ASSESSMENT OF BARRIERS TO COMMUNICATION IN THE NIGERIAN CONSTRUCTION INDUSTRY

By

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DECLARATION

I hereby declare that the work in this thesis " was performed by me in the Department of quantity surveying, under the supervision of Dr A.D. Ibrahim & Dr Y.M. Ibrahim.

The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this work has been presented for another degree or diploma at any institution.

CERTIFICATION

This project thesis titled "ASSESSMENT OF BARRIERS TO COMUUNICATION IN THE NIGERIAN CONSTRUCTION INDUSTRY" meets the regulations governing the award of the degree of Masters in quantity surveying of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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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. This study's aim to find out the factor that causes communication barriers in the construction industry. A cross sectional descriptive study design was used and 100 professionals from the construction industry were selected using a non-probability convenience sampling technique. Statistical package for social sciences (SPSS Version 20) was used for the analysis. Data was summarized using frequency tables and graphic presentation. Chi-square test was used to test the association between the predictor variable and the outcome variable. P-value was set at $P < 0.05$. The research sampled 82 professionals working with consultant, project clients and contractors. The research established that within the Nigerian construction industry there have been many barriers to communication on construction project in Nigeria and the inherent factors that influences the occurrence of this barriers was also determine which includes: Badly expressed message, Adopting to the behaviour of a group, Limited vocabulary, Environment, Job dissatisfaction, Pronunciation, Disturbing moment, Religious beliefs, Time schedule pressure, Ethics, Social differences, Body language, Gestures, Ascent, Grammar, and Unconscious incompetence. The relationship between communication barriers and the factors that influences its occurrence was established. Finally the research established that poor communication as a result of barriers to communication had resulted in project delayed, project cost overrun, poor project quality and affects workers safety on site.

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CHAPTER ONE

1.1 BACKGROUND TO THE STUDY

Construction industry is one of the most booming industries in the world. It is mainly urban based and is concerned with preparation as well as construction of real estate properties. The repairing of any existing building or the making of certain alterations in the same building also comes under the construction industry. The construction industry accounts for around one-third of the world's gross domestic product, seven percent of employment, half of all resource usage and up to forty percent of energy consumption. The construction industry is also a key indicator and driver of economic activity and wealth creation (Mehra, 2009).Therefore communication within the construction industry is essential as 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 (Emmit & Gorse, 2003).

Globally, the construction industry plays a key role in the economy of both developing and developed countries, contributing between 4-14% of the GDP whilst generating vast amount of employment and wealth. The construction sector also provides the infrastructure that supports other sectors of the economy. In Nigeria, the sector is very strategic to the nation's development efforts and a major indicator of the country's wealth in social and economic terms. Nowadays, although the industry is still responsible for about 70% of the fixed capital formation, its contribution to the national economy now stands at about 4.2% of the GDP in recent years (Ibrahim, 2011).

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 (Emmitt & gorse, 2003). As the project unfolds and the design is realized, information in the form of drawing, specification, and construction methods must be communicated from one expert to another. In other words information must be transferred and understood so that the various aspect of the project can be assembled to realize the design. In transferring and understanding these information between this professionals there are barriers that occur that hinder this information to be communicated effectively hence this results to poor communication. In Nigeria, the various construction professionals who are regularly engaged in the industry are Architects, Quantity surveyors, Builders, Civil Engineers, and Project managers. For the purpose of this study, 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 feelings to a receiver (Maame, 2012).

Communication is essential to all business activities; it is an integral part of the construction process. Beyond the argument, any improvement in communication can improve an organization's operating effectiveness. Good communication within an organization and between organizations contributing to the construction project can improve motivation levels and improve the processes (Mehra, 2009). Conversely, inadequate communication can result in a demotivated workforce and lead to problems in production (Sheetanshu, 2011).

Construction projects are complex and risky, requiring the active participation of all contributors. Co-operation and co-ordination of activities through interpersonal and group communication are essential in ensuring the project is completed successfully. Poor communication, lack of

consultation and inadequate feedback are to be found as the root cause of defects in many constructed works. The proper management of construction requires a constant flow of information between all interested parties. It is especially important to disseminate such information quickly during construction (Sheetanshu, 2011).

Poor co-ordination and communication of design information lead to design problems that cause design errors. Communication is the one aspect of the management of projects that pervades all others. Effective communication is essential for the functioning of any organization. Breakdowns in communication contribute to a group of problems that result in low work productivity and quality. Construction moves so rapidly that failure to take account of a change in plans or materials can cause expensive tearing out of completed work or slowdown in the entire job. Hence, there are many kinds of information that must quickly be made available between architect and engineer, between the contractor and contract engineers, between architect engineer and owner, among the various teams situated in different verticals and geographic locations and with outside parties (Dainty *et al*, 2006).

Given that construction is such a fragmented, dynamic and disparate sector, the challenges of communicating effectively are greater than in most other production environments. Contractually driven relationships, conflict and a lack of mutual respect and trust, all combine to hinder open communication and render the role of the project manager extremely demanding and problematic. Nevertheless, addressing communication in the industry can be seen as a principal enabler for improving the industry in the future. Therefore accessing factors that cause barriers to communication is very crucial towards addressing communication problems in the industry.

The construction industry is one of the most information dependent industries (Tam, 1999) and heavily based upon traditional means of communication such as face to face meetings, phone calls and exchange of drawings and associated paper work or documents (Mohamed & Steward, 2003). Communication can therefore be seen as the key factor in the overall success of any construction project. Crucial to the running of any construction project is the movement and transfer of project information amongst the distinct professions all of whom have conflicting priorities and differing objectives (Faniran *et al*, 2001). Construction projects are assembled by gathering different profession and areas of expertise under one "flag" (Wikforss, 2006). Typical of such assemblies is that each professional group also bears with it a set of principles, rules, knowledge domains and professional skills formulated in a certain manner. At the same time as this help make the profession strong and successful, it also explain why they cannot cooperate with other profession particularly well. Communication within project-based environments presents special challenges. This is especially true within the construction industry, where interaction tends to be characterized by unfamiliar groups of people coming together for short periods before disbanding to work on other endeavors (Dainty *et al*, 2006).

Some of the fundamental components contributing to the construction industry's poor performance are its ineffective communication practices, its organizational fragmentation, barriers and lack of integration between design and production processes (Dainty et al, 2006).Successful communication between stakeholders in the industry can be seen to be a major contributory factor to project delivery as poor communication may lead to a delay in the decision making process that may in no small way affect the successful completion of such project.

According to Newton (1998) 65% of contractors rework is attributed to insufficient, inappropriate or conflicting information. This can be attributed to barriers in communication

Unfortunately, however, while there are reports of the causes of barriers to communication in the construction industries of industrialized countries like the US, Issa et al,.Toole (2003), Canada, Revard (2000), Sweden, Denmark and Finland, Samuelson (2002) and New Zealand, Doherty (1997), among others, comparatively few exist for a developing country like Nigeria. The findings are similar in respect of these industrialized countries, the results, according to Austin (1990), might not be applicable to a developing country (like Nigeria) due to differences in the cultural, socio – economic and regulatory environments (Jarvenpaa *et al*, 1998; Dewan *et al*, 2000). This study is therefore an attempt to access the sources and factors that cause barriers in communication amongst stakeholders in the construction industry in Nigeria and the problems that these factors bring.

1.2 STATEMENT OF RESEARCH PROBLEM

According to Kezsbom & Edward (2001), "Communication is the single largest factor determining the quality, efficiency, satisfaction, and productivity of a project team". Yet, poor communication continues to be a major contributory factor to failed projects. It is also common knowledge that the implementation of the construction project in the industry is usually accompanied with time delay and cost increase as well as owner dissatisfaction (Hafez, 2001).

Olu (1999), John (1999), Mehra (2009), Daniyan (2011), & Maame (2012) have identified types of barriers in communication in general, without discussing the mechanism of such influence. Also, there has been much other investigation in the field of detecting barriers in communication. These researchers did not investigate the factors which might lead to the generation of the barriers in communication.

Barriers in communication are likely to be repeated again and again in the future because little information and knowledge have been articulated to learn reasons that have led to the actual occurrence of these barriers. To reduce barriers to communication effectively it is important to understand the inherent factors and the mechanisms whereby barriers occur. Juran's quality improvement methodology warns against taking shortcuts from symptoms to solution without finding and removing the cause (Stasiowski *et al*, 1994,). By this, influencing, contributory factors can be identified and proactive actions can be taken.

Detecting barriers is an important step in controlling and eliminating barriers to communication but determining the factors that cause barriers and controlling these factors which lead to the generation of barriers in communication from inception of the project will result in a substantial reduction in poor communication.

1.3 SIGNIFICANCE OF THE STUDY

The construction industry in Nigeria is extremely significant to be ignored, considering its sizeable contribution to Nigeria'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 develop at the interfaces between key specialists.

While some specialist 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 that is free from barriers is extremely relevant in the management of projects. For instance, delay in recognizing that information is missing, incorrect

or conflicting will either cause a delay, adjustment of recourses and or require alteration to incorrectly constructed components and all this are attributed to barriers in communicated information. It is essential that communication is effective and that information is understood and processed correctly. For communication to be effective and information well understood and processed correctly barriers to communication must be eliminated.

However, as mentioned earlier identifying barriers to communication is the first step towards determining the factors that cause the occurrence of barriers to communication. The findings of this study therefore address some communication problems for future project implementation.

From the information gathered, the factors that cause the occurrence of barriers was determined in other to improve construction communication. This research work showed how ineffective communication negatively affects construction projects. This research work is useful to the management of construction companies and their professional status.

1.4 AIM AND OBJECTIVES

1.4.1 Aim

The research aim is to assess barriers to communication on construction projects with a view to enhancing better construction communication for timely completion of construction project in Nigeria.

1.4.2 Objectives

- To review types of barriers to communication on construction project
- To determine the causes of barriers to communication in construction projects in Nigeria
- To determine the effect of communication on project delivery in Nigeria

- To assess the relationship between communication barriers and selected demographic profiles.

1.5 METHODOLOGY

A quantitative survey strategy was adopted in this research due to the fact that it is most suitable for large well design and well administered survey using properly constructed and worded questionnaire. Quantitative research follows a deductive approach in relation to theory and is concerned with the design measurement sampling. The method adopted in this study is the use of questionnaires which were distributed to construction professionals which comprise of Quantity surveyors, Civil Engineers, Architects, Builders and Project managers.100 questionnaires were administered of which 82 responses were received with a response rate of 82%.The data collected are answers to questions that are related to barriers to communication at different levels and stages of a project life cycle. This research was carried out through convenient sampling.

1.6 SCOPE

The study is actually intended to determine the factors that cause communication barriers in order to improve construction communication as an aid to construction project delivery in Nigeria. But with a special attention given to a few construction firms within the Kaduna metropolis because of its high rate of development in terms of infrastructure and relatively high concentration of consultancy firms as well as construction, contractor organization and ease of access to the researcher.

The research is limited to Nigeria as the collection of data was extracted from Nigeria construction firms, though the findings can be adapted and applied in other construction industries.

CHAPTER TWO

LITERATURE REVIEW

THE NIGERIAN CONSTRUCTION INDUSTRY

2.1 Overview of the Nigerian Construction Industry

In spite of the huge capital outlay, public utilities are unable to cope with the demand of the increasing population of the country. Government's budgetary allocation no longer meet demands hence the involvement of the private sector for the financing, development and Operation of infrastructure project. This is becoming common practice globally to allow for dwindling fiscal resources to be committed to other national development projects.

Capital outlays on infrastructure in the form of housing provisions and other infrastructure facilities are central to growth and development. More so in developing countries, such expenditures are necessary to create advancement in the technology and by extension industrialization obtainable in developed societies

Infrastructure play critical but not independent role in stimulating and sustaining economic growth. Kesside (1993) found that developed countries support the fact that infrastructure capital has a significant and positive effect on economic input. Further; she notes that developing countries need infrastructure, and more importantly the services that stem from their provision, so that they can achieve economic growth.

Unfortunately, developing countries have become associated with the stigma of poorly managed infrastructure with resultant cost implications. First are higher maintenance costs from many years of neglect, and then costs associated with the provision of alternative (temporal)

infrastructure where there is complete in operation of the facilities. Facility failures have far reaching implications beyond this. For example the idle time for labor, yet they still have to be remunerated; there is also the cost of lost production, the associated goodwill and the revenue forfeited (Mehra, 1999).

Study of sixty developing countries, Bazin (1996) found that half the utilities in operation had very low rates of return and that several incurred losses. In Nigeria, performance during the construction phase fall short of expectation too. A critical appraisal of the performance of the construction sector brings to question its ability to support infrastructure development needs. Between 1996 and 2000, the building and the construction sector of the economy contributed only 0.85% to the nation GDP at current basic prices ; while between 2000 and 2004 the value fell to 0.78% (CBN annual reports 2006) whereas the relative contribution of the finance an insurance sector was 1.23% and 1.17% during these period respectively. The wide margin between the expected contribution of the construction industry and the actual contributions; are indication that something must be wrong somewhere even with our development efforts.

