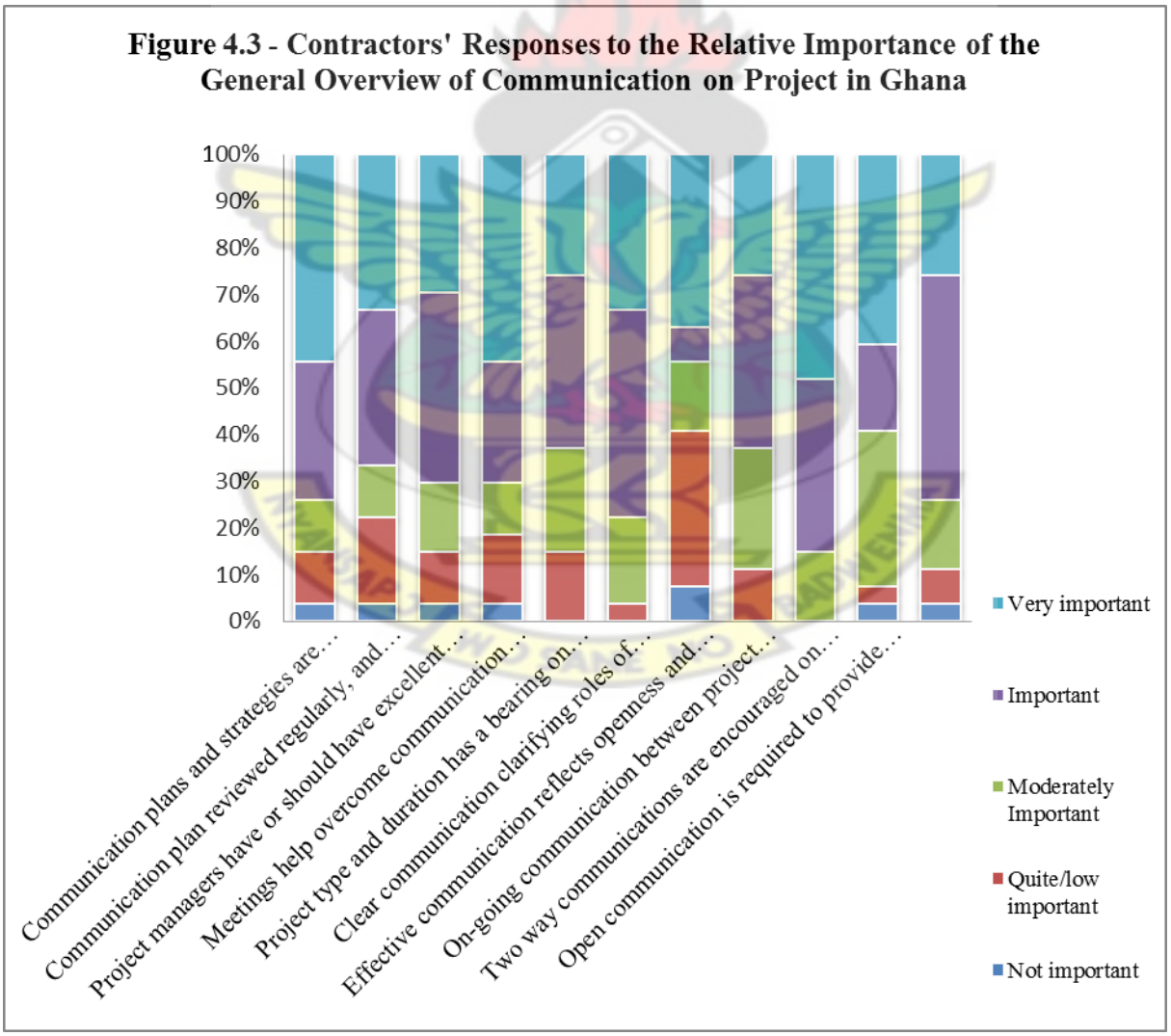
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 11 | Appropriate communication media for specific purposes/audiences are necessary | 1 | 2 | 4 | 13 | 7 | 27 |

The table 4.3 above and the chart in figure 4.3 below shows the Contractors' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana. The measuring keys are as follows:

1 – Not important, 2 – Quite/low important, 3– Moderately Important, 4 –Important, 5 - Very important.



**Figure 4.3 - Contractors' Responses to the Relative Importance of the General Overview of Communication on Project in Ghana**



*Source: Fieldwork, 2012*

### 4.4.13 On-going communication between project proponents and its stakeholders improve project success

Out of a total of 27 respondents who were contractors in the construction industry in Ghana, 17 of them said that an on-going communication between the project proponents (team) and its stakeholders is important or very important in improving project success. Only 3 contractors' respondents said that an on-going communication between the project proponent and its stakeholders are either not important or its importance is insignificant.

### 4.4.14 Open communication is required to provide management with some control

With a total of 27 respondents who were contractors in the construction industry in Ghana, 16 of them said that an open communication is important or very important to provide management with some control. Only 2 contractors' respondents said that an open communication is not important or not insignificantly important to provide management with some control. And significant number of respondents numbering 7 said that open communication is moderately (or somewhat) important to provide management with some control.

### 4.4.15 Communication plan reviewed regularly and adjusted becomes necessary for project success

A total of 27 respondents who were contractors were interviewed in the construction industry in Ghana, 18 of them said that communication plan reviewed and adjusted regularly is important or very important to achieve a project success. Only 6 contractors' respondents said that

communication plan reviewed and adjusted regularly is not important or not insignificantly important to project success.

