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**A Study of the Effects of Supervisors' Communication Modes on Construction
Project Delivery Time: A Case Study of Ningo-Prampram District Assembly**

By

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A Thesis submitted to the Department of Construction Technology and Management,
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degree of

MASTER OF SCIENCE

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DECLARATION

I hereby declare that this submission is my own work towards the MSc. Construction Management and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university or any other university, except where due acknowledgement has been made in the text.

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ABSTRACT

The aim of this study was to identify the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly. With this aim, two (2) objectives were set which were to identify the supervisors' communication modes in Ningo-Prampram district assembly and to identify the challenges associated with the supervisors' communication in Ningo-Prampram district assembly. In order to achieve this aim, a comprehensive literature review was conducted on the subject of the study. The findings from the review were used to formulate a structured questionnaire which was distributed to twenty-eight (28) respondents, of which twenty-five (25) were retrieved for the analysis. The data were analyzed using mean score ranking and presented in tables. From the analysis, it was realized that, face-to-face communication was mostly used in Ningo-Prampram district assembly followed by telephone, memos and letters. Also, it was realized that, perception about the communication was most faced communication challenge in the Ningo-Prampram district assembly followed by semantic problem and lack of education and training. Finally, telephone, face-to-face and video conferencing tools had a statistically significant effect on project schedule performance. However, memos and letters, meetings, e-mails and project portal and project documents had a statistically low effect on project schedule performance. With these findings, it was recommended that, supervisors should improve on the extensive use of face-to-face communication mode in the Ningo-Prampram communication mode to facilitate the progress of the project and supervisors should switch to the use of other communication modes like letters and meetings as they have been proven to be effective in terms of time consumption. One limitation of the study was that it was limited to the Ningo-Prampram district assembly.

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DEDICATION

I wholeheartedly dedicate this work to almighty God for his protection, my family (my wife, Augustina and children Jayden, Alexander, Jaron) for their unconditional love and my friends (Victor, Nath and Robert) for their good counsel.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

The construction industry is a very significant aspect of the general development of every country. Many researchers have agreed to that fact. For instance, Rameezdeen (2005), postulated that, the construction industry is the spine of every economy whether developed or developing. In Ghana, Ofori (2012), postulated that, the construction industry aids in the development of the country as it provides the government with revenue and employs about 6% of the working age of the population. Over recent years, the construction industry in Ghana has experienced steady growth at approximate 7-8% average growth per year (AgyakwaBaah, 2007). This is a very good sign for construction practitioners in the country. Nevertheless, a faster growth rate can be achieved if efforts are exerted to ensure the successful completion of projects and satisfaction of clients. One way to achieve this is to recognize the role of supervisors' communication modes in successful project delivery. Basically, a construction project is said to be delivered successfully if it meets the constraints of cost, time and quality. Other stakeholders may have different assertion about the phenomenon of a successful project delivery. This make the generalization of project success very complex and hence, a safer way to deal with project success is to ascertain the perception of project success from your target respondents.

The construction industry is a very complex sector coupled with lots of uncertainties. It is a common assertion that no two projects are the same and hence the procedures of tactics employed for one project cannot be generalized for all construction projects.

The uniqueness of every project makes the role of a supervisor very critical in achieving success. A supervisor can be described as managers who are charged with leading, coordinating and directing the work of their subordinates in order to achieve team goals (Eckles et al., 1975). Supervisors are mostly in charge of a team which comprise of both professionals and unqualified, unskilled and untrained laborers. In order to ensure good project delivery, there is the need for extra and tactful supervision of the unskilled personnel to ensure project delivery (Alwi et al., 2001). Supervisors must also ensure that, the professionals are also on the same page with them in terms of the goals and objectives they all want to achieve.

A supervisor plays a very crucial role during the entire life-cycle of a construction project. They must possess a set of qualities in order to execute their roles successfully. Eckles et al., (1975) stated that, a supervisor must possess management skills, human relation skills and leadership skills in order to effectively and efficiently motivate, communicate and cope with organizational behavior. If a supervisor is unable to plan work activities, communicate with workers effectively and adequately direct the course of the works, then the project will be heading towards a huge failure. This is because, the construction project will be full of reworks and work quality issues which can lead to cost and time overruns.