2.2 CONCEPT OF COMMUNICATION

Communicating frequently is necessary throughout the life of any project because all projects are executed by humans and they interact by way of teams (Mehra, 2009).Communication could be defined in various ways. According to Olu (1999), communication has being defined as the process by which people attempt to share meanings through symbolic massages. The best way to communicate in the teams is to involve team members in all activities because project manager along with team members are responsible for managing communication on projects. Communication may be carried out using symbols, signs, behaviour, speech, writing or signals,

as well as through project plans, project scope statement and status report. Mehra (2009) also noted that project fail when expectation is not aligned with result. Timely and effective communication can bridge these gaps to avoid surprises at the end. Expectations, goals, and priorities of the project stakeholders should be well documented and communicated.

Communication consists of transmitting information from one person to another. In fact, some scholars of communication take this as working definition and also as a means circumscribing the field of communication theory. Their definitions are outlined below:

Communication is a term used to refer to any dynamic, information sharing process (Clevenger, 1959). Communication is the exchange of information, usually via a common system of symbols (Dance,1970). 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 itself a multifarious and complex term, which can mean different things in different context and situations. Communication is the process of conveying information from a sender to a receiver with the use of a medium in which the communicated information is understood the same way by the sender and receiver (Mehra, 2009).

With inference from the above definitions, communication can be defined as "the process of exchanging information related to the progress and successful completion of a project
Through the sharing of knowledge and experience for the mutual benefit of the parties involved in ensuring timely project delivery".

2.3 IMPORTANCE OF COMMUNICATION IN THE CONSTRUCTION INDUSTRY

Communication is an important topic in the construction industry, often problems in communication are referred to as communication problems (Latham, 1994). Due to its specific characteristics, the industry forms a complex communication environment. Construction is a fragmented and dynamic sector with project based nature. This makes that many stakeholders operate frequently changing sets of relationships which are contractually driven. The culture shows reality of conflicts and lack of mutual respect and trust (Dainty *et al* 2006). Communication is essential to all business activities; it enables an organization, and is an integral part of the construction process. Beyond the argument, any improvement in communication can improve an organization's operating effectiveness. Good communication within an organization and between organizations contributing to the construction project can improve motivation levels and improve the processes. Conversely, inadequate communication can result in a demotivated workforce and lead to problems in production (Sheetanshu, 2011).

Construction projects are complex and risky, requiring the active participation of all contributors. Co-operation and co-ordination of activities through interpersonal and group communication are essential in ensuring the project is completed successfully. Poor communication, lack of consultation and inadequate feedback are to be found as the root cause of defects in many constructed works. The proper management of construction requires a constant flow of information between all interested parties. It is especially important to disseminate such information quickly during construction (Sheetanshu, 2011).

Sheetanshu (2011) stated that poor co-ordination and communication of design information lead to design problems that cause design errors. Communication is the one aspect of the management

of projects that pervades all others. Effective communication is essential for the functioning of any organization. Breakdowns in communication contribute to a group of problems that result in low work productivity and quality. Construction moves so rapidly that failure to take account of a change in plans or materials can cause expensive tearing out of completed work or slowdown in the entire job. Hence, there are many kinds of information that must quickly be made available between architect and engineer, between the contractor and contract engineers, between architect engineer and owner, among the various teams situated in different verticals and geographic locations and with outside parties.

Given that construction is such a fragmented, dynamic and disparate sector, the challenges of communicating effectively are greater than in most other production environments. Contractually driven relationships, conflict and a lack of mutual respect and trust, all combine to hinder open communication and render the role of the project manager extremely demanding and problematic. Nevertheless, addressing communication in the industry can be seen as a principal enabler for improving the industry.

Jacklyn (2011) stated that as professional Construction Managers, we cannot overstress the role of communication in a construction project. The most common reason for construction disputes is a breach in communication and expectations. Depending on the size of your project, the hub of communications could be the Estate or Property Manager, or it could be a large enough project to warrant the retention of a professional Owners Representative. Concerted effort is necessary to facilitate communications between the team members. This includes the Architect and Contractor, but many other professionals are required as well: engineers, permit & entitlements expediter, interior designer, communications & computer system designers & installers, furnishing installers, landscape designers, etc. A construction project has an enormous number

of "moving parts": A successful project demands that the professionals involved are experienced, appropriate, have the same mind-set, and are team players with complimentary skill sets–and that they are managed to bring out their best work to meet the vision and goals of the project. It is critical that you establish a clear chain of communication and command for the input and distribution of information. All requests for information, change order requests, and directives to and from the Client should be introduced in writing and addressed through proper channels to ensure issues are responded to by the right party without delaying progress, and captured and documented for the project. As professional project managers, it is our job to assemble the optimum team, coordinate the design and engineering disciplines properly, and skillfully execute the planning and preconstruction phases. With this type of careful, proactive attention to detail, problems can be anticipated and mitigated. The contractors can then accomplish the project smoothly, on time and within budget. During the Construction phase, a continued presence on site serves to monitor the contractors' work, coordinate the consultants, mitigate change orders, perform quality control inspections and be completely on top of the budget and schedule.

2.4 COMMUNICATION IN CONSTRUCTION

Since the early 1940's, literature in communication has appeared, mainly based on the situation in the UK (Emmit & Gorse, 2003). Many problems concerning communication have been reported, within the construction sector with a focus on intra-supplier communication, demand-supply communication during the design phase, and communication between and within single demand and supply side parties, during whole the construction process. In this division the demand side contains (representative of) principals, users, investors, etc and the supply side Architects, (sub) contractors, advisors, etc.

The efficiency and effectiveness of the construction process strongly depends on the quality of communication. Two reasons are mentioned why improvements in communication are needed. The first reason is that an improvement in communication are needed within the building team, Higgin & Jessup (1965) in project teams, Thomas *et al* (1998) and between project manager and contractors, Franks (1998) could reduce failure. Second, more open communication at all levels could lead to innovations and better technical solution (Lenard & Eckersley 1997).

2.5 COMMUNICATION MODELS

In communication, there is always a sender and a receiver (maybe more than one in some cases). Both parties have their own experiences, their perception, their ideas, etc, hence they may experience, perceive, and interpret things differently. The same event will always be perceived a little differently by each party. Mehra (2009) gave a simple communication model as Figure 2.1 shows how the information travels from sender to receiver.

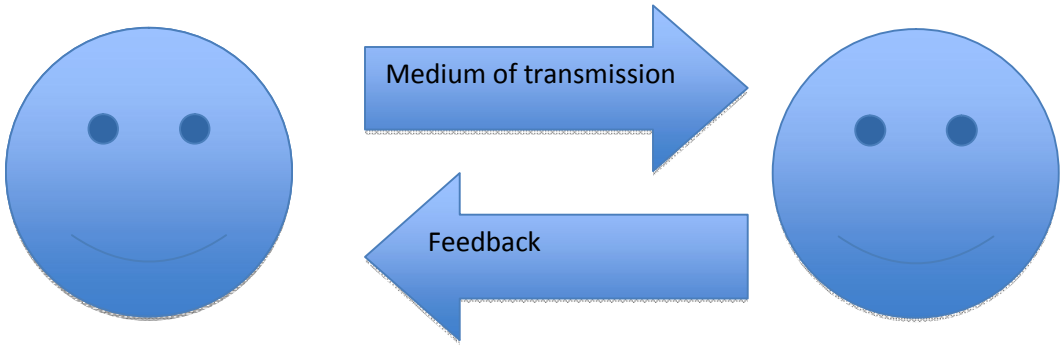


Figure 2.1: A simple communication Model (Mehra, 2009)

The Sender – is an information source, who initiates communication. Encoder – 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 massage that he or she is likely to interpret in the way intended. Medium – Message must be sent using traditional mail, email, phone call, face-to-face or using gesture alone. Medium is the communication method used to transmit the message. Decode – Message is decoded to understand the information sent by sender. The 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.

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

2.6 CHARACTERISTICS OF COMMUNICATION

Business communication syllabus (2011) the real meaning of communication is getting the receiver and the sender tuned together for a particular message. Communication takes place when one person transfers some understandable data to another person. It also includes the exchange of thoughts, opinions, sentiments, facts, and information between two or more

persons. Feedback is very important as it assures that your message should be properly conveyed to the receiver. The essential features of an effective communication system are keys for productive communication. The chief principles or characteristics of an effective communication system are as follows: Clearness and integrity of message to be conveyed, adequate briefing of the recipient, accurate plan of objectives, reliability and uniformity of the message, to know the main purpose of the message, proper response or feedback, correct timing, use of proper medium to convey the message properly and the use of informal communication. The following are some important guidelines to make communication effective: Try to simplify your thoughts before communicating your message, you must analyze the intent of each and every message consider the overall physical setting whenever you communicate, you must discuss with others, where appropriate, in planning communication be careful while communicating, of the overtone as well as basic content of your message. Take the opportunity to suggest something of help or value of the receiver, follow-up your communication. Prepare yourself for transmitting the message in a proper way. Be sure your actions support your communication. Seek not only to be understood but understand.

Some of the characteristics of communication according to Mehra (2009) are as follows; communication is a process –it is continuous, ongoing, and dynamic. Communication requires a sender and a receiver. Communication has information (massage/content). Communication requires a medium (symbol, signs, behaviour, speech, writing, or signals). Communication requires shared understanding – all parties understanding the same thing the same way. Communication is transactional and irreversible.

2.7 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 document 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 contactor may wish to sub-contract some of his work to subcontractors in which case, a gain a contractual relationship I 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 as follows (Mehra, 2009). Formal written – This takes the form of project plan, Project charter, Specification, Reports, Metrics. Formal verbal – Presentations and speeches fall under this category. Informal written – Examples of informal written methods of communication include memos, e-mail, notes, etc. Informal verbal – Meetings, stakeholders and conversations are categorized under informal verbal method. Nonverbal message – These are conveyed through our facial expression as well as our postures and gestures and account for about 55% of what is perceived and understood by others. Para – verbal messages – These include the tone, pitches,

and pacing of our voice and account for about 38% of what is perceived and understood by others.

2.8 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.

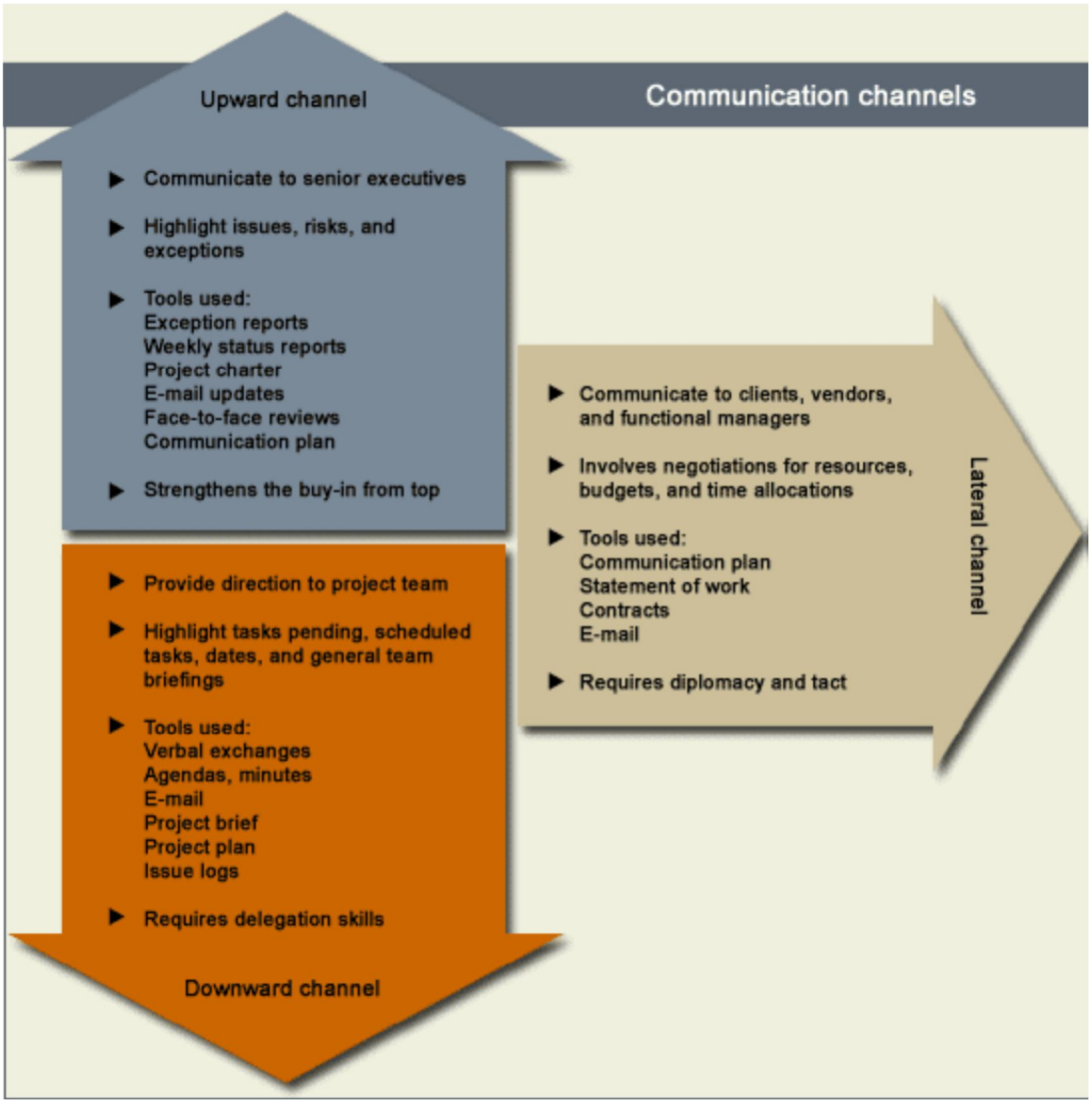


Fig 2.2: Communication channels (Mehra, 2009)

Machinery need to be put in place for further communication to take place, either downward communication (from superior to sub-ordinate), horizontal communication (between colleagues) of upward communication (from sub –ordinate to superior).