#### 4.4.16 Meetings help overcome communication barriers and increase performance level

A total of 27 respondents who were contractors' were interviewed in the construction industry in Ghana, 19 of them said that meetings are important or are very important in overcoming communication barrier and increasing performance level of a project. However, 4 contractors' respondents said that meetings are not important or insignificantly important in overcoming communication barriers and increase project performance. There were also 5 respondents who said that the effect on meetings in overcoming project communication barrier is moderate.

#### 4.4.17 Communication plans and strategies must be determined / established at the outset of projects

Out of a total of 27 constructions industry contractors' respondents, 20 of them said that it is important or very important to setup or establish communication plans and strategies at the onset of projects to ensure project success. Only 4 contractors' respondents said that setup or establishment of communication plans and strategies at the onset of projects is neither important or its importance is insignificant.

#### 4.4.18 Project type and duration has a bearing on communication strategy and structure

Out of a total of 27 respondents who were contractors' in the construction industry in Ghana, 17 of them said that Project type and duration of the project is important or very important in

determining the communication strategy and structure of the project. Only 4 contractors' respondents said that Project type and duration of the project is neither important or its importance is insignificant.

### 4.4.19 Project managers have or should have excellent communication skills to deliver an effective communication on a project

Eleven (19) of the 27 contractors' respondents said that it is important or very important for a Project manager(s) to have excellent communication skills in order oversee an effective communication on a project. Four (4) of that number also said that for a Project manager(s) to have excellent communication skills in order oversee an effective communication is not important or its importance is insignificant.

### 4.4.20 Clear communication clarifying roles of stakeholders are drawn in the project Plan

Out of a total of 27 respondents who were contractors in the construction industry in Ghana, 21 of them said that it is either important or very important to have a clear communication clarifying roles of stakeholders drawn out in the project communication plan. Only 1 contractor's respondents said that to have a clear communication clarifying roles of stakeholders, drawn out in the project communication plan is not important or its importance is insignificant.

### 4.4.21Effective communication reflects openness and tolerance of cultural differences on projects

Out of a total of 27 respondents who were contractors in the construction industry in Ghana, 12 of them said that it is important or very important to have an effective communication reflect openness and tolerance of cultural differences on projects. On the other hand, 11 contractors' respondents said that it is not important or its importance is insignificant to have effective communication reflect openness and tolerance of cultural differences on projects.



### 4.4.22 Two way communications must encouraged on construction projects in Ghana

Out of a total of 27 respondents who were contractors in the construction industry in Ghana, 13 of them said is important or very important to encourage two way communications on construction projects in Ghana in order to improve project success. None of the contractors' respondents said that two way communications on construction projects in Ghana is not important or its importance is insignificant.

### 4.4.23 Appropriate communication media for specific purposes/audiences are necessary

A total of 27 respondents who were contractors who interviewed in the construction industry in Ghana, 20 of them said that it is important or very important to have appropriate communication media for specific purposes/audiences. Only 3 contractors' respondents said that appropriate communication media for specific purposes/audiences is not important or not insignificantly important.

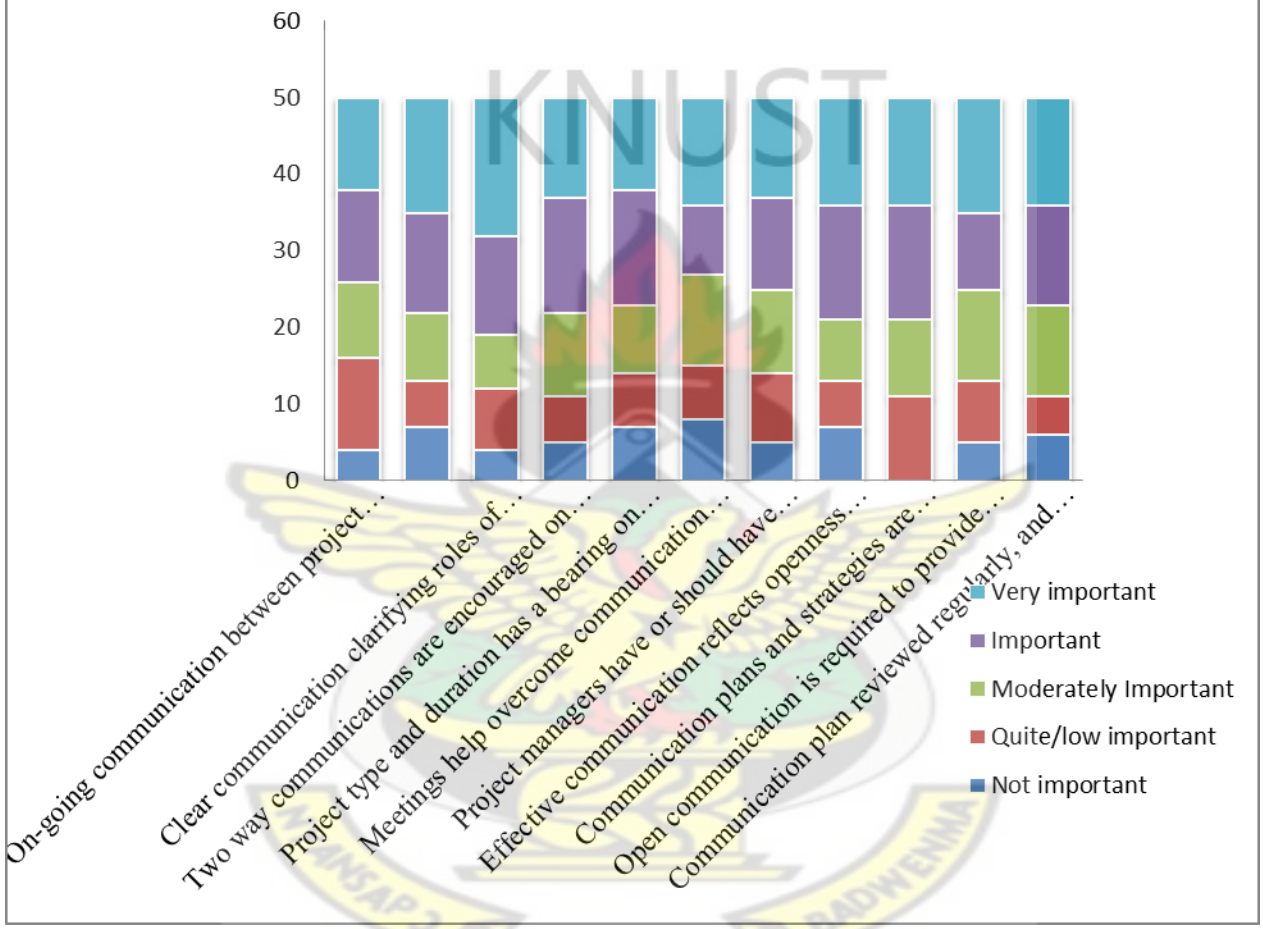
**Table 4.4 - Consultants' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana**