The skills set of a supervisor can however be improved through education and training. However, significant portion of a supervisor's training will be gained on the job. Thus, they get trained and experience the hard way as they make mistakes and correct them. This is a trial and error system of training which has been proven by research to be a very effective way of training if combined and supplemented with

formal training (Betts, 1989). This research is being conducted to ascertain the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly. The department of works at district assembly play a supervisory role in public project executed in their jurisdiction.

1.2 PROBLEM STATEMENT

As already stated in the previous section, supervisors play very crucial roles in ensuring a construction project is executed successfully. At the assembly level, the department of works act as consultants who supervise public projects being executed in their jurisdiction in other to ensure project success. The measurement of project success can be based on cost performance, time performance, quality performance, safety performance, end user satisfaction and no claims and disputes during the course of the work (Baker et al., 1974; De Wit, 1998; Westerveld, 2003; Lim and Mohamed, 1999). The roles played by assembly as supervisors on projects include planning of works, communicating with stakeholders, checking quality of works, defining scope of works, defining project objectives, dispute resolution, measurement of work done and recommending work done payments. From the above, it is very difficult to ascertain which success factor the assembly is mostly concerned about. Also, choosing the supervisors' role that is very critical in achieving project success proved very difficult.

In other to clarify the confusions above, two separate preliminary surveys were conducted. The first one was designed for the department of works at the assembly to identify the success factor that is very critical to them. Their responses were subsequently ranked. The outcome showed that, the assembly are mostly concerned

about completing the project on time (time performance). The findings of the first survey was incorporated into the second survey. This survey was directed to a sample of ten (10) contractors who have worked often with the assembly. They were asked to indicate which of the roles of the assembly that hinders them from completing the project on time. Ranking of their responses showed that, improper, ineffective and inefficient communication procedures hindered the contractors from completing the project on time.

From the findings, the research will look at the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly.

1.3 AIM OF THE STUDY

The aim of the research is to identify the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly.

1.3.1 Research objectives

1. To identify the supervisors' communication modes in Ningo-Prampram district assembly;
2. To identify the challenges associated with the supervisors' communication in Ningo-Prampram district assembly; and

1.4 RESEARCH QUESTIONS

1. What are the supervisors' communication modes used in Ningo-Prampram district assembly?

2. What are the challenges associated with the supervisors' communication in Ningo-Prampram district assembly?

1.5 SIGNIFICANCE OF THE STUDY

This outcome of this research will be very significant for both contractors and consultants as they will know which aspect to improve on. This will help them in increasing the probability of achieving high project performance. It would also help researchers, as new avenues for research will be available from the outcome of this research for the benefits of the entire construction industry. This study will also aid in adding to the literature on communication and its effect on organizational performance.

1.6 SCOPE OF THE RESEARCH

Contextually, this research work will only consider time performance success factor. This is because, the assembly faces an issue of poor time performance, therefore, the focus on time performance will aid improve on its performance. Geographically, this work is limited to the department of works in the Ningo-Prampram district assembly.

1.7 METHODOLOGY

This study basically explores the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly. The descriptive research design is more suitable for this study as it provides a description of how the communication modes influences schedule performance. Furthermore, the setting of the study makes it a case study research strategy. The quantitative research method will be adopted for this research. Findings from the literature will be used in

designing a questionnaire to ascertain the perception of the respondents. The respondents for this study are the department of works at the Ningo-Prampram district assembly. Thus, only primary data will be utilized for the study.

Details of the methodology is described in chapter three (3) of this study.

1.8 STRUCTURE OF THE THESIS

This research is organized into five chapters. The chapters are divided into chapter one which is the background of the study, aim and objectives of the study, importance and need of study, assumptions, limitations, definition of terms in the study. As the general introduction of the research. Chapter two will review the literature which is related to the research study. Chapter three will outline the research methodology, the chapter includes the research design, targeted population, sample size and sampling procedure. Also presented in chapter is the collection instruments, data collection and analysis procedures. Chapter four contains data analysis, presentation and interpretations. The findings, discussions, conclusions and recommendations for action based on the study findings.