2.9 COMMUNICATION MODELS

The communication models summarized in the Table 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------Channels (or medium) ------Receiver

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

Table 2.1 the summary of the various models and summarized interpretations

Model	**Comment**
Lasswell formula	Useful but too simple

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

Gerbner (1956)	Special features of this model is that it can be given different shapes depending on the situation it describe 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 conteny with some consequences The flexible nature of the model makes it useful. It also allows an emphasis on perception It could explain, for example, the perceptual problems of a witness in court and, in the media, a model which helps us to explore the connection between reality and the stories given on the news
Westley and Maclean (1957)	Another influential model The authors were keen to create a model which showed the complexities of mass communication, hence the emphasis on having to interpret a mass of Xs (events which are communicated in the media) It oversimplifies the relationship between participants by not showing power relations between them. It makes the media process seem more integrated than it may actually be It doesn't show the way different media may have different interest of

	the state (e.g. difference between a state broadcast and a private one)

Source: Mehra (2009)

2.10 BARRIERS TO COMMUNICATION

According to businessdictionary.com barriers to communication are defined as, "aspects of or conditions that interfere with effective exchange of ideas or thoughts." Barriers to communication can be anything that distorts or prevents a message from being properly sent or received.

Olu (1999) states that traditionally, barriers to effective communication can be classified into physical, psychological and linguistic. Physical barrier occurs in form of loud noise and disturbing moments. Also psychological barriers are related to human behaviour and attitude that will affect listening and understanding, while linguistic barriers are problems of language in such area as pronunciation, ascent, vocabulary, grammar and the processes of making meaning for practical purposes, John (1999) analyzes the barriers in the following specifications:

Differing perception

John (1999) highlighted differing perception as the most common communication barriers. People who have different background of knowledge and experience often perceive same idea from different perspectives. Suppose that a new superior complement an assembly line worker for his or her efficiency and high quality work, the superior genuinely appreciates effort and same time want to encourage the other employees to emulate his or her examples. Others on the assembly line may however regard the worker being singled out for praise as a sign that "buttering up the boss" they react by testing or being openly hostile. Thus individual perception of the same communication differs radically.

Poor listening and premature evaluation

John (1999) stated that poor listening and premature evaluation demands full attention and self discipline. It also means that avoiding premature evaluation of what the other person has to say. A common tendency is to approve or disapprove what is being said rather trying to understand the speaker's frame of reference. Consequently, people tend to hear what they want to hear not necessary what is being said.

Distrust

John (1999) stated that communication may suffer due to listener's distrust of the communicator. Credibility of a massage is to a large extent a function of the credibility of the sender in the mouth of the receiver. Distrust can be the result of inconsistent behaviour by the superior or can be due to past experience in the sub ordinate was punished for honestly reporting unfavorable, but true information to the boss. Lack of trust could also make the sender to hold back some vital information.

Badly expressed messages

John (1999) stressed that the content of a communication in a form of it chosen words, phrases and sentences may be a barrier to efficient transmission of massages. No matter how clear the idea in the mouth of the sender of the information it may still be marred by poorly chosen words, omission, lack of coherence, poor organization of ideas, awkward structure of sentence, platitude, unnecessary jargons, and failure to clarify the implication of the massage.

Difference in background

Another major barrier to good communication emphasize on, arises from the differences in social, racial or educational background, compounded by age differences and personality differences. For example, an employee with no serious academy background might feel resentful

or inferior to a fellow university graduate employee. The university graduate might also consider him superior to others. The different background and interior/superior attitude will make communication difficult.

Information overload

In many cases an individual may receive a massage but misinterpret it simply because there are so many other issues currently calling for the attention of that person. Consequently, vital aspects of the information may be overloaded due to severe pressure.

Inconsistent verbal and non verbal communication

language is one of the primary medium of communication, but the message we send and receive are strongly influence by non verbal factors such as: body movement, clothing, the distance we stand from the person we are talking to, our posture, gesture, facial expression, eye movement and body contact. Even when our message is as simple as "Good morning" we convey different intents by our non verbal communication.

Emotional reaction

Emotional reaction – anger, love, defensiveness, hate, jealousy, fear and embarrassment – influence how we understand others message. If for example, we are in an atmosphere where we feel threatened with loss of power or prestige, we may lose the ability to gauge the meaning of the message we receive and will respond defensively or aggressively.

Noise/distraction

Noise is any factor that disturbs, confuses or otherwise interferes with communication. Communication rarely occurs in totally noise- free environment, of course, so people learnt to screen out many of the irrelevant message they receive. The problem is that they sometimes also screen out relevant information. While Mehra (2009) gave some example of barriers to

communication in the construction industry as: Physical – noise, distance, time, environment, physical medium. Cultural – ethnic, religious and social differences. Perception – viewing what is said from your own mindset. Words – we assign a meaning to a word often because of culture, experience, etc reasons which results in improper encoding of message. Experience – lack of similar experience. Emotion – personal feelings at the moment of doing other things besides listening. Linguistic – different language or vocabulary. Non-verbal – non-word message. Gestures – misunderstood gestures are a major barrier. Variation in language, accent, dialect. Any of the barriers to communication can create interferences or disturbances and impact the effectiveness of communication negatively.

There are many reasons why interpersonal communications may fail. In many communications, the message (what is said) may not be received exactly the way the sender intended. It is, therefore, important that the communicator seeks feedback to check that their message is clearly understood. The skills of Active Listening, Clarification and Reflection may help but the skilled communicator also needs to be aware of the barriers to effective communication and how to avoid or overcome them. There are many barriers to communication and these may occur at any stage in the communication process. Barriers may lead to your message becoming distorted, therefore risk wasting both time and/or money by causing confusion and misunderstanding. Effective communication involves overcoming these barriers and conveying a clear and concise message.

2.11 Categorization of Barriers to Communication.

Language and linguistic ability may act as a barrier to communication. However, even when communicating in the same language, the terminology used in a message may act as a barrier if it

is not fully understood by the receiver(s). For example, a message that includes a lot of specialist jargon and abbreviations will not be understood by a receiver who is not familiar with the terminology used. Regional colloquialisms and expressions may be misinterpreted or even considered offensive.

Psychological barrier: The psychological state of the receiver will influence how the message is received. For example, if someone has personal worries and is stressed, they may be preoccupied by personal concerns and not as receptive to the message as if they were not stressed. Stress management is an important personal skill that affects our interpersonal relationships. Anger is another example of a psychological barrier to communication, when we are angry it is easy to say things that we may later regret and also to misinterpret what others are saying. More generally people with low self-esteem may be less assertive and therefore may not feel comfortable communicating - they may feel shy about saying how they really feel or read negative sub-texts into messages they hear. Psychological barriers may result from the receiver's physical state: for example, a receiver with reduced hearing may not grasp to entirety of a spoken conversation especially if there is significant background noise.

Physical Barrier: An example of a physical barrier to communication is geographic distance between the sender and receiver(s). Communication is generally easier over shorter distances as more communication channels are available and less technology is required. Although modern technology often serves to reduce the impact of physical barriers, the advantages and disadvantages of each communication channel should be understood so that an appropriate channel can be used to overcome the physical barriers.

Systematic barrier: Systematic barriers to communication may exist in structures and organizations where there are inefficient or inappropriate information systems and communication channels, or where there is a lack of understanding of the roles and responsibilities for communication. In such organizations, individuals may be unclear of their role in the communication process and therefore not know what is expected of them.

Attitudinal barrier: Behaviors or perceptions that prevent people from communicating effectively. Attitudinal barriers to communication may result from personality conflicts, poor management, and resistance to change or a lack of motivation. Effective receivers of messages should attempt to overcome their own attitudinal barriers to facilitate effective communication.

2.12. RECOGNIZING BARRIERS TO COMMUNICATION

Recognizing barriers to communication is the first step in improving communication style. Encoding barriers, the process of selecting and organizing symbols to represent a message requires skill and knowledge. Obstacles listed below can interfere with an effective message. Lack of Sensitivity to Receiver: A breakdown in communication may result when a message is not adapted to its receiver. Recognizing the receiver's needs, status, knowledge of the subject, and language skills assists the sender in preparing a successful message. If a customer is angry, for example, an effective response may be just to listen to the person vent for awhile. Lack of Basic Communication Skills: The receiver is less likely to understand the message if the sender has trouble choosing the precise words needed and arranging those words. Insufficient Knowledge of the Subject: If the sender lacks specific information about something, the receiver will likely receive an unclear or mixed message. Have you shopped for

an item such as a computer, and experienced how some salespeople can explain complicated terms and ideas in a simple way while others can't.

Information Overload: If you receive a message with too much information, you may tend to put up a barrier because the amount of information is coming so fast that you may have emotional Interference: An emotional individual may not be able to communicate well. If someone is angry, hostile, resentful, joyful, or fearful, that person may be too preoccupied with emotions to receive the intended message. If you don't like someone, for example, you may have trouble "hearing" them.

2.13 METHODS OF OVERCOMING BARRIERS TO COMMUNICATION

overcoming communication barriers require a vigilant observation and thoughts of potential barriers in a particular instance of communication. Strategies to overcome barriers will be different in different situations depending upon the type of barriers present. Following are some of the important general strategies that will be commonly useful in all the situations to overcome the barriers of communication: Taking the receiver more seriously, Crystal clear message, delivering messages skillfully, focusing on the receiver, using multiple channels to communicate instead of relying on one channel, ensuring appropriate feedback and be aware of your own state of mind/emotions/attitude.

In addition to removal of specific barriers to communication, the following general guidelines may be helpful to facilitate communication: Have a positive attitude about communication, defensiveness interferes with communication, work at improving communication skills.

The communication model and discussion of barriers to communication provide the necessary knowledge to improve communication. This increased awareness of the potential for improving

communication is the first step to better communication. Make communication goal oriented. Relational goals come first and pave the way for other goals. When the sender and receiver have a good relationship, they are much more likely to accomplish their communication goals. Experiment with communication alternatives. What works with one person may not work well with another. Use diverse communication channels, listening and feedback techniques. Accept the reality of miscommunication. The best communicators fail to have perfect communication. They accept miscommunication and work to minimize its negative impacts. Use of simple and clear words should be emphasized. Use of ambiguous words and jargons should be avoided It is essential to identify and eliminate the source of noise. Listen attentively and carefully. There is a difference between "listening" and "hearing." Active listening means hearing with a proper understanding of the message. By asking questions, the speaker can ensure whether his/her message is understood or not by the receiver in the same manner as intended by him.

The organizational structure should be simple to facilitate communication between various hierarchy levels. The number of hierarchical levels should be optimum, and there should be an ideal span of control within the organization. Simpler the organizational structure, more effective will be the communication. The managers should know how to prioritize their work. They should not overload themselves with the work, should spend quality time with their subordinates, and should listen to their problems and feedbacks actively.

According to Mehra (1999) there are 6 C's of communication, which are applicable to both written and oral communication which are as follows:

Complete: The message must be complete in all respect and should convey all facts required by the receiver. Incompleteness of the message may lead to misunderstanding or incomplete

understanding and confusion between the sender and the receiver. It is the responsibility of the sender to make sure (before mailing the message) that the information provided in the message is complete,

Clear: Clarity in communication makes understanding easier and enhances the meaning of a message. A clear message uses exact, appropriate, and concrete words and avoids ambiguous words.

Correctness: Correctness in communication implies that there are no grammatical and spelling errors .

Concise: Conciseness means eliminating wordiness and communicating what you want to convey in least possible words without forgoing the other C's of communication. **Consideration**: Consideration implies "stepping into the shoes of others." Effective communication must take the receiver/s into consideration (i.e., the audience's viewpoints, background, mindset, education level, etc.). The sender should make an attempt to understand the audience, their requirements, emotions, as well as problems. Ensure that the self-respect of the audience is maintained and their emotions are not hurt. **Courtesy**—courtesy in message implies that the message should show the sender's expression as well as respect to the receiver. The sender of the message should be sincerely polite, judicious, reflective, and enthusiastic

2.14 PATTERNS OF COMMUNICATION WITHIN THE CONSTRUCTION INDUSTRY.

Good communication is one of the main prerequisites for the smooth and profitable running of any organization. This is particularly so in the construction industry, as communication in the industry according to Shutt (1992) is often hampered for the following reasons: Lack of cooperation and early consultation between the various stages of construction. i.e. client's conception stages, design stages, planning and other legislative approvals, erection stage. The increasing proportion of subcontract labor (if nominated) over which the main contractor has no control. The problem of the erection site being far from the specialist head office functions often leads to instructions being issued by the phone, rather than more concise written instructions being given.