| CONTACT GROUP 3 | | Degree of relative importance | | | | | N |
|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | |
| 1 | On-going communication between project proponents and its stakeholders improve project success | 4 | 12 | 10 | 12 | 12 | 50 |
| 2 | Appropriate communication media for specific purposes / audiences are necessary | 7 | 6 | 9 | 13 | 15 | 50 |
| 3 | Clear communication clarifying roles of stakeholders are drawn in the project Plan | 4 | 8 | 7 | 13 | 18 | 50 |
| 4 | Two way communications are encouraged on construction projects in Ghana | 5 | 6 | 11 | 15 | 13 | 50 |
| 5 | Project type and duration has a bearing on communication strategy and structure | 7 | 7 | 9 | 15 | 12 | 50 |
| 6 | Meetings help overcome communication barriers and increase performance level | 8 | 7 | 12 | 9 | 14 | 50 |
| 7 | Project managers have or should have excellent communication skills to ensure | 5 | 9 | 11 | 12 | 13 | 50 |
| 8 | Effective communication reflects openness and tolerance of cultural differences on projects | 7 | 6 | 8 | 15 | 14 | 50 |
| 10 | Communication plans and strategies are determined /established at the outset of projects | 0 | 11 | 10 | 15 | 14 | 50 |
| 11 | Open communication is required to provide management with some control | 5 | 8 | 12 | 10 | 15 | 50 |
| 22 | Communication plan reviewed regularly, and adjusted it becomes necessary | 6 | 5 | 12 | 13 | 14 | 50 |

The table 4.4 above and the chart in figure 4.4 below shows the Consultants' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana. The measuring keys are as follows:

1 – Not important, 2 – Quite/low important, 3– Moderately Important, 4 –Important, 5 - Very important.

**Figure 4.4 - A Chart showing Consultants' Responses to the Relative Importance of the General Overview of Communication on Projects in Ghana**




*Source: Fieldwork, 2012*

### 4.4.24 On-going communication between project proponents and its stakeholders improve project success

Out of a total of 50 respondents who were consultants in the construction industry in Ghana, 24 of them said that an on-going communication between the project proponents (team) and its stakeholders is important or very important in improving project success. Only 16 consultants' respondents said that an on-going communication between the project proponent and its stakeholders are either not important or its importance is insignificant.



#### 4.4.25 Open communication is required to provide management with some control

With a total of 50 respondents who were consultants in the construction industry in Ghana, 25 of them said that an open communication is important or very important to provide management with some control. Only 13 contractors' respondents said that an open communication is not important or not insignificantly important to provide management with some control. And significant number of respondents numbering 12 said that open communication is moderately (or somewhat) important to provide management with some control.

#### 4.4.26 Communication plan reviewed regularly and adjusted becomes necessary for project success

A total of 50 respondents who were consultants were interviewed in the construction industry in Ghana, 27 of them said that communication plan reviewed and adjusted regularly is important or very important to achieve a project success. Only 11 consultants' respondents said that communication plan reviewed and adjusted regularly is not important or not insignificantly important to project success.

### 4.4.27 Meetings help overcome communication barriers and increase performance level

A total of 50 respondents who were consultants' were interviewed in the construction industry in Ghana, 23 of them said that meetings are important or are very important in overcoming communication barrier and increasing performance level of a project. However, 15 consultants' respondents said that meetings are not important or insignificantly important in overcoming communication barriers and increase project performance. There were also 12 respondents who said that the effect on meetings in overcoming project communication barrier is moderate.



### 4.4.28 Communication plans and strategies must be determined / established at the outset of projects

Out of a total of 50 constructions industry consultants' respondents, 29 of them said that it is important or very important to setup or establish communication plans and strategies at the onset of projects to ensure project success. Only 11 consultants' respondents said that setup or establishment of communication plans and strategies at the onset of projects is neither important or its importance is insignificant.

### 4.4.29 Project type and duration has a bearing on communication strategy and structure

Out of a total of 50 respondents who were consultants' in the construction industry in Ghana, 27 of them said that Project type and duration of the project is important or very important in determining the communication strategy and structure of the project. Only 14 consultants' respondents said that Project type and duration of the project is neither important or its importance is insignificant.

### 4.4.30 Project managers have or should have excellent communication skills to deliver an effective communication on a project

Twenty-five (25) of the 50 consultants' respondents said that it is important or very important for a Project manager(s) to have excellent communication skills in order oversee an effective communication on a project. Fourteen (14) of that number also said that for a Project manager(s) to have excellent communication skills in order oversee an effective communication is not important or its importance is insignificant.