1.9 STRUCTURE OF THE REPORT

There are five (5) chapters in this dissertation. The chapter one (1) constitutes the general introduction of this study. This constitute the background of study, problem statement, aim, objectives, methodology, significance of study and the scope of the study. The chapter two (2) constitutes the literature review. The review was done with regards to the objectives of the study. The chapter three (3) constitute the methodological approaches adopted for the study whiles the chapter four (4) discusses

the outcome of the analyzed data. The chapter (5) provides a general conclusion to the entire dissertation.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews literature pertaining to the subject matter of this study. This study sought to ascertain the effects of supervisors' communication modes on construction project delivery time. In this chapter, literature is reviewed on the nature of the Ghanaian construction industry. This is followed by a review on project schedule as a criterion for measuring project success. In this chapter, hypothesis was developed based on the concept of communication. This is very relevant in ascertaining the effects of supervisors' communication modes on construction project delivery time.

2.2 OVERVIEW OF THE GHANAIAN CONSTRUCTION INDUSTRY

Statistics from the Ghana Statistical Service shows that, the Ghanaian construction industry is the largest growing industry in the country. The Ghanaian construction industry has realized a growth rate of 30.60% (Ghana statistical service, 2015). The construction industry in Ghana has realized a steady growth from 26.6% in 2014 to 26.90% in 2015. Also, it has a share of 14.80% of the nominal GDP. The construction industry has significant impact on other sectors of the economy like manufacturing, mining, quarrying, electricity and water. Thus, the growth of the construction industry in Ghana will help in the socio-economic development of the country.

However, according to Ahadzie (2010), construction in the past were non-commercial and regarded as a family business. During the pre-independence and post-independence era, the Ghanaian construction industry was dominated by foreign

firms. In recent times, most firms in Ghana face numerous challenges in the effective management of construction activities. Therefore, stakeholders and authorities blame project failure on the contractors involved ministry of housing projects (Ahadzie, 2010). The Ghanaian construction does not have a stable operating environment due to the constant changing of economic and political situations in the country (Dansoh, 2005). Furthermore, local contractors cannot compete with foreign construction firms due to the lack or inadequacies of vital resources like capital, plants and human know-how.

In 2000, a report was written by Road sector in the Ghanaian construction industry indicating the numerous challenges facing the industry. These challenges included maintenance problems, ineffective communication and management information system, decentralization of the road sector, inability to secure adequate working capital and poor workmanship. These problems have a significant impact on the performance of the construction in-terms of cost, time, quality, health and safety and so on. According to Songwe (2014), there is a close relationship between a country's economic growth and the construction industry. Thus, the construction industry aids in the provision of infrastructure upon with development can be realized.

2.3 PROJECT SCHEDULE AS A MEASURE FOR PROJECT SUCCESS

Project schedule was described by Hatush and Skitmore (1997), as the period that enables the building to use operated by a date stipulated the client's future plans. Chan and Chan (2004), described project schedule as the duration for the completion of a project. Swan and Khalfan (2007), indicated that, project schedule performance is a major criterion for measuring project success. In fact, project schedule performance

is one of the earliest identified criterion for measuring project success alongside cost and quality. The famous iron-triangle as depicted in figure 2.1 shows the schedule criterion for measuring construction project success. The schedule performance can easily be quantified. Construction schedule is mostly stipulated at the planning or design stage of a project therefore; schedule performance can be measured as stipulated time of completion against actual completed time.

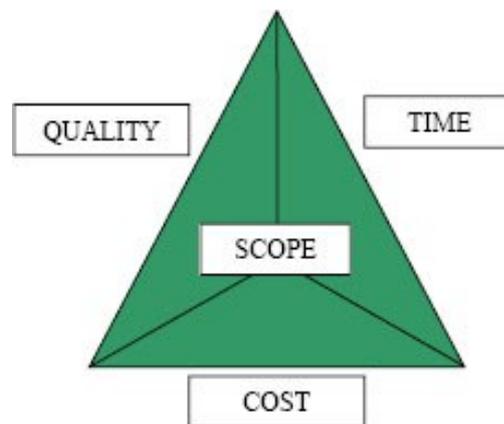


Figure 2.1: The iron triangle

Source: Caccamese and Bragantini, (2012).