2.14.1 Communication at conception/Design stages

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 requirement 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 requirement 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 the cost implication of the project to see if the project design is still within the approved budget.

2.14.2 Communication during Approval by the planning Authority

The role of the construction industry in the society is to satisfy the wants of the consumers in terms of construction project, 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.

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

Local plans: These are prepared to examine in detailed the local area under construction, and to prevent problems that might arise from complications due to conflicts on planning applications. It would be foolish, for example, to proceed with a planning application for a road side extension to a client's factory. If there is a local plan proposing a road widening scheme in the future, this will affect the factory.

All development plans are available for inspection at the local authority planning offices, to forestall problems with certain clauses in the building regulations (Shutt, 1992).

2.14.3 Communication between design team and building team

On nearly every job, certain difficulties arises, usually practical difficulties in construction to certain detailed drawing. These problems in many cases could have been overcome, had there been consultation between the architect and builder at the 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 drawing long after the project has started. This point alone raises communication problems, in that the builder may have to order purpose-made components, 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/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.

2.14.4 Communication within contractor's organization: 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 organization (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.

2.14.5 Communication between parties: 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 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 which could hold weekly. All the relevant parties like the architect, contract manager, general foreman, clerks of works, main subcontractors, etc which are a complete record summarizing daily happenings on site for the week 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 operation involve the team effort of the client, quantity surveyor, architect, consulting engineers, 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.

2.15.1Roles of participants in construction industry

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 materials, liaison with clients/consultant, coordination with architect 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 meeting with client for reviewing site progress and resolving pending problems for various projects under execution, and 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 document and the procedures manual, liaise with local authorities and ministerial agencies having jurisdiction over the project, review contractor's structural changes order proposal, review contractor's claims related to structural worked and prepare recommendations for claims approval or rejection, assist in negotiation with contractors regarding the value of claims or changes in schedules, review of structural drawings for projects designed by others, and 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 work, issue of variation orders altering extent, nature or quantity of the works, and 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 approval budget, prepare the Bill of Quantity for the project, recommends action to the client through a tender report for the purpose of the project, managing the tender process, assessing capital and revenue expenditure over the whole life of a facility, managing and analyzing risk, giving advice on the avoidance and settlement of disputes, valuing construction

work for interim payment, valuing change, assessing or compiling claims for loss and expense and agreeing final accounts, negotiating with interested parties, control construction cost 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 implication of design decision at an early stage to ensure that good value is obtained for the money to be expended and advising clients on ways of procuring the project.

Construction (Resident) Engineers: Directs the affairs of the construction project, provides technical 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, and 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.

2.16 COMMUNICATION STRUCTURE IN THECONSTRUCTION INDUSTRY

Although not all participant have a contractual relationship they all must communicate effectively to make the project work. Maslej (2006) noted that larger and more complex projects will often require the involvement of additional parties such as Structural engineers, environmental officials and other consultants working for the owner. An example of the communication structure of a residential project is given in Fig 2.3 below;

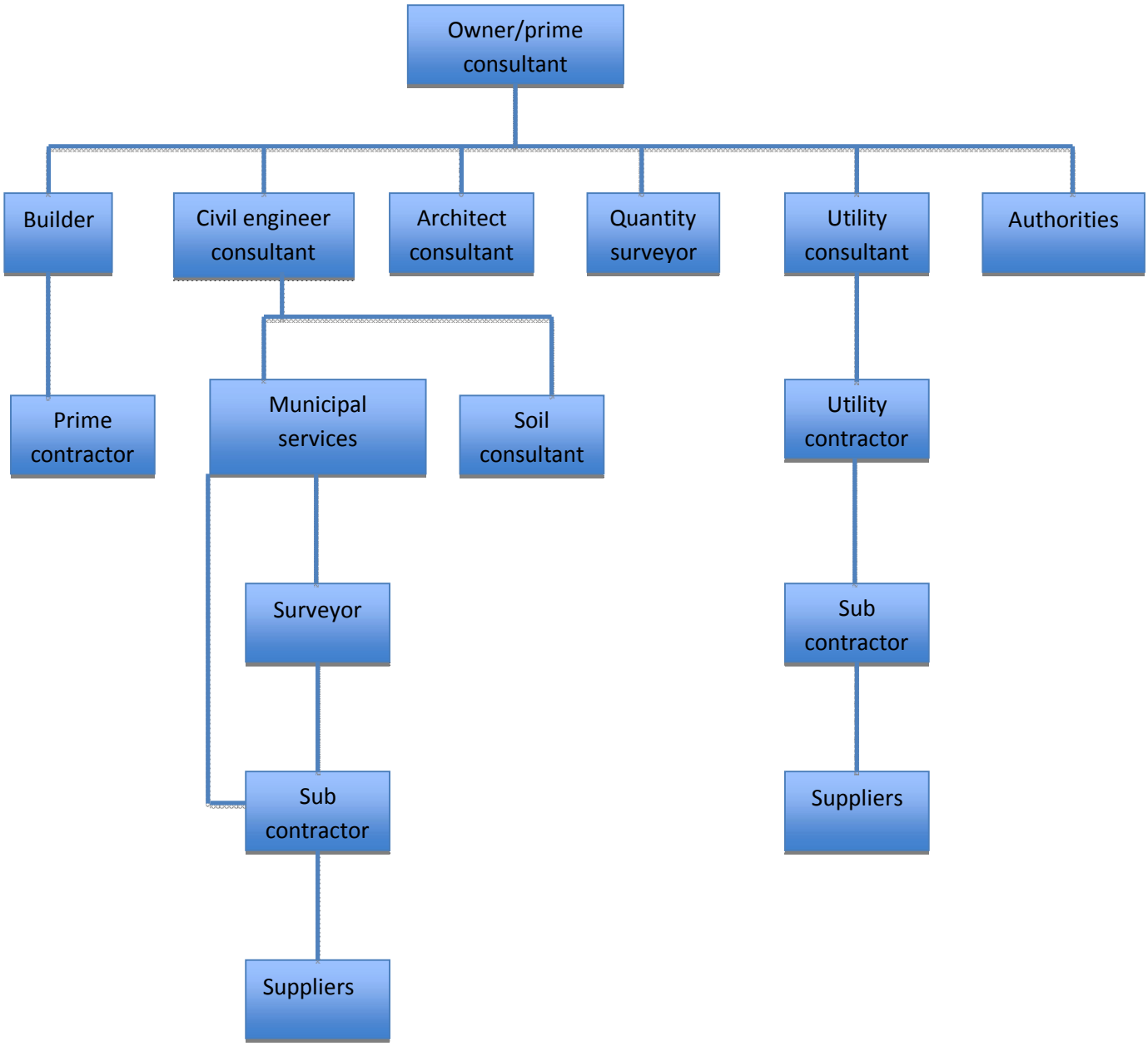


Figure 2.3: Parties involved in a residential construction project (Maslej, 2006).

Communication within project-based environments presents special challenges. This is especially true within the construction industry, where interaction tends to be characterized by

unfamiliar groups of people coming together for short periods before disbanding to work on other endeavors (Dainty *et al,* 2006).

Aside from the communication that takes place between businesses, each entity will have to communicate a significant amount of information internally, that is, within the company (Maslej, 2006). Figure 2.4 below displays the communication that occurs within a construction firm.

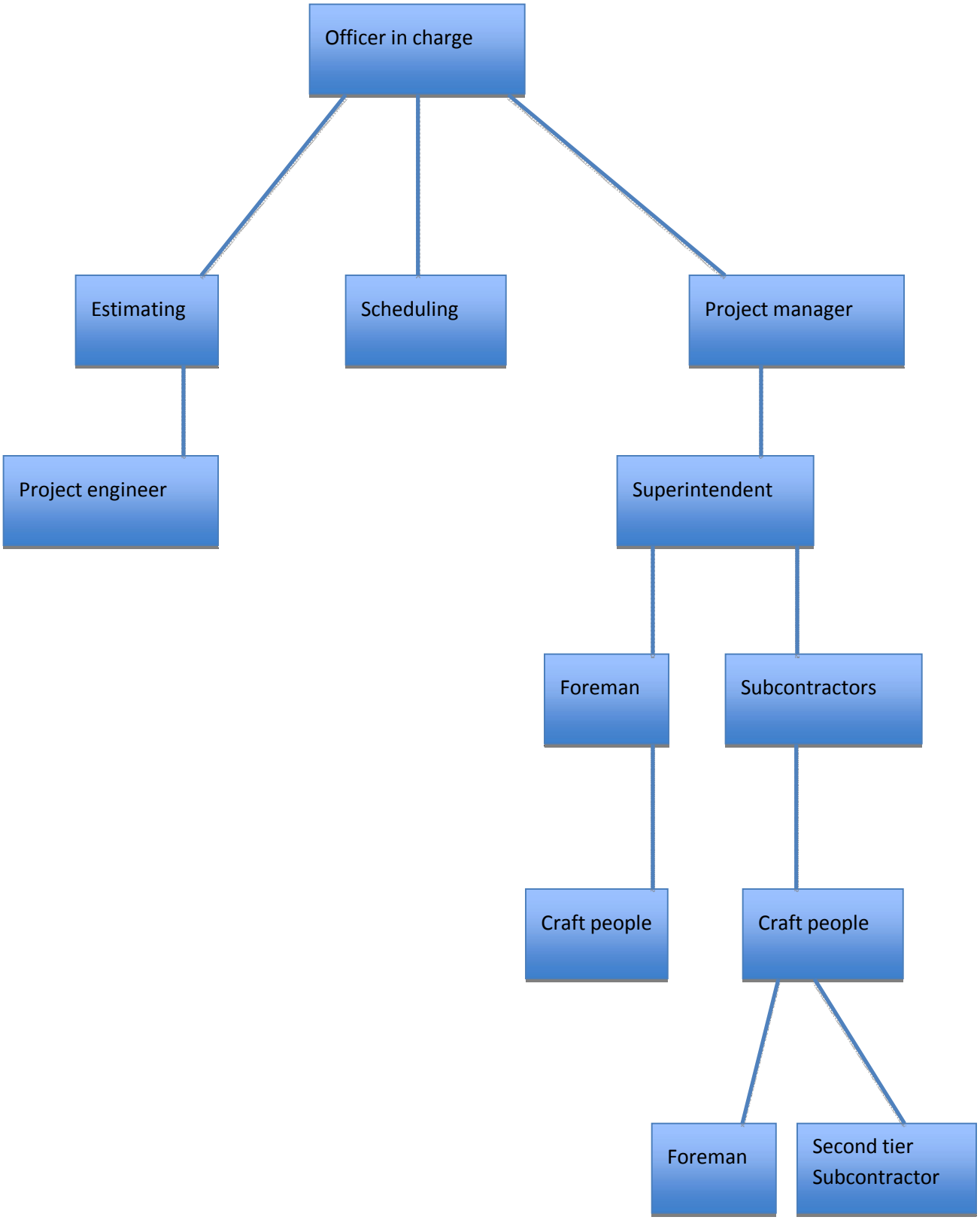


FIG 2.4 Contracting firms internal communication structure (Maslej, 2006)

2.17 CAUSES OF POOR COMMUNICATION

Quite often, it has been stated that the major problem facing the construction industry is that of ineffective communication (Latham, 1994, & DETR, 1998). Many at times, poor communication has caused delays in the delivery of projects. Extension of time will be necessary and the contractor equally charges for the extended time provided the delay was not his fault. Some of the causes of poor communication are listed below:

Lack of standardized communication methods: A significant portion of communication problems in the construction industry is closely linked to lack of standardized communication methods. Poor communication between parties is the root cause of risk in the design and construction process. This often results in cost, schedule and quality problems. The construction firms have strongly focused on optimizing their own internal communication processes and controls while the hand off of information between companies remains largely unstructured. The lack of common vocabulary largely contributes to real construction industry-wide process advancement from taking place (Kenig, 2005). The construction industry requires standards if it hopes to improve its major processes, particularly project delivery processes.

Severity of the problem and brief history: The construction industry has been suffering from communication difficulties for many years. Findings of a 1995 construction industry training survey strongly indicate that new tools for communication are desperately needed in the business and that poor communication has a strong detrimental effect on productivity (Finding, 1998). Individual surveyed for this thesis similarly agree the witness problems in their line of work as a direct result of poor communication practices. This concludes that exactly half of those surveyed for this study recognize the communication problem in the construction industry as being severe.

Construction work demand: Construction work demand has been a constant rise for the past decade as a direct result of the growing and changing economy. Increased construction activity has formed a growing reliance on immigration to fill the many labour shortages within the construction industry that begin to exist (Finding, 1998).