### 4.4.31 Clear communication clarifying roles of stakeholders are drawn in the project Plan

Out of a total of 50 respondents who were consultants in the construction industry in Ghana, 31 of them said that it is either important or very important to have a clear communication clarifying roles of stakeholders drawn out in the project communication plan. Only 12 consultants' respondents said that to have a clear communication clarifying roles of stakeholders, drawn out in the project communication plan is not important or its importance is insignificant.

### 4.4.32 Effective communication reflects openness and tolerance of cultural differences on projects

Out of a total of 50 respondents who were consultants in the construction industry in Ghana, 28 of them said that it is important or very important to have an effective communication reflect openness and tolerance of cultural differences on projects. On the other hand, 11 consultants'

respondents said that it is not important or its importance is insignificant to have effective communication reflect openness and tolerance of cultural differences on projects.

#### 4.4.33 Two way communications must encouraged on construction projects in Ghana

Out of a total of 50 respondents who were consultants in the construction industry in Ghana, 29 of them said is important or very important to encourage two way communications on construction projects in Ghana in order to improve project success. Only 13 consultants' respondents said that two way communications on construction projects in Ghana is not important or its importance is insignificant.

#### 4.4.34 Appropriate communication media for specific purposes/audiences are necessary

A total of 50 respondents who were consultants who interviewed in the construction industry in Ghana, 28 of them said that it is important or very important to have appropriate communication media for specific purposes/audiences. Only 13 consultants' respondents said that appropriate communication media for specific purposes/audiences is not important or not insignificantly important.

### 4.5 Barrier to Communication Management on Construction Projects in Ghana

Respondents were asked to state how frequent the following communication barriers occur during project initiation through to post implementation review. The frequency index formula was used to rate the frequency of occurrence for each of the communication barrier: high (3),

medium (2), or low (1). This method of analyses was used to find out the communication barriers which were really occurring on construction projects.

**Frequency Index (F.I)** = $\frac{3n_1+2n_2+n_3}{3(n_1+n_2+n_3)}$ **:** where $\mathbf{n_1}$ is the number of respondents who answered "high", $\mathbf{n_2}$ the number of respondents who answered "medium" and $\mathbf{n_3}$ the number of respondents who answered "low".



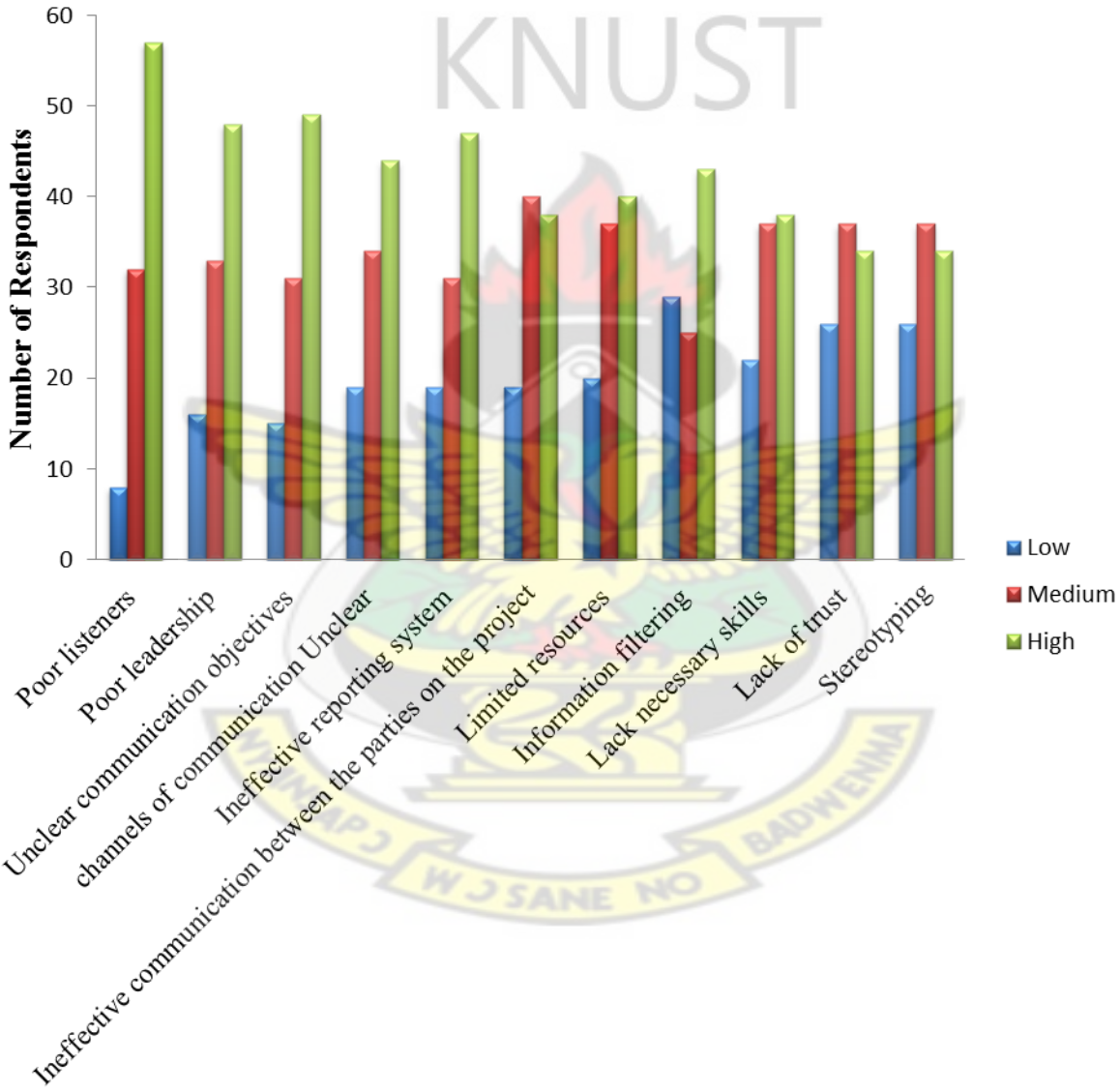
The respondents asked to rate the frequency of occurrence for each of the communication barrier according to three ordinal scales: high (3), medium (2), or low (1). "The frequency index" for each cause was derived from the frequency index formula.