2.3.1 Factors that affect construction project schedule

The duration of a construction project is affected by various factors. A study conducted by Tabish and Jha (2011), indicated five (5) major factors that affects the duration of a construction project. These are;

1. Bureaucratic interference;
2. Thorough understanding of client's needs;
3. High degree of trust among project stakeholders;
4. Timely decision from top management; and
5. Availability of resources as planned.

Other researchers identified other factors that affect the duration of a construction project. For instance, Agents (1998), identified the lack of commercial edge in the execution of procurement function, and lengthy financial closure of contracts which leads to unnecessary delays. Also, Westring (1997), realized that, delays in construction projects are mostly caused by long post-award negotiations and land ownership disputes. According to the World Bank (2003), the procedures for the payment of contractors and suppliers are also lengthy. They also involve over thirty steps from invoice to receipt of the payment cheque and often over-centralized which leads to delays in the project execution.

The above listed factors may cause construction project delays if not properly managed. Stumpf (2000), described delay as an event that causes an extension in the time needed to perform the tasks under a contract. In recent times, project delays have become a major component in a construction project life-cycle. Despite the major advancement in technology and management know-how, construction projects still suffer delays (Stumpf, 2000).

2.4 THE CONCEPT OF COMMUNICATION

Effective and frequent communication throughout the life cycle of a project is vital as they interact by way of teams. Communication has been defined in various ways. According to Olu (1999), communication has been defined as the process by which people attempt to share meanings through symbolic messages. Communication can be carried out in various formats. They include the use of speech, signs, behavior, symbols, signals and so on.

Communication comprises transmitting information from one individual to another. Some scholars of communication take this as a working definition and also a means of circumscribing the field of communication theory. Their definitions are outlined below:

Communication is a term that alludes to an dynamic, information sharing process (Clevenger, 1959). Dance (1970) also defined communication as the exchange of information, usually via a common system of symbols. Communication is the process of transmitting information from a sender to a receiver with the use of a means in which the information communicated is well 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”.

There are two (2) general forms of communication. These are;

1. Formal communication; and
2. Informal communication.

Formal and informal communication are all utilized by an organization for activities of varying uncertainties. Formal communication is based on regulations. Thus, formal communication follows laid down instructions set in communication strategy of an organization (Dainty et al., 2006). According to Dalton (1987) formal communication can sometimes be full of errors and over-optimistic. Informal communication on the other hand can be described as the exchange of information through mediums like

meetings, face-to-face, telephone and text messages. Informal communication follows no guidelines.

2.4.1 Communication Flow on a Construction Project

Communication can be categorized based on the direction of flow from the sender to the recipient (Okoh, 2004).

This form of communication categorization leads to four (4) main directions of communication flow. These are

1. Downward flows;
2. Upward flows;
3. Horizontally flows; and
4. Lateral flow.

2.4.1.1 Downward communication

This form of communication is from head to assistants. This form of communication can breakdown due to several reasons like poor organization, confusion about messages and personal reasons. Poor interpersonal relationship between heads and assistance can cause a breakdown in downward communication.

2.4.1.2 Upward communication

This is a form of communication that comes from assistance to heads. Similarly, they may breakdown due to poor organization, confusion and messages and personal reasons. Also, poor interpersonal relationship between heads and assistance can cause a breakdown in upward communication. Subordinates may be tempted to give

inaccurate information due to reasons like hiding errors or does not want to border the boss with trivial issues.

2.4.1.3 Horizontal communication

This is a form of communication between people on the same hierarchy. This kind of communication can break down due to difference in location.