Language barrier: Lack of proper training or no training at all contributes to extreme conditions on the jobsite (Flory, 2001). Secondary research strongly indicates that language barrier largely contributes to poor communication in the construction industry and has a tremendous effect on worker safety on the jobsite.

2.18 EFFECTS OF POOR COMMUNICATION ON PROJECTS

Poor communication in the construction industry has a significant detrimental effect on project quality, cost, schedule, and worker safety (Maslej, 2006). Construction schedules can be significantly delayed as a direct result of poor communication. Miss-communicated information leads to work being redone or corrected. In construction, work is organized so that minimal or no time is wasted in the assemble process. To achieve this trades are schedule to work consecutively as a team. For example, in a housing project, a high labour turnover is employed. The framing crew could be schedule to start work immediately after the foundation are completed by the concrete crew.

If the concrete crew has to correct their work due to miscommunication this in turn will delay the framing crew who will then delay all the consecutive crews. Conclusively, it only takes a small misunderstanding to lead to significant project delays. According to Jergeas (2005) many project delays, particularly on larger scale developments occur due to unrealistic schedules. Projects

changes typically mean additional work. They must be communicated to the execution team early on if schedule deadlines are to be met.

The cost of any given construction project can grow significantly as a direct result of poor communication. According to Maslej (2006), project cost can increase due to three main reasons; Incomplete or faulty contract document, misinterpretation of the contract document, and lack of proper project supervision. Lack of proper project supervision can lead to schedule delays and can significantly increase the cost of any given project. Poor communication and inefficiencies between companies is responsible for 30% of design and construction costs, excluding material costs such as concrete, brick and mortar (Construct ware n.d).

Maslej (2006) also noted that language barrier was a strong contributor to poor communication practices on the jobsite and had a tremendous impact on worker safety. In many cases, contractors are willing to take risks associated with hiring employees who cannot communicate freely with other workers. Apart from the fact that the contractors take on a larger workload in order to minimize profit, they also save a considerable amount of money in labour costs by making use of illegal immigrants with language barrier. Many of these immigrants have little or no English skills which can cause severe communication problems on the worksite and affect productivity, profitability and above all worker safety (Dexter, 2005). The most common causes of all deaths and fatal injuries in construction are falls, being struck by something, caught in between machinery or some other equipment, electrical shock which are all related to workers with little or no language skills (Maslej, 2006).

Quality in construction refers to the standard of work that is expected based on the requirement of the contract documents including drawings, specifications, contract, addenda and any

additional conditions supplementary to the contract (Collier, 2005). Dunbar (2006) stated that the purpose of the construction specification is to clearly communicate the owner's expectation to the contractor in a manner that was fair and equitable. He further suggested that well written specification will result in accurate documents. Although poor project quality is often associated with being the contractor's fault, it is predominantly the mistakes that designers and specification writers make that are responsible for desired project quality not being achieved (Maslej, 2006). Inefficiencies in contract document issued by consultants are a form of miscommunication and can lead to significant quality problems.

CHAPTER THREE

RESEARCH METHOD

3.1 INTRODUCTION

The essence of this chapter is to define the entire method adopted in this project work. It describes the procedures followed in realizing the objectives. This involves the adequate description of the research and stressing on the inclusiveness of the chosen area of this study, the research tools and samplings techniques necessitating the administration of questionnaires. Other discussions centered on study design which describes the major procedure followed in carrying out the project, the method of data collection and finally, the analysis of data indicating the statistical tool used and suitability of such tools.

3.2 SECONDARY DATA

Research is highly based on existing concepts which are established upon the body of knowledge surrounding them in form of theories, principles, laws, and literature. Literature review was conducted both at the outset and throughout the research process. The preliminary stages of this research involved the review of literature on relevant topics within the research domain. The review essentially provided a good foundation for this research by throwing light on all relevant issues and it made the contemporary issues more clearly while highlighting the gaps in knowledge and practice.

Sources of literature include libraries, use of electronic sources which include electronic publishing sites and search engines. Types of materials that were sorted include research papers from peered viewed journals, articles from professional journals and magazines, relevant and related textbooks, encyclopedia, etc.

3.3 RESEARCH APPROACH

There are two approaches to a research, the quantitative approach and the qualitative approach. This research aims at determining types, causes and effects of barriers to communication on construction projects; hence the most suitable approach to it is the quantitative approach. Quantitative research is generally associated with the positivist/post positivist paradigm. It usually involves collecting and converting data into numerical form so that statistical calculations can be made and conclusions drawn. 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). Naoum (2002) characterized 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, emphasizes on quantification. The samples collected are often large and representative. This means that quantitative research results can be generalized to a larger population within acceptable error limits. The question which this research sorts to determine was what causes barriers in communication amongst professionals working on a constructional project.

3.4 RESEARCH DESIGN

There are three main categories of research design: survey design, experimental design, ex post facto design. 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 generalization to a larger population, which makes them suitable to construction management research. There are three types of survey research design one-short or cross-sectional study, successive independent samples study and panel or longitudinal study. For the purpose of this study cross sectional descriptive design was used. According to Ibrahim (2012) cross-sectional study is the most commonly used design and is used when a sample of the population is selected and information is collected from this sample usually at one time.

3.5 SAMPLING

The sampling frames for this research were construction firms in Kaduna. The study population comprised of construction professionals namely Quantity surveyors, Architects, Builders, project managers and Engineers working in a construction firm in Kaduna. Convenience sampling was used in selecting the samples from the populations due to the nature of the study.

A list of construction firms was obtained. Office type of work, size of the office, current projects, experience and qualification were criterion's considered. These criteria are given points and weighed for each office. Offices who achieve certain points are qualified. The inclusion criteria was all construction industry professionals employed more than one year ago at the firm and were available at the time of the study and willing to participate, office type of work, size of the office, current projects involve in and experience in the field of work. The exclusion criteria was those who were employed less than one year ago, those not available such as those who were on leave and those who decided to exercise their right not to participate.

3.6 DATA COLLECTION TOOL

A structured self-administered questionnaire was used to collect data from the various respondents. The questionnaire consisted of closed ended questions. For the purpose of the study, the questions were grouped under two categories. The first series of questions were related to the respondent's profile. This was intended to find out the background and experience of respondents and whether demographic variables have any significant association with communication. The second group of questions related to barriers in communication and factor that cause barriers to communication in the construction industry. A 5-point Likert scale (from 1 strongly agree to 5 strongly disagree) was utilized where the respondents were asked to indicate from the list which is a barrier to communication, the how important each factor is and how frequent those occur.

3.7 DATA ANALYSIS

Data analysis techniques include univariate analysis (such as analysis of single-variable distributions), bivariate analysis, and more generally, multivariate analysis. Multivariate analysis, broadly speaking, refers to all statistical methods that simultaneously analyze multiple measurements on each individual or object under investigation (Hair *et al*, 1995). As such, many multivariate techniques are extensions of univariate and bivariate analysis. The questionnaires collected were manually cleaned and coded; data collected was analyzed using statistical package for social sciences (SPSS version 20). Frequency tables, tabulations and cross tabulations.

The questionnaire reliability coefficient was assessed, and the Cronbach's Alpha was found to be 0.88 i.e. 88% which was adequate.

Cronbach's alpha Internal consistency

$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.7 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Table 3.1 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.881	.875	51

A descriptive and inferential statistics analysis was employed. Data was summarized using frequency tables and graphic presentations. Chi-square test was used to test for association between the predictor variables and the outcome variables. P-value was set at $p < 0.05$ which was considered significant. Frequency Index (FI) = $5n_1+4n_2+3n_3+2n_4+n_{5/5n(n1+n2+n3+n4+n5)}$: where n_1 is the number of respondent who answered "very high", n_2 the number of respondent who answered "high", n_3 number of respondent who answered "low", n_4 number of respondent who answered "very low", n_5 number of respondent who answered "not important".

3.8 LIMITATION OF THE STUDY

The validity of the response by the professionals in the construction industry could not be ascertained. Time to response to the questionnaire honestly as possible by use bulky questionnaire and respondent honesty was requested. This study's finding could not be generalized due to the fact that only one state out of 36 states in Nigeria was accessed. The need to enlarge the scope and reach of study to allow for findings to be generalized should be supported by making more funds available. The use of review questions to determine causes of communication barriers is subjective and could not be objectively verified.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The purpose of this study is to assess the factors influencing the occurrence of barriers to communication on construction projects in Nigeria. In the previous chapters the research was placed in context by defining construction communication and barriers for the purpose of the study. This chapter assesses the factors that influence the occurrence of barriers to communication in construction projects types based on a review of literature and questionnaire analysis. Out of 100 questionnaires distributed, 82 completed questionnaires were returned (percentage of return 82%) the result of the questionnaires and the background information collected for this research was discussed in details. The mean age of respondents was 34 years ±8 SD which was not significantly associated to communication barriers**.** General descriptive statistics was presented. This chapter therefore presents the survey results and analysis of the results.

4.2 QUESTIONNAIRES RESULTS

Table 4.1 Age distribution of respondent

Age	Frequency (no)	Percentage (%)
20-29	30	36.6
30-39	34	41.5
40-49	14	19.5
50-59	2	2.4
Total	82	100

Source: survey data

The age group with highest number of construction industry professionals is 30-39years with 41.5%**.**

Table 4.2 Sex distribution of respondent

Sex	Frequency (no)	Percentage (%)
Male	61	74.4
Female	21	25.6
Total	82	100

Source: survey data

Of the respondent 74.4%were males while 25.6% of them were females

Table 4.3 Profession of respondent

Profession of respondent	Frequency (no)	Percentage (%)
Quantity surveyors	46	56.1
Architects	18	21.9
Project managers	3	3.7
Builders	9	11.0
Engineers	6	7.3
Total	82	100

Source: survey data

Majority of the respondents were Quantity Surveyors with 56.1%

Table 4.4 Classification of type of organization

Type of organization	Frequency (no)	Percentage (%)
Contracting	44	53.7
Consulting	37	45.1
Client	1	1.2
Total	82	100

Source: survey data

Of the respondent contracting jobs took 53.7% with the highest percentage.

Table 4.5 Working experience of respondent

Working experience	Frequency (no)	Percentage (%)
<or = 9	17	20.7
10-19	57	69.5
20 and above	8	9.8
Total	82	100

Source: survey data

It was observed that 69.5% of the respondents are 10-19 years post qualification

Table 4.6 Qualification of respondent

Highest qualification	Frequency (no)	Percentage (%)
OND	14	17.1
HND	27	32.9
BSC	29	35.4
MSC	11	13.4
PHD	1	1.2

Total	82	100

Source: survey data

Respondents with Bsc 35.4% account for the highest educational level

Table 4.7 Relationship between age and occurrence of barriers

Age	**Agree**		**Disagree**		**Total**	
	F	%	F	%	F	%
20-29	0	0.0	1	1.2	1	1.2
30-39	3	3.7	18	22.0	21	15.6
40-49	4	4.9	36	43.9	40	48.8
50-59	0	0.0	20	24.4	20	24.4
Total	7	8.5	75	91.5	82	100
Chi square test	x^2= 0.035		df=1		p= 0.851	

Source: survey data

The respondent age was analyzed using bivariate analysis to see if the age of the respondent has any association with the occurrence of barriers. There was no statistical significant association between age and barriers to communication. From the chi square test in Table 4.7 above p= 0.398 which is greater than the P-value = 0.05.

Table 4.8 Relationship between sex and occurrence of barriers

Sex	Agree		Disagree		Total	
	F	%	F	%	F	%
Male	5	6.1	56	68.3	61	74.4
Female	2	2.4	19	23.2	21	25.6
Total	7	8.5	75	91.5	82	100
Chi square test	x^2 =0.035		df= 1	P= 0.851		

Source: survey data

From the analysis of data the respondent sex was analyzed using bivariate analysis to see if the sex of the respondent has any association with the occurrence of barrier. There was no statistical significant association between sex and barriers to communication. From the chi square test in Table 4.8 above P= 0.851 which is greater than the P-value = 0.05, which shows there is no association between the sex of the respondent and their knowledge on communication barriers.

Table 4.9 Relationship between qualification of respondent and occurrence barriers

Highest qualification	Agree		Disagree		Total	
	F	%	F	%	F	%
OND	1	1.2	13	15.9	14	17.1
HND	1	1.2	26	31.7	27	32.9
BSC	3	3.7	26	31.7	29	35.4
MSC	2	2.4	10	12.2	12	14.6
Total	7	8.5	75	91.5	82	100
Chi square test	x^2=1.9		df= 3	P= 0.577		

Source: survey data

From chi square test analysis in Table 4.9 above p= 0.577 which shows that the p-value for respondent qualification is greater than the p-value =0.05, there is no significant association between the qualification of the professionals and occurrence of barriers.