Their responses have been tabulated and presented in the table and graph below.

**Table 4.6 – Shows the ranking of all Respondents on Barrier communication in construction projects**

| | **Barrier to communication in construction projects** | Frequency of occurrence of each factor quoted by Respondents | | | Total number of Respondents | Frequency Index (F.I.) | Rank |
|---|---|---|---|---|---|---|---|
| | **All Respondents** | **1** | **2** | **3** | | | |
| | Poor listeners | 8 | 32 | 57 | 97 | 0.835 | **1** |
| | Poor leadership | 16 | 33 | 48 | 97 | 0.777 | **2** |
| | Unclear communication objectives | 17 | 31 | 49 | 97 | 0.777 | **2** |
| | Unclear channels of communication | 19 | 34 | 44 | 97 | 0.753 | **5** |
| | Ineffective reporting system | 19 | 31 | 47 | 97 | 0.763 | **4** |
| | Ineffective communication between the parties on the project | 19 | 40 | 38 | 97 | 0.732 | **7** |
| | Limited resources | 20 | 37 | 40 | 97 | 0.735 | **6** |
| | Information filtering | 29 | 25 | 43 | 97 | 0.715 | **9** |
| | Lack necessary skills | 22 | 37 | 38 | 97 | 0.722 | **8** |
| | Lack of trust | 26 | 37 | 34 | 97 | 0.694 | **10** |
| | Stereotyping | 26 | 37 | 34 | 97 | 0.694 | **11** |
| | Language difficulties | 27 | 36 | 34 | 97 | 0.691 | **12** |

**Figure 4.5 - A Bar Chart showing the frequency of occurrance of the various communication Barriers**




**Construction Communication Barriers and their frequency of Occurance**



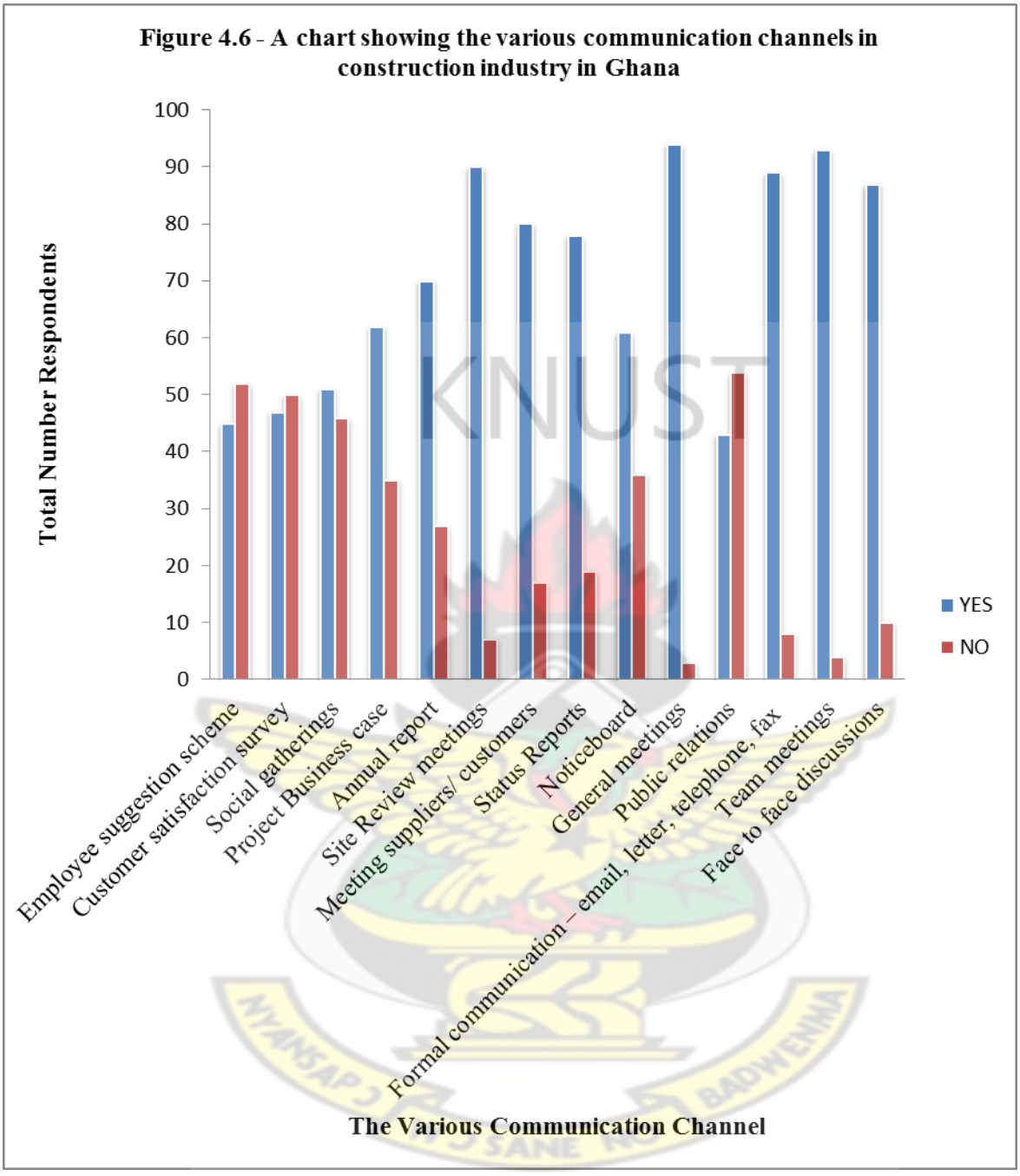
*Source: Fieldwork, 2012*

Table 4.6 and figure 4.5 summarise the frequency of occurrence indices and the ranks for each of the communication barriers as perceived by all the three contact groups of respondents.