2.4.2 Challenges to Communication

According to Shutt et al.,(1992) in the construction industry, the process of communication is regularly stalled. The stalling of construction projects is done due to the following reasons;

1. Lack of co-operation and coordination among the various stages of construction. This normally happens due to the fragmented nature of the industry;
2. The increasing number of sub-contractors over which the main contractor has no influence or direct command.; and
3. The construction site being very far away from the main office. This can lead to directives being issued on phone.

The areas of communication problems will be considered under the following headings (Shutt, 1992);

Conception/Design stage

1. The approval by the planning authority;
2. The design and building team;
3. Contractor's firm; and

4. Between site operative

2.4.3 Communication at conception stage

During the conceptual stage, communication is between the client and the project management team. This communication line last throughout the entire during of the project. At the stage the client's requirements is communicated to the consultant. The client's requirements may include budget available, scope of work and schedule limits.

2.4.4 Communication at endorsement by planning authorities

Before the commencement of any project, the construction team must seek approval from the community planning department. They will seek the structural plan approval and local plan approval.

2.4.5 Communication between design team and Building team

The design team and building team may interact to clarify certain issues like mistakes in certain details of the drawings. Communication between the builder and design team is very crucial in the achievement of project success.

2.4.6 Communication within contractor's organization

The size of the construction organization will determine the type of communication system to adopt and the speed of information delivery. Thus, smaller companies distribute information early compared to larger organization.

2.4.7 Communication between parties on site

In order to successfully achieve project objective, project team must efficiently communicate. This may include the organization of meetings for managers. They may then disseminate the information to his subordinates

2.4.8 Strategic Measures to Effective Communication

Communication within the construction industry is regarded effective when the following themes are achieved (Gudykunst 2003). Understanding, compatibility, displaying positive behavior, smoothness of communication, positive outcomes, positive non-verbal communication and adaption of the message.

1. Understanding is where one party understands the other or both parties understanding each other in the communication;
2. Compatibility includes commonality, honesty to communicate and a constructive atmosphere;
3. Presenting positive behavior includes displaying positive attitudes and positive listening;
4. Smoothness involves the flow of communication and responsiveness;
5. Positive results include attaining, accomplishing or gaining desirable results; through communication. Positive non-verbal involves eye contact, positive body language and positive facial expression; and
6. Adapting message includes adjusting messages to the person with whom respondents are communication.

2.4.9 Causes of ineffective communication

The causes of ineffective communication breakdown according to Adeleke and Suraju (2012) include;

2.4.9.1 Poor symbolic representation

In construction, sketches and representations are mostly used in the communication. Poor representations and sketches may be very difficult to reply to (priced and constructed).

2.4.9.2 Poor written media

Poor written information like reports, specifications, bill of quantities may unnecessarily delay projects. It can also lead to disputes which unnecessarily delay projects.

2.4.9.3 Scarce communication equipment

Poor mobile network does not aid in the effective transmission of information to recipients through mobile phones. Also, power outages do not allow e-mails to be sent thereby disrupting information flow.

2.4.9.4 Semantic problem

Words may mean differently to different people. This is a huge barrier to communication and can hinder the recipient from giving appropriate feedbacks

2.4.9.5 Lack of education and training

Some project operatives are not educated therefore do not know how to communicate in English. Also, some are not trained enough to read meaning into drawings.

2.4.9.6 Incompatibility

Different cultural backgrounds interpret information differently.

2.4.9.7 Motivation

If workers are not motivated enough to carry out instructions, they normally pass it on to the next person.

2.4.9.8 Jargon

Communicating with words which are understood by some groups of people. This is also a barrier to communication which can make the recipient to send wrong feedbacks.

2.4.9.9 Perception about the communication

The receiver decides what to accept and what to discard in an information based on his perception of priority.

2.5 COMMUNICATION MODES

Video conference systems, project planning documents, face-to-face communication, meetings, project portal, telephone, email and smartphone are all regarded as tools or channels to communication information.

2.5.1 Face-to-face

The most significant role of project team is to ensure smooth communication among stakeholders (Stryker and Santor, 1982). Research has shown that, face to face communication is the efficient medium of communication for problem solving. Gathering people in an open-space does not mean face-to-face interactions will occur. It is significant to take into consideration how communication can occur in putting up an office space (Stryker and Santoro, 2012). The same author stipulated that, the occurrence of face-to-face communication is a function of the distance separating them. Also, openness and visibility in an office space can increase the probability of communication within the entire office space. Therefore, the spaces of an office should be well planned to enhance communication.