Table 4.10 Relationship between Professions of respondent with occurrence of barriers

Profession of respondent	**Agree**		**Disagree**		**Total**	
	F	**%**	**F**	**%**	**F**	**%**
Q/S	2	2.4	44	53.7	46	56.1
Architect	1	1.2	17	20.7	18	22.0
Project manager	1	1.2	2	2.4	3	3.7
Builders	2	2.4	7	8.5	9	11.0
Engineers	1	1.2	5	6.1	6	7.3
Total	7	8.5	75	91.5	82	100
Chi square test	x^2=6.2	df= 4	P= 0.180			

Source: survey data

From the analysis of data the respondent profession was analyzed using bivariate analysis to see if the profession of the respondent has any association with occurrence of barriers. There was no statistical significant association between profession and barriers to communication. From the chi square test in Table 4.10 above p= 0.180 which is greater than the P-value = 0.05, which shows there is no association between the profession of the respondent and occurrence of barriers.

Table 4.11 Relationship between working experience of respondent with occurrence of barriers

Work experience	Agree		Disagree		Total	
	F	%	F	%	F	%
>= 9	6	7.3	51	62.2	57	69.5
10-19	1	1.2	16	19.5	17	20.7
<20	0	0.0	8	9.8	8	9.8
Total	7	8.7	75	91.5	82	100
Chi square test	**x^2 =1.18**		**df= 2**	**p 0.045**		

From the analysis of data the respondent work experience was analyzed using bivariate analysis to see if the working experience of the respondent has any association with the occurrence of barriers. There was statistically significant association between the professionals working experience and occurrence of barriers to communication. From the chi square test in Table 4.11 above P= 0.045 which is less than the P-value = 0.05.

Table 4.12 Types of barriers to communication in construction project

Barriers	Strongly agree		Agree		Undecided		Disagree		Strongly disagree	
	F	%	F	%	F	%	F	%	F	%
Poor listening And premature evaluation	37	45.1	40	48.8	2	2.4	2	2.4	1	1.2
Deferring perception	26	31.7	49	59.8	3	3.7	3	3.7	1	1.2
Badly expressed message	28	34.1	46	56.1	4	4.9	3	3.7	1	1.2
Information Overload	20	24.4	40	48.8	12	14.6	9	11.0	1	1.2
Distrust	23	28.0	2	2.4	18	22.0	6	7.3	33	40.0
Emotional reaction	6	7.3	8	9.8	47	57.3	20	24.4	1	1.2
Noise	17	20.7	46	56.1	12	14.6	3	3.7	4	4.9
Inconsistent Communication	23	28.0	42	51.2	10	12.2	6	7.3	1	1.2
Experience in the field of work	28	34.1	39	47.6	9	11.0	6	7.3	0.0	0.0
Distraction	23	28.0	32	39.0	19	23.2	6	7.3	2	2.4
Muddled messages	19	23.2	6	7.3	8	9.8	47	57.3	2	2.4

The professional's were asked to indicate their level of agreement to the argument as to which is a potential barrier. Table 4.12 shows the response of the respondent. Barriers to communication as agreed by the professionals from the one with the highest frequency include: poor listening and premature evaluation, deferring perception, badly expressed message, information overload,

distrust, emotional reaction, noise, inconsistent verbal and nonverbal communication, experience in the field of work, distraction and muddled messages

Table 4.13 Factors that influences the occurrence of barriers to communication

Classification	Not important		Very low		Low		High very		High	
PHYSICAL FACTORS	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Distance	5	6.1	6	7.3	45	54.9	25	30.5	1	1.2
Disturbing moment	7	8.5	8	9.8	39	47.6	23	28.0	5	6.1
Time schedule pressure	10	12.2	9	11.0	31	37.8	30	36.6	2	2.4
Environment	8	9.8	3	3.7	36	43.9	33	40.2	2	2.4
PSYCHOLOGICAL FACTORS										
Job dissatisfaction	6	7.3	3	3.7	42	51.2	23	28.0	8	9.8
Fear of superiors	8	9.8	6	7.3	32	39.0	33	40.0	3	3.7
Unconscious incompetence	6	7.3	40	48.8	32	39.0	0	0.0	4	4.9
Lack of commitment	4	4.9	2	2.4	45	54.9	27	32.9	4	4.9
Confusion	2	2.4	7	8.7	36	43.9	32	37.8	6	7.3
Human behaviour and attitude	1	1.2	4	4.9	33	40.2	39	47.6	5	6.1
Poor listening skills	1	1.2	4	4.9	40	48.8	28	34.1	9	11.0
LINGUISTIC FACTOR										
Badly expressed message	3	3.7	4	4.9	44	53.7	22	26.8	9	11.0
Pronunciation	3	3.7	10	12.2	44	53.7	19	23.2	6	7.3
Ascent	11	13.4	11	13.4	35	42.7	23	28.0	2	2.4
Limited vocabulary	10	12.2	8	9.8	48	58.5	16	19.5	0	0.0
Grammar	10	12.2	8	9.8	49	59.8	11	13.4	4	4.9
Gestures	8	9.8	12	14.6	34	41.5	27	32.9	1	1.2
CULTURAL FACTOR										
Ethics	11	13.4	10	12.2	27	32.9	33	40.2	1	1.2

Religious beliefs	13	15.9	6	7.3	23	28.0	37	45.1	3	3.7
Social differences	12	14.6	8	9.8	28	34.1	33	40.2	1	1.2
Body language	10	12.2	11	13.4	33	40.2	28	34.1	0	0.0
Adopting to the behaviour	5	6.1	10	12.2	23	28.0	41	50.0	3	3.7

The respondents were asked to show the level of occurrence of barriers to communication. Table 4.13 shows the response of the respondents. Which assesses the major factors that influences the occurrence of barriers to communication which include: Human Behaviour and attitude, adopting to the behaviour of a group, religious beliefs, listening skills, confusion, fear of superiors, environment, distrust, disturbing moment, gestures, unconscious in competence, social differences, ascent, grammar , time schedule pressure, pronunciation, job dissatisfaction and limited vocabulary.

4.3 DISCUSSION OF RESULTS

4.3.1 Demographic variables

The survey as presented in Tables 4.1 to 4.6 shows that 56.1% of the questionnaires were filled by Quantity surveyors, 22% by Architects, 11% by Builders, 3.7% by Project managers and 7.3% by Engineers. An overwhelming majority of 79.3% of the respondents had more than 10-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.41.5% of the respondents were more than 30-years of age. Overall, 97.9% of the respondents were familiar with the term construction communication or project communication.

The study found the mean age of respondent to be 34 years ±8 SD which was not statistically significant associated with communication barriers p=0.398, mean years of experience which is 15 years ±7 SD which was statistically significant associated with communication barriers

p=0.045 to a study in Ghana with mean years of experience 18 years ±8 SD (Maame, 2012). And was not statistically significantly associated with communication p=0.552.

It was found out in this study that the years of working experience was associated with construction communication. Meaning there was a statistically significant association between communication and years of experience p=0.045. On the other hand age, sex, occupation and education were not statistically significant. In a US study by Toole (2003) age, education working experience and occupation was found to significantly affect communication, but found sex not to have any effect on communication.

4.3.2 Occurrence of barriers

Table4.14 Ranking of factors that influences the occurrence barrier to communication in construction projects

Occurrence of barriers	Level of occurrence					n	Frequency index	Rank
	Frequency (no)							
Listening skills	1	4	28	40	9	82	0.727	1
Distance	5	6	25	45	1	82	0.702	2
Fear of superior	6	3	23	42	8	82	0.702	2
Lack of commitment	4	2	27	45	4	82	0.705	2
Human behaviour	1	4	33	39	5	82	0.705	2
Confusion	2	7	36	31	6	82	0.678	6
Badly expressed message	3	4	44	22	9	82	0.673	7
Behaviour of a group	5	1	23	41	3	82	0.666	8
Limited vocabulary	10	8	16	48	0	82	0.649	9
Environment	8	3	36	33	2	82	0.644	10
Job dissatisfaction	8	6	32	33	3	82	0.641	11
Pronunciation	11	11	35	23	2	82	0.637	12

Disturbing moment	7	8	39	23	5	82	0.627	13
Religious beliefs	13	6	23	37	3	82	0.627	13
Time schedule pressure	10	9	31	30	2	82	0.612	15
Ethics	11	10	27	33	1	82	0.607	16
Social differences	12	8	28	33	1	82	0.607	16
Body language	10	11	33	28	0	82	0.593	18
Gestures	8	12	34	27	4	82	0.588	19
Ascent	11	11	35	23	2	82	0.585	20
Grammar	10	8	49	11	4	82	0.578	21
Incompetence	6	40	32	0	4	82	0.493	22

It was found that there are factors influencing the occurrence of barriers to communication and if this factors are not determine, mitigating barriers to communication will be as much difficult. Respondent were asked to respond to some questions which assesses the level of occurrence of barriers. Some researchers have identified types of barriers in communication in general, without discussing the mechanism of such influence. Also, there has been much other investigation in the field of detecting barriers in communication. These researchers did not investigate the factors which might lead to the generation of the barriers in communication. Controlling the factors which lead to the generation of barriers in communication from inception of the project will result in a substantial reduction in poor communication.

Table 4.14 above summaries the frequency of occurrence indices and the rank for each of the factors that influence the occurrence of barrier as perceived by the respondent which include the following ranked according to their level of occurrence: Badly expressed message, adapting to the behaviour of a group, limited vocabulary, environment, job satisfaction, pronunciation,

disturbing moment, religious beliefs, time schedule pressure , ethics, social differences, body language, gestures, ascent, grammar and unconscious incompetence.

4.3.3 Relationship between barriers and the factors that influences its occurrence

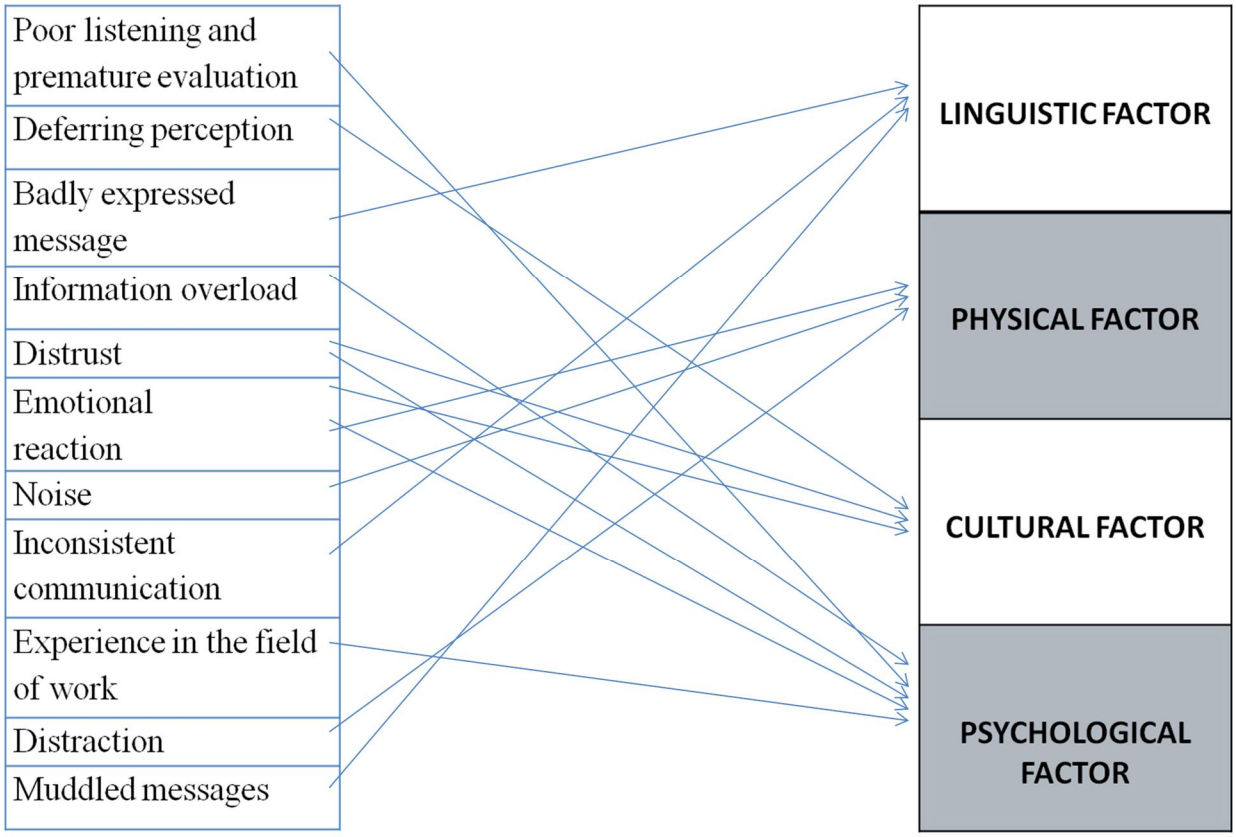


Fig 4.1Relation between barriers and factors that influence its occurrence

Without finding the reasons for the occurrence of communication barriers and ways of mitigating these factors, barriers are likely to be repeated again and again in many construction projects. To reduce barriers to communication effectively in other to solve the problem of poor communication within construction project professionals for the realization and timely delivery of project, It is important to understand the relationship between these barriers and the factors that influences it occurrence. The factors have been classified into linguistic factor, physical

factor, psychological factors and cultural factor for the purpose of better understanding of the factors. From the analysis a barrier can be influence by multiple factors.