## 4.6 Channels of Communications



There are many channels of communication however in relation to project, fourteen (14) various channels were made available to respondents to choose from which are used on their construction projects. Figure 4.6 below presents the responses of the respondents within the industry.




*Source: Fieldwork, 2012*

## 4.7 Discussions / Comments of Responses

According to Neureiter (2005) communication is a widespread term, therefore establishing an efficient project related information system means to decompose communication the following three broad themes;

**Project reporting:** The written documents regarding project communication which contain feedback for the team members about project events are called reports. Reporting therefore includes all documents in written form giving all groups of interest orientation about the project's progress. The goal of this approach is to show the current state of the project and predict future outcomes as well.

**Project documentation:** A requirement for targeted project documentation is a practicable order of the project documents. All project documents have to be easily accessible, which makes introducing a structure for the project documents necessary. Depending on the size of the project, the project documentation can vary and should be adequate.

**Direct Communication:** This form of communication is neither report nor documentation and would usually include face to face meetings etc.

The various fourteen (14) communication channels put forward by the researcher and selected by the respondents in the industry was consistent with the three broad communication categories and channels as suggested by Neureiter (2005). Which were:

- **Project reporting;**
    - Project Annual Report,
    - Project Status Report and
    - Customer Satisfaction Survey.
- **Project documentation;**
    - Employee suggestion Scheme

- Project Business Case
- Noticeboard

- **Direct Communication**
  - Social Gatherings
  - Site Review Meetings
  - Meeting Suppliers / Customers
  - General Meetings
  - Public Relations
  - Formal Communication (emails, phone calls)
  - Team Meetings
  - Face to face Discussions

Again during their investigation into interpersonal communication behavior between designers and contractors during the construction phase of projects, the findings of Gorse et.al, (1999) revealed that informal approaches such as face-to-face are perceived to be the most effective medium of communication within the industry. Their results are also supported by Carlsson et.al. (2001) who conducted communication research within the Swedish construction industry. These findings indeed reflected in the outcome of this research as well. From the channels of communications responses as seen in figure 4.6 above all the various communication channels that dealt with some form of face to face contact interaction had the highest number of respondents as what is truly taking place on construction site in Ghana. For instance; face to face

discussion, team meetings, site meeting as well as general meeting seem to happen at every construction site in Ghana.

One character of communication is that information is transferred from place A to place B. In an organizational context, this generally means a flow of information from the top management down through different project levels. On every level, a part of the information disappears or changes significantly. According to Juholin (1999) the information reaching the bottom of the line may be entirely different from what is started at the top and are often miss understood. These are all attributable to communication barriers which could either be an external or internal (Lohtaja & Kaihovirta-Rapo 2007).

Again, Carlsson et.al, (2001) had argued that "barriers to effective communication are likely to be broken down by more integrated project delivery systems. From the table 4.6 and figure 4.5, it can be clearly seen that the eleven (11) most frequent barriers to communication on Ghanaian construction projects from the combined perspective of all the three contact groups (namely clients, contractors and consultants) are in descending order:

1. Poor listeners
2. Poor leadership
3. Unclear communication objectives
4. Unclear channels of communication
5. Ineffective reporting system
6. Ineffective communication between the parties on the project
7. Limited resources

8. Information filtering
9. Lack necessary skills
10. Lack of trust
11. Stereotyping
12. Language difficulties



Furthermore, Maslej (2006) noted that to better understand the concept of communication in the construction industry, it is important to acknowledge the roles, responsibilities and the authority of various participants on a typical construction project and how information gets exchanged. That is why this research was contact by using the various stakeholders in the construction industry with an emphasis on the professionals who work in the industry. With regards to their perceptions about the significance of communication management on projects, most the respondents' professionals working with the clients, contractor or consultants were acknowledged the importance of project communication management in the construction industry in Ghana. Majority of them agreed to the following statements as seen in tables 4.2 to 4.5 and figure 4.2 to 4.4.

- On-going communication between project proponents and its stakeholders improve project success
- Appropriate communication media for specific purposes / audiences are necessary
- Clear communication clarifying roles of stakeholders are drawn in the project Plan
- Two way communications are encouraged on construction projects in Ghana
- Project type and duration has a bearing on communication strategy and structure
- Meetings help overcome communication barriers and increase performance level

- Project managers have or should have excellent communication skills to ensure
- Effective communication reflects openness and tolerance of cultural differences on projects
- Communication plans and strategies are determined /established at the outset of projects
- Open communication is required to provide management with some control
- Communication plan reviewed regularly, and adjusted it becomes necessary

# Chapter Five

# Research Conclusions And Recommendations

## 5.1 Introduction

This chapter discusses the summary of the findings, the conclusions of the study and suggest appropriate recommendations which seek to direct future research. The objectives of this research were to determine how project professionals value project communication and the various communication channels employed by these professionals in Ghana. Also the research was to determine what causes communication barriers on project in Ghana and whether or not constructional project communication affects project delivery in Ghana.