Gorse and Emmitt., (2007), examined several architects and engineers. They were asked to indicate the communication system they prefer. They all had the perception that, face-to-face communication is most efficient They also described the face-to-face communication as a meta-communication. This can be described as the scenario where facial expressions denote whether the recipient has really understood what is being communicated. Studies have also shown that, face-to-face communication is the key to solving complicated problems. However, there are a number of challenges associated with face to face communication. This may include misinterpreted body language, less time to think about the message, interruptions and could be expensive (Wampler, 2006).

2.5.2 Video conferencing tools

This tool is very efficient for team members who are situated at other locations. Face-to-face communication is not possible if the team members are located at different locations. The video conferencing tool permits audio and visual communications. Additionally, the authors Gorse et al., (1999) stated that videoconference tool bridges gaps and aids in long distance project management.

2.5.3 Project planning documents

Project planning documents are very crucial in the execution of a project as it shows the details of a project on paper. Literature has shown that project teams normally underuse planning documents. A very typical example is an organizational relation chart. Project team members are also required to comprehend all the information on stipulated in the planning document so as to enhance coordination. Organizational chart gives details on how managers communicate but in practice, they do not depict the actual path adopted for communicating.

2.5.4 Meetings

Meeting is a tool used to issue instructions and communicate with small groups of people like managers. This information is subsequently issued to their subordinates. This form of information distribution from top to bottom is efficient and helpful for projects due to the fact that construction project personnel are mostly scattered (Dainty et al., 2006). Hawkins and Brawner(1997) stipulated that, the best number for meetings when trying to come up with an idea is 5-7 but not exceeding 10.

2.5.5 The E-mail and Project Portal

These are internet-based tools which has been quickly assimilated in the construction industry due to its high speed of distributing information and effectiveness (Dainty et al., 2006). This form of communication aids in the quick dissemination of information. Effective sharing of information aids in achieving high project success. Despite the innovation in information sharing, it is difficult to use it as a means to solve a problem. engineers generally prefer face-to-face instructions.

2.5.6 Telephone and Smartphone

Mobile phones are regarded as one of the best things that ever happened to man. It has substantially change the way people communicate. It aids in communicating whiles on the move (Dainty et al., 2006). The only pre-requisite are internet charges for communicating.

2.6 EFFECTS OF COMMUNICATION ON SCHEDULE

According to Jessop (2001), difficulties associated with the communication modes can affects the progress of work and cause unnecessary delays. Thus, the type of communication mode adopted has a toll on project duration. Hartman and Ashrafi (2002), acknowledged the significant impact of communication modes on project schedule. In his findings, he stipulated that, project managers must use appropriate methods to communicate effectively with project stakeholders. Identifying and communicating project goals to team members and other stakeholders at the early stages of a project is very critical because failure to do this can lead to identifying some of the project requirements at the later stage which will cause alterations to the

plan of the construction procedure consequently leading to time overruns (Anantatmula 2010). From the above discussion it can be hypothesized that;

2.7 CHAPTER SUMMARY

This chapter begun with an overview of the Ghanaian construction industry. It was identified from the literature that, the Ghanaian construction industry has been in existence for a very longtime, however, there are numerous problems that hinders the performance of the industry in terms of cost, time and quality. Furthermore, project schedule as a criterion for measuring project success was discussed thoroughly which was followed by a discussion on the concept of communication. The communication flow on construction projects were discussed which was followed by the challenges associated with communication and the modes of communication which led to the development of one hypothesis.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the methods and steps needed to conduct this study. The methodological approaches adopted for this research aided in the achievement of the aim and objectives stipulated in the study. In this chapter, the research design and research approach are thoroughly discussed. Furthermore, the research strategy, research methods and ethical considerations made are discussed. Also, the population, sample size and sampling technique adopted are discussed in this chapter. Thus, this chapter gives full details of the procedures utilized in this study.