Fig 4.2 below shows the basic linguistic factors that influences three of the barriers (muddled messages, badly expressed message and inconsistent verbal and non-verbal message) identified in Table 4.12 above. Linguistic barriers are problems of language in such area as pronunciation, ascent, vocabulary, grammar and the processes of making meaning for practical purposes. Inconsistent verbal and non verbal communication is influence by gestures. Language is seen as one of the primary medium of communication, but the messages send and receive is strongly influence by non verbal factors such as: body movement, clothing, the distance from one person to the other when talking, posture, gesture, facial expression, eye movement and body contact. Even when the message is as simple as “Good morning” people convey different intents by their non verbal communication. Muddled messages and badly expressed message is influenced by limited vocabulary, ascent and pronunciation.

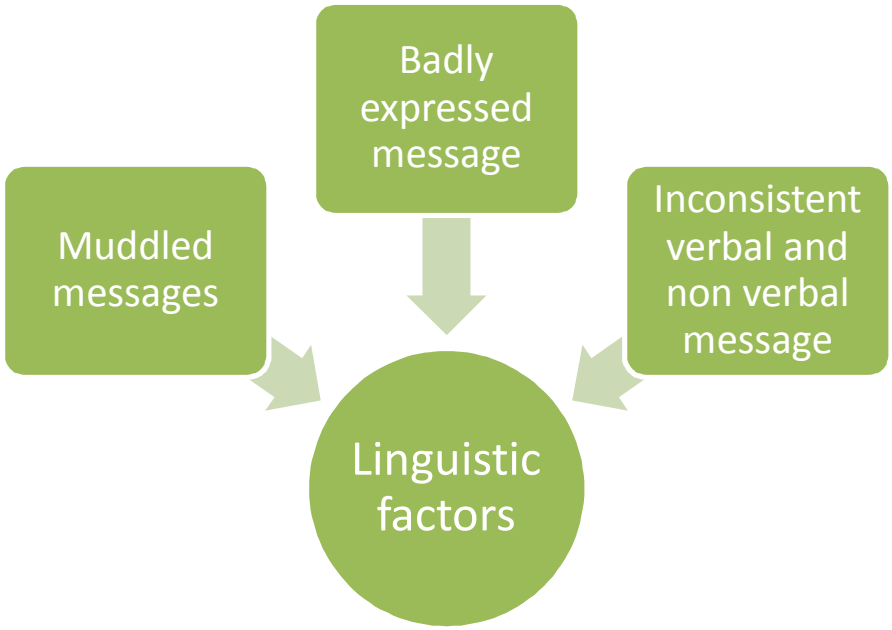


Fig 4.2 Relationship between linguistic factors and types of barriers

According to Mehra (2009) some examples of barriers to communication in the construction industry are: Physical – noise, distance, time, environment, and physical medium. From the survey Fig 4.2 shows that physical factor such as environment, time schedule pressure, distance and disturbing moment are what influence the occurrence of noise/ distraction and emotional reaction as barriers to communication. Noise as already explained, is any factor that disturbs, confuses or otherwise interferes with communication. Communication rarely occurs in totally noise- free environment, of course, some people learnt to screen out many of the irrelevant message received. The problem is that sometimes relevant information is also screened out. Noise can be influenced by disturbing moment and environment. Emotional reaction, environment influences the understanding of others message. If for example, an atmosphere is threatened with loss of power or prestige, the ability to gauge the meaning of the message received will be lost and will respond defensively or aggressively.

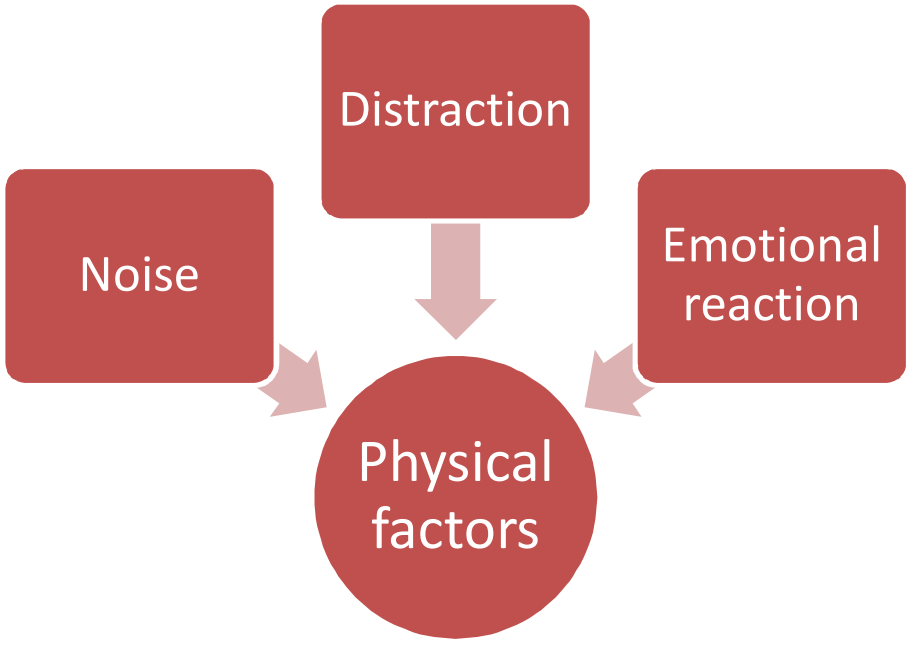


Fig 4.3 Relationship between physical factors and barriers

Cultural factors are related to Perception – viewing what is said from one's mindset. This cultural factor includes ethnics, religious beliefs, social difference, adapting to the behaviour of a group and body language. From Fig 4.3 above emotional reaction as a barrier is influenced by physical factor and also influenced by cultural factors in Fig 4.4 below. According to Maame (2012) Emotions are personal feelings at the moment of doing other things besides listening. Therefore emotions can be influenced by religious beliefs and adapting to the behaviour of a group. According to John (1999) Communication may suffer due to listener's distrust of the communicator. Credibility of a massage is to a large extent a function of the credibility of the sender in the mouth of the receiver. Distrust can be influenced by religion, ethnics and body language as shown in the figure below.

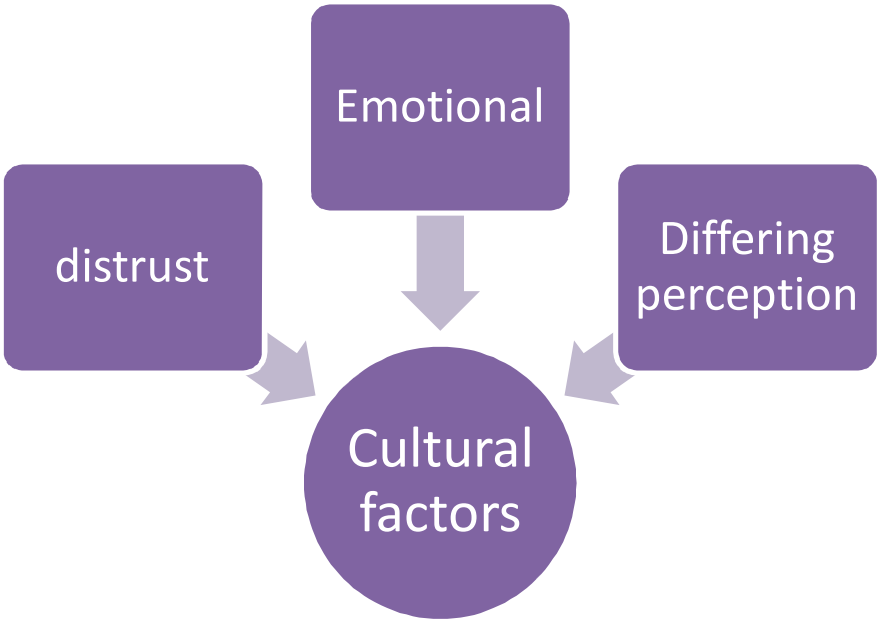


Fig 4.4 Relationship between cultural factors and barriers

Psychological factors are related to human behaviour and attitude that will affect listening and understanding, which include job dissatisfaction, fear of superiors, confusion, unconscious incompetence and lack of commitment as shown in Fig 4.5 this factors brings about emotional reaction, information overload which in many cases an individual may receive a massage but misinterpret it simply because there are so many other issues currently calling for the attention of that person. Consequently, vital aspects of the information may be overloaded due to severe pressure, poor listening and premature evaluation, it demand full attention and self discipline according to (John, 1999). It also means that avoiding premature evaluation of what the other person has to say.

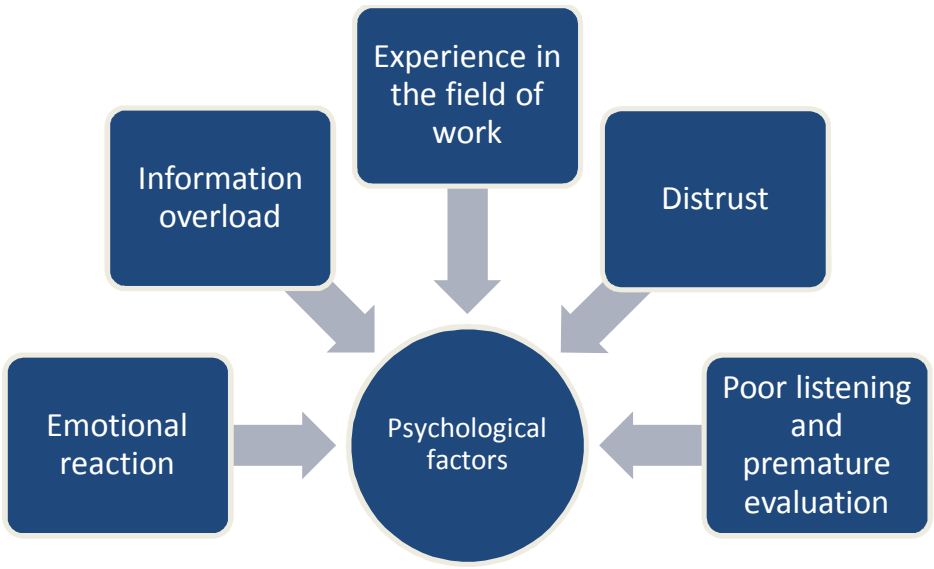


Fig 4.5Relationship between psychological factors and barriers

4.4 EFFECTS OF COMMUNICATION BARRIERS ON CONSTRUCTION PROJECTS

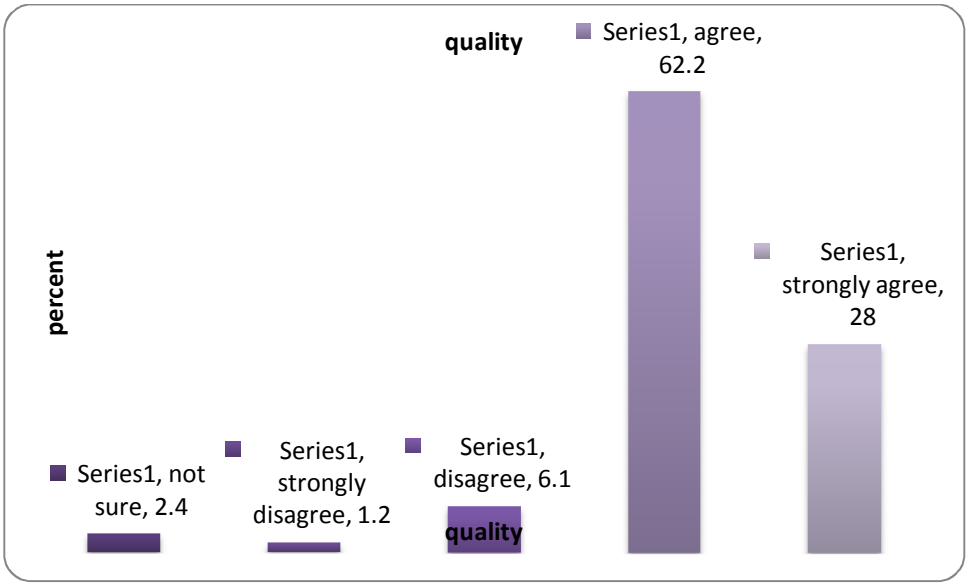


Fig 4.6 Effects of barrier to communication on project quality

Barriers to communication can create interferences or disturbances and impact the effectiveness of communication negatively, which results to poor communication and leads

to tremendous effect on construction projects. The respondents were asked questions on the effect of communication barriers on construction projects. From the analysis of data it was gathered that barriers to communication affects the quality of construction work, project cost overrun, and project delay and workers safety. According to Mehra (1999) Inefficiencies in contract document issued by consultants are a form of miscommunication and can lead to significant quality problems. And this miscommunication can be as a result of barriers to communication within the consultant during preparation of the contract document. Fig 4.6 above shows the respondent response on project quality. 90.2% of the respondents agree that barriers to communication affect the quality of construction work.