## 5.2 Summary of Findings

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

### 5.2.1 Project Professionals value of project communication

From the responses gathered from project professionals within the construction industry in Ghana, there was a strong appreciation of project communication and its importance within the industry. With regards to the specific communication issues there were unanimous agreement of the importance of each on communication on project site. For instance, many of the professional respondents agreed that site meetings are an important channel of communication between the consultants and contractors. Again, most of the respondents also said that training of operatives is necessary for onsite communication. Project Professionals were of the opinion that communication often results into delay, increase in cost, abandonment, amongst other problems. In addition, project professionals also said that poor and distorted information will affect the

level of work done on site. Others are inexperience interpretation of working drawings can cause a failure in building components, poor means of communication leads to distorted information on site. The importance of language used among operatives is very essential for effective communication on site. And finally, late dissemination of information will affect output on site negatively.

There were similar agreements expressed by both the clients and consultant in the construction industry. Further, all the players within the industry agreed that there was indeed an on-going communication between project proponents and its stakeholders and that has improved project success. There were again, unanimous agreements on the fact that open communication is required to provide management with some control, communication plan reviewed regularly and adjusted becomes necessary for project success, meetings help overcome communication barriers and increase performance level, communication plans and strategies must be determined or established at the outset of projects, project managers have or should have excellent communication skills to deliver an effective communication on a project and finally there should be a communication that clarifies roles of stakeholders in the project Plan.

### 5.2.2 The various communication channels employed by project professionals in the construction industry in Ghana.

The research established that channels used for communication differ in the form of communication involved. For instance if the communication is amongst project team members, the type of communication involved will be different from if the communication involves the project manager on a project and the consultant or the project client.

Project Professional have largely use the following means or channels of communication; general meetings, formal communication (email, letter, telephone, fax), team meetings, face to face discussions, presentation of status and progress reports, formal meeting supplier or customers, site review meetings, annual reports and project business case. What have not been used a lot on constructional sites are public relations, customer satisfaction survey, and employee suggestion scheme. The various construction communication types and the channels used in Ghana are presented below:



- Channel of communication between the consultant and the contractor include; formal communication (email, letter, telephone and fax) and site review meetings.
- Channel of communication between consultant and Client include; formal communication (email, letter, telephone and fax), presentation of status and progress reports, annual reports and project business.
- Channel of communication amongst the contractor's project team members includes; team meetings, face to face discussions and general meetings.
- Channel of communication that exist between the contractor and their suppliers or sub-contractors includes; formal communication (email, letter, telephone and fax), formal meeting supplier or customers and site review meetings.

### 5.2.3 Major barriers to communication on projects in Ghana

Amongst the findings of this research were the various barriers to communication on a construction project in Ghana. Poor listenership and leadership were the most prevalent barriers

to communication on construction projects in Ghana. Below is the most prevalent barrier to communication on construction projects and has been arranged in the descending order.

- Poor listeners
- Poor leadership
- Unclear communication objectives
- Unclear channels of communication
- Ineffective reporting system
- Ineffective communication between the parties on the project
- Limited resources
- Information filtering
- Lack necessary skills
- Lack of trust
- Stereotyping
- Language difficulties

### 5.2.4 How constructional communication affect project delivery in Ghana

With regards to the above objectives, responses were purely sort from professionals within the industry. The responses established that poor communication had resulted in project delays, project cost overrun and project abandonment. Again, there was unanimity with regards to the fact that poor and distorted information relayed do affect the level of work done on site. In other

words, inexperience interpretation of work drawings had many a time caused failures in project delivery. These findings have established that indeed communication has effect on project delivery.



## 5.3 Conclusions

Within the Ghanaian construction industry, there is a strong appreciation of the importance of project communication and its importance within the industry. Indeed, various levels and channels of communications have been established within the construction industry, for example communication between the clients and consultants or consultants and contractors. In spite of that, there have been many hindrances to effective communication on construction project in Ghana. These includes; poor listeners, poor leadership, unclear communication objectives, unclear channels of communication, ineffective reporting system, ineffective communication between the parties on the project, stereotyping and language difficulties. Finally, the research established that poor communication had resulted in project delays, project cost overrun and project abandonment.

This research has shown that, project communication strongly affect the performance of professionals within the construction industry. 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.

## 5.4 Recommendations and Implications for further research

This study has a few shortcomings or discussible issues, which may be taken into account when conducting similar studies in the future. First, the data collected was restricted to only bigger firms within the construction industry. Again, the sample size of the professionals used for the study was much smaller. Although there were clear distinction between the agreements and disagreements of the variables assessed, the results could be different with larger sample size. It is therefore recommended that future study should concentrate on the following:

- Designing an appropriate communication model for construction industry in Ghana
- Influences of project communication on resolving modern project complexities
- How to use effective project communication to address constructional disputes and its ultimate judgement debts.

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## Appendix One

SURVEY QUESTIONNAIRE

Research topic: **An Assessment of Project Communication Management on Construction Projects in Ghana**

### Introduction

Just like in any other discipline of business the importance of communication cannot be overemphasized in managing projects. Statistics show that seventy four percent of projects are unsuccessful. One of the many factors that contribute to the failure of these projects is poor or insufficient communication. For this reason, there is a need to assess the current management of project communication in the construction industry in Ghana.

This research is therefore being undertaken to find out from the primary stakeholders to any construction project (namely the client, consultant and contractor) how, in their opinion communication is being carried out and whether that has an effect on project deliveries in Ghana. This study is conducted as part of a graduate study at KNUST. It is my belief that the stakeholders will provide practical and convincing answers to the questions below to enable me present a good report. Thank you in advance for your contribution to this research study.

Please respond to the following by either writing in the blank space provided or ticking the appropriate box.

**Section One - Respondent Profile**

1.1 What type of organisation do you belong?

a) Clients' organisation ☐ b) Contracting firm ☐ c) Consulting firm ☐
d) Others (specify).....