3.2 RESEARCH DESIGN

According to Spencer-Oatey (1993), the research design stipulates the procedures employed to answer the research questions. Research design basically discusses what is going on and why it is going on. This gives rise to the two (2) types of research design namely; descriptive research design and explanatory research design.

The descriptive research design discusses what is going on. It comprises of a methodical and accurate description of facts and characteristics of a given population. On the other hand, the explanatory research design discusses why it is going on (DeVaus, 2001). This includes the development of causal explanations which relies on the fact that, one theory is affected by other factors.

For the purpose of this study, the descriptive research design was adopted. This study wants to ascertain the effects of supervisor's communication mode on project

schedule. Therefore, the descriptive research design is most suitable for this study as a vivid description of the effects will be provided.

3.3 RESEARCH APPROACH

The two (2) basic research approaches available as identified by Gabriel (2013), are the deductive and inductive research approach. According to Gabriel (2013), the inductive research approach basically involves the generation of new theory established from data. The qualitative research method is more appropriate for inductive research. Gabriel (2013), also described the deductive research as an approach adopted for the testing of theory. This normally begins with research questions or the setting of hypothesis. This research adopts the deductive research approach as the study seeks to test the hypothesis “*Communication modes has an impact of project schedule performance*”.

3.4 RESEARCH STRATEGY

This section discusses a number of research strategies and selects an appropriate research strategy for the study. The research strategy identified includes action research, survey research and case study research.

Action research was discussed by Huang (2010) as a type of research strategy that involves working with practitioners on the job in order to enhance the methods and processes. This type of research is normally done in an educational environment for teacher development with regards to teaching. A survey research is basically used in providing a description for a phenomenon that already exists. Conducting survey research provides answers to questions and solutions to existing problems. According

to Smith (1979), a case study research involves an in-depth study of an individual or group. The individual or group being studied is not separated from their natural environment.

For the purpose of this study, the case study research strategy was deemed more suitable. This is because, this study seeks to study supervisor's communication modes at Ningopram district assembly.

3.5 RESEARCH METHOD

There are three (3) fundamental research methods. These are the quantitative, the qualitative and the mixed research method (Carrie, 2007). According to Leedy and Ormrod (2001), the quantitative research method is normally done when the study is based on existing theories. The process of a quantitative research begins with a research question followed by data collection and data analysis to make conclusions and recommendations. It must be noted that, the outcome of a quantitative research is normally predictive, explanatory or confirming.

Carrie (2007), described qualitative research as a way of making discovery. The qualitative research method collects and interprets data from the viewpoint of the respondent. Qualitative research is most suitable for researches involving the emergence of new theories.

The mixed method combines the strength of both quantitative and qualitative research therefore, it is also known as the triangulated method (Creswell, 2003; Tashakkori and Teddlie, 2003). However, this study adopted the a purely quantitative research

method. The type of research method adopted depends on the type of data used for the study. This study will make use of numerical data by converting collected data in SPSS. This makes the quantitative research method more suitable.

3.6 ETHICAL CONSIDERATIONS

Ethical considerations are very important in the execution of any research. The following ethical considerations were deemed useful in this study.

1. High degree of respect for the dignity of the research participants;
2. Protection of privacy and confidentiality; and
3. Full consent should be sort from research participants.

3.7 SOURCE OF DATA

There are basically two (2) forms of data that can employ in any form of research. These are the primary data and secondary data. Primary data can be described as the data collected to solve a specific research problem (Hox and Boeije, 2005). Primary data are collated by the researcher as such data may not be available already. Thus, the collection of primary data signifies that, new data are added to existing store of social knowledge that are made available for use to the general research community. When collected data are utilized by other researchers, it is then referred to as secondary data. The secondary data may be used for;

- The description of contemporary and historical attributes;
- Comparative research or replication of an original research;
- Reanalysis;
- Research design and methodological advancement; and
- Teaching and learning.

This study employed only secondary data for the research.