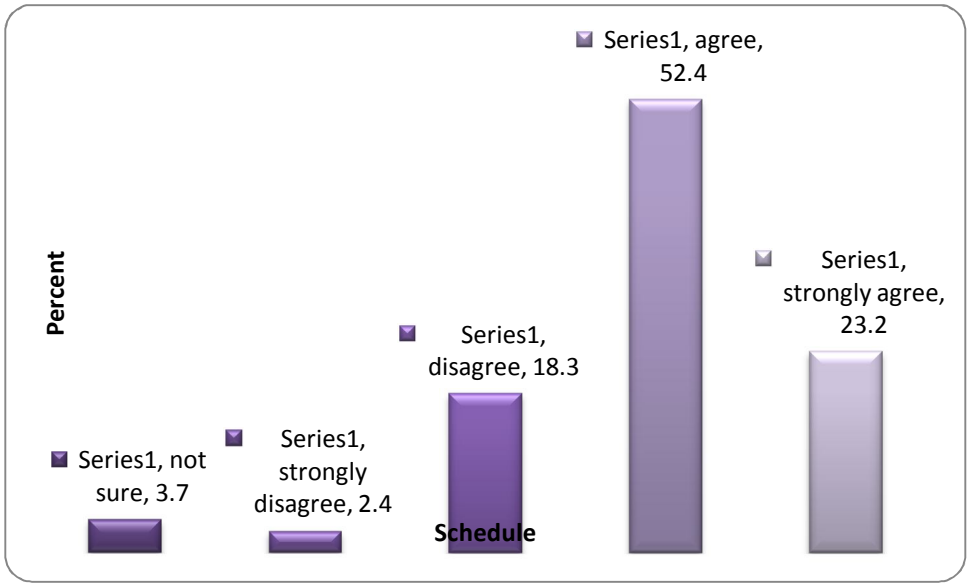


Fig 4.7 Effects of barrier to communication on project schedule of work

Fig 4.7 shows that 75.6% of the respondents agree that barriers to communication affect the schedule of construction work. Construction schedules can be significantly delayed as a direct result of poor communication. And poor communication can be as a result of hindrances to

communication and these hindrances are barrier. Miss-communicated information leads to work being redone or corrected. In construction, work is organized so that minimal or no time is wasted in the assemble process. To achieve this trades are schedule to work consecutively as a team.

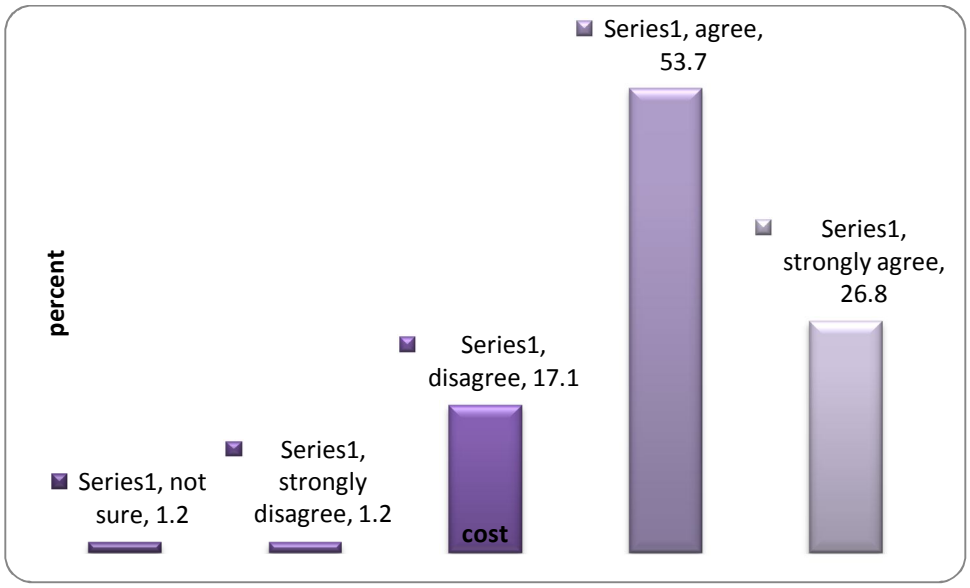


Figure 4.8 Effects of barriers to communication on cost of construction work

Fig 4.8 above shows that 80.5% of the respondents agree that barriers to communication affect the cost of construction work. The cost of any given construction project can grow significantly as a direct result of poor communication as stated above poor communication can be as a direct result of barriers to communication . According to Maslej (2006), project cost can increase due to three main reasons; Incomplete or faulty contract document, misinterpretation of the contract document, and lack of proper project supervision. Also as stated above incomplete or faulty contract document can be as a result of barriers in communication amongst the professionals in the process preparation of the contract document. Misinterpretation of contract document is

attributed to some of the barrier identified in Table 4.11 above. Lack of proper project supervision can significantly increase the cost of any given project.

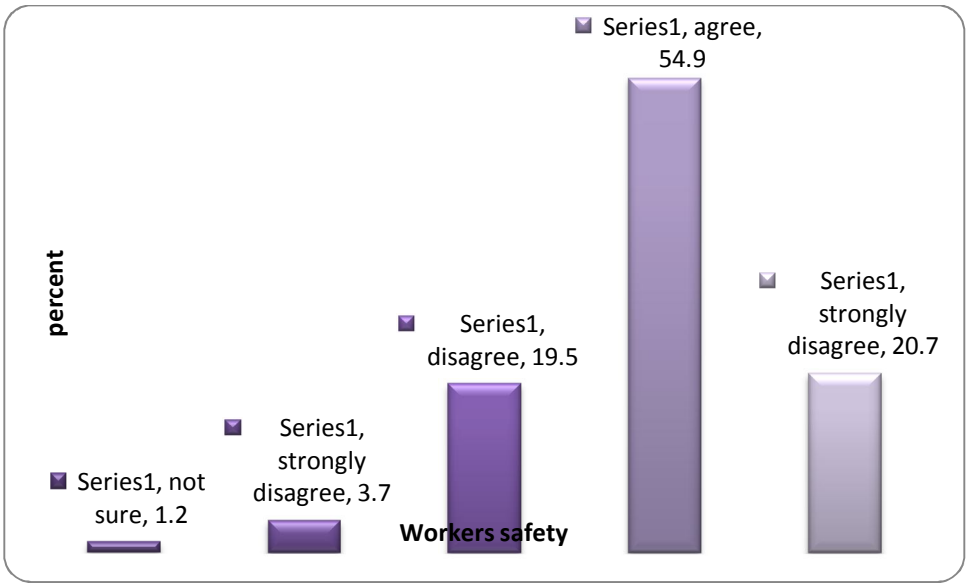


Figure 4.9 Effects of barriers to communication on workers safety in construction works.

75.6% of the respondents agree that barriers to communication affect the safety of workers on site. Maslej (2006) noted that language barrier was a strong contributor to poor communication practices on the jobsite and had a tremendous impact on worker safety. As stated above poor communication can be as a result to some of the barriers identified in Table 4.11 above and as stated above those language barriers as linguistic factors that causes the occurrence of some of the barriers. In many cases, contractors are willing to take risks associated with hiring employees who cannot communicate freely with other workers (Maslej, 2006).

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 SUMMARY OF FINDINGS

Below are the major findings from the study.

I. The barriers to communication in the Nigeria construction industry are poor listening and premature evaluation, deferring perception , badly expressed message , experience in the field of work, inconsistent verbal and non verbal communication, noise, information overload, distrust and emotional reaction.

II. The factors that influences the occurrence of barriers to communication are classified into linguistic, physical, psychological and cultural, these factors include Badly expressed message, adapting to the behaviour of a group, limited vocabulary, environment, job satisfaction, pronunciation, disturbing moment, religious beliefs, time schedule pressure , ethics, social differences, body language, gestures, ascent, grammar and unconscious incompetence.

III. The construction industry professionals reported that the effects of barriers to communication are project delays, project cost overrun, poor project quality and lack of workers safety on site.

IV. Construction industry professionals with lower Years of working experience in the construction industry will experience more barriers in communication on the other hand the construction industry professionals with higher years of working experience will communicate better.

5.2 RECOMMENDATION

Based on the findings the following recommendations were made:

I. Establishing and managing the structures of communication on projects must always be on the agenda of team leaders and management before the commencement of every project.

II. In other to mitigate barriers to communication effectively proactive action should be taken on the factor that influences the occurrence of barriers to communication.

III. Making use of feedback should be encouraged. Feedback is the process of obtaining information and performance in order to take collective actions where necessary.

IV. Programmes should be organized by firms to meet its obligations, it should be designed to include both information about the working and also appreciation of the sources of information

5.3 FURTHER RESEARCH

I. A study to assess the arbiter to the factor that influences the occurrence of barriers to communication in the Nigeria construction industry.

II. The understanding of communication barriers amongst team leaders and management needs to be explored.

III. Further study should be carried out to evaluate the management system and how it affect the communication site in Nigeria.

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APPENDIX

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This MSC research study is an investigation into the causes of barriers to communication in construction processes in Nigeria. The objective of this research is to improve construction communication through reduction of barriers to effective communication. Be assured that any information provided will be treated with confidentiality.

Thank you in anticipation of your kind cooperation.

Please fill in or tick as appropriate

1. Name of Company: ----------
2. Type of organization 1. Contracting ( ) 2. Consulting ( ) 3. Client ( ) 4. Other specify- ----------
3. Age ----------
4. Sex 1. Male ( ) 2. Female ( )
5. Marital Status 1. Single ( ) 2. Married ( ) 3 Separated ( ) 4. Widow ( )
6. Profession of respondent: 1. Quantity surveyor ( ) 2. Architect ( ) 3. Project manager ( ) 4. Builder ( ) 5. Engineer ( )
7. Highest Qualification: 1. OND ( ) 2. HND ( ) 3. BSC ( ) 4. MSC ( ) 5. PHD ( ) 6. Other specify please----------
8. Working experience of respondents in years: ----------

SECTION A

9. The following are potential barriers to communication on project sites. However there are arguments as to which is a barrier or not. Indicate your level of agreement by ticking appropriately.

	Barriers to communication on project site.	**Strongly agree**	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**
9.1	Poor listening and premature evaluation					

9.2	Differing perception between sender and receiver					
9.3	Badly expressed message					
9.4	Information overload					
9.5	Distrust					
9.6	Emotional reaction					
9.7	Noise/Distraction					
9.8	Inconsistent verbal and non-verbal communication					
9.9	Experience in the field					
9.10	Distraction/Noise					
9.11	Muddled messages					
9.12	Other (specify please)					

SECTION B Causes of barriers to communication.

Classification	**Factors influencing occurrence of barriers to communication**	**Importance of factors**				
		Not important	**Very low**	**Low**	**High**	**Very high**
	a. Operation of construction tools and equipment					

Physical factors	b. Distance					
	c. Disturbing moment					
	d. Time schedule pressure					
	e. Environment					
	f. other (specify please)----------					
Psychological factors	a. Job dissatisfaction					
	b. fear of superiors					
	c. unconscious incompetence					
	d. Lack of commitment					
	e. Confusion					
	f. Human behaviour and attitude					
	g. poor listening skills					
	h. Other (specify please)----------					
Linguistic factor	a. Badly expressed message					
	b. Pronunciation					
	c. Ascent					
	d. Limited Vocabulary					
	e. Grammar					
	f. Gestures					
	g. Other (specify please) ----------					
	a. Ethnics					
	b. Religious beliefs					
	c. Social differences					
	d. Body language					

Cultural factor	e. Adopting to the behaviour of a group					
	f. Other (specify please)----------					

What are the relationship between types of communication barriers and the factors that cause these barriers above?

SECTION C Effects of barriers to communication on project delivery.

	Strongly agree	**Agree**	**Disagree**	**Strongly disagree**	**Not sure**
Quality in construction refers to the standard of work that is expected based on the requirement of the contract documents including drawings, specifications, contract, addenda and any additional conditions supplementary to the contract					
Poor communication affects project quality in construction.					
Poor project quality is often associated with being the contractor's fault					
Mistakes that designers and specification writers make are responsible for desired project quality not being achieved.					
Inefficiencies in contract document issued by consultants are a form of miscommunication and can lead to significant quality problems					
Construction schedules can be significantly delayed as a direct result of poor communication.					

Miss-communicated information leads to work being redone or corrected					
It only takes a small misunderstanding to lead to significant project delays					
The cost of any given construction project can grow significantly as a direct result of poor communication.					
Poor communication and inefficiencies between companies is responsible for 30% of design and construction cost.					
Language barrier is a strong contributor to poor communication practices on the jobsite.					
Language barrier has a tremendous impact on worker safety					
Contractors take risks associated with hiring employees who cannot communicate freely with other workers					
Contractors take on a larger workload in order to minimize profit					
Contractors save money in labour costs by using illegal immigrants with language barrier.					
Many immigrant workers have little or no English skills.					
Difference in language can cause severe communication problems on the worksite and affect productivity, profitability and above all worker					

safety					