1.2 Which of the following describes your position?

a) Quantity Surveyor ☐ b) Project Manager ☐ c) Architect ☐
d) Principal consultant ☐ e) Managing director ☐ f) Contractor ☐

g) Others (specify) …….....

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

a) Less than 5years ☐ b) 5 years to 10year ☐ c) 10 years to15 years ☐
d) 16 years and above ☐

1.4 Have you ever had any form of communication on a project? Yes ☐ No ☐

1.5 If yes, what for did it take?

(specify)……...



**Section Two – Questions Relating to Project Communication on Construction Projects in Ghana**

2.1 Below are statements relating to project communication on construction projects in Ghana. From your experience, please express your opinion on how important or True and Otherwise of each statement on project communication on Ghanaian construction projects and also rate the frequency of occurrence for each on projects in Ghana.

(Please tick the approximate cell).

i. Site meetings are an important channel of communication between the consultants and contractor on site.

TRUE ☐ FALSE ☐

ii. Training of operatives is necessary for onsite communication.

TRUE ☐ FALSE ☐

ii. Poor communication often results into delay, increase in cost, abandonment, amongst other problems.

TRUE ☐ FALSE ☐

iv. Poor and distorted information will affect the level of work done on site.

TRUE ☐ FALSE ☐



v. Inexperience interpretation of working drawings can cause a failure in building components.

TRUE ☐ FALSE ☐

vi. Poor means of communication leads to distorted information on site.

TRUE ☐ FALSE ☐

vii. The importance of language used among operatives is very essential for effective communication on site.

TRUE ☐ FALSE ☐

viii. Late dissemination of information will affect output on site negatively.

TRUE ☐ FALSE ☐

(Please tick the approximate cell).

**Relative importance:** 1 – Not important, 2 – Quite/low important, 3– Moderately Important, 4 –Important, 5 - Very important

**Frequency of occurrence:** 3 - High, 2 – Medium, 1- Low

| General overview of communication on project | | Relative Importance | | | | | Frequency | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 |
| 1 | Project communication management is vital to the success of constructional projects | | | | | | | | |
| 2 | Communication plans and strategies must be determined /established at the outset | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | Culturally sensitive and appropriate communication is necessary | | | | | | | | |
| 5 | Project managers should have excellent communication skills | | | | | | | | |
| 6 | Two way communications must be encouraged | | | | | | | | |
| 7 | On-going communication between project proponents and its stakeholders | | | | | | | | |
| 8 | Effective communication reflecting openness and tolerance of cultural differences | | | | | | | | |
| 9 | Clear communication clarifying roles of stakeholders | | | | | | | | |
| 10 | Open communication is required to provide management with some control | | | | | | | | |
| 11 | Meetings help overcome communication barriers and increase performance level | | | | | | | | |
| 12 | Project proponents and stakeholders communicate throughout the project | | | | | | | | |
| 13 | Communication plan reviewed regularly, and adjusted if need be | | | | | | | | |
| 14 | Project type and duration has a bearing on communication strategy and structure | | | | | | | | |
| 15 | Appropriate communication media for specific purposes/audiences are necessary | | | | | | | | |
| 16 | Effective communication strategies are needed to minimise potential disputes and misunderstandings | | | | | | | | |
| 17 | Understanding the language(s) and practices of local culture enhances communication | | | | | | | | |
| 18 | Communication gives project stakeholders the opportunity to comment or cast a vote | | | | | | | | |

**Section Three - Questions Relating to Communication Barriers on Ghanaian Construction Projects**

**3.1** Below are potential influences of project communication barriers in Ghana. From your experience, please tick the appropriate cell by indicating how important each barrier is in preventing effective communication on Ghanaian construction projects.

Relative importance: 1 – Not important, 2 – Quite/low important, 3–Moderately Important, 4 –Important, 5 - Very important

| | **Communication barrier** | **Relative Importance** | | | | |
|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** |
| 1 | Political/community interference | | | | | |
| 2 | Poor listeners | | | | | |
| 3 | Poor leadership | | | | | |
| 4 | Unclear objectives | | | | | |
| 5 | Conflicting cultural values | | | | | |
| 6 | Unclear channels of communication | | | | | |
| 7 | Ineffective reporting system | | | | | |
| 8 | Limited resources | | | | | |
| 9 | Information filtering | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | Conflicting business/industry ethics | | | | | |
| 11 | Lack necessary skills | | | | | |
| 12 | Lack of trust | | | | | |
| 13 | Religious issues | | | | | |
| 14 | Stereotyping | | | | | |
| 15 | Lack of concern | | | | | |
| 16 | Language difficulties | | | | | |
| 17 | Age difference | | | | | |






**Section Four - Questions Relating To Communication Channels on Ghanaian Construction Projects**

**4.1** Below are some communication channels of project communication in Ghana. From your experience, please tick the appropriate cell by indicating "Yes" or "No" to whether any of the communication channels below is present at any of the project you are currently involved in.

| ***Communication Channel*** | ***YES*** | ***NO*** |
|---|---|---|
| Employee suggestion scheme | | |
| Customer satisfaction survey | | |
| Social gatherings | | |
| Project Business case | | |
| Annual report | | |
| Site Review meetings | | |
| Meeting suppliers/ customers | | |
| Web site | | |
| Noticeboard | | |
| Newsletter | | |
| General meetings | | |
| Employment contract/ code of conduct/job description | | |
| Employee manual | | |
| Disciplinary and grievance code | | |
| Customer complaint system | | |
| Public relations | | |
| Formal communication – email, letter, telephone, fax | | |
| Canteen/ coffee room | | |
| Team work | | |
| Quality circles | | |
| Appraisal | | |
| Job design/ rotation | | |
| Compensation design | | |
| Induction training | | |
| Maintenance training | | |
| Development training | | |
| Management by walking about | | |
| Face to face discussions | | |