3.7 THE STUDY POPULATION, SAMPLE SIZE AND SAMPLING TECHNIQUE

According to Bryman (2004), population of a research involves the universe from which a sample is drawn (Bryman, 2004). The population for this study included road and building contractors who has worked with Ningopram district assembly. The Ningopram district was initiated in June 2012. Since that time, the industry has worked with nineteen (19) Building contractors ranging from category DIK1 to D4K4. Also, the assembly has worked with nine (9) Road contractors ranging from A1B1 to A2B2. A census survey was conducted for this due to the size of the population. Furthermore, the respondents were not very difficult to reach. Therefore, twenty-eight (28) questionnaires were distributed and twenty-five (25) were retrieved representing a response rate of 89.29%. The extremely high response rate was due to the ease of reaching the respondents.

3.8 QUESTIONNAIRE DEVELOPMENT AND ADMINISTRATION

Questionnaire is a very important tool in the collection of data from research participants. For the purpose of this study, a structured questionnaire was with four (4) sections were used in the collection of data from the respondents. The first section of the questionnaire concentrated on the background of the respondents. In the section A, the respondents were asked to indicate the type of construction they are involved in, their category in the construction industry, their years of experience, their highest level of education and the number of projects they have handled in their assembly. The section B was based on the objective one of the research. The

respondents were asked to indicate the communication mode that is used often in the Ningyo-Prampram district assembly. They were to rate the factors using the five-point Likert scale of 1 = Not often; 2= Slightly often; 3 = Moderate; 4 = Often; 5 = Very often.

The section was focused on the objective two of the study. In this section, the respondents were asked to indicate the challenges in communication that occurs often in the Ningyo-Prampram district assembly. Similarly, they used the five-point Likert scale of 1 = Not often; 2= Slightly often; 3 = Moderate; 4 = Often; 5 = Very often.

Finally, the section D which concentrated on the objective three (3) of the study was designed to ascertain the severity of the supervisor's communication modes on project schedule performance in the Ningyo-Prampram district assembly. The respondents did the rating using the five-point Likert scale of 1 = Not severe; 2 = Slightly severe; 3 = Moderate; 4 = Severe; 5 = Very severe.

With this questionnaire, it was self-administered to all the respondents in the assembly as the census survey was utilized. In all, twenty-eight (28) questionnaires were administered and twenty-five (25) were retrieved representing a response rate of 89.29%.

3.9 THE RESEARCH ANALYTICAL TOOLS

The data collected was coded into the SPSS version 26 software and subsequently analyzed using the mean score ranking. The mean score ranking was used on

objective one (1) and objective two (2) to ascertain the frequently used communication mode and the most occurring communication challenge in Ningoprampram district assembly was used on objective three (3) to identify the effect of the communication modes on schedule performance. Results were presented in table.

CHAPTER FOUR

ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

The aim of this study was to identify the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly. In order to achieve the set aim, the developed questionnaire was administered and collected to be analyzed. This chapter analyze and discuss the data collected from the twenty-five (25) respondents. The questionnaire was set based on the objectives of the study. This chapter begins with a descriptive analysis of the background of the respondents followed by the ranking of the variables.

4.2 BACKGROUND OF THE RESPONDENTS

This section analyzed the background of the respondents. The respondents were asked to indicate the construction type they are involved in, their contractor category, their years of experience, level of education and the number of projects they have involved in. The analyzed data was discussed with the aid of tables and text.

4.2.1 Construction type

The respondents were asked to indicate the type of construction they are involved in. The options included whether they were involved in building construction or civil construction. From table 4.1, it can be seen that, 64% of the respondents were into building construction whiles 36% of the respondents were into civil construction.

4.2.2 Construction category

The respondents were also asked to indicate their construction category with the options being DIK1/A1B1, D2K2/A2B2, D3K3/A3B3 and D4K4/A4B4. From table 4.2, it can be seen that, 8% of the respondents were D1K1/A1B1, 56% of the respondents were D2K2/A2B2, 32% respondents were D3K3/A3B3 and only 4% of the respondent was D4K4/A4B4.

Table 4.1: Construction type

Variable	Percentage
Building	64.00
Civil	36.00
Total	100.00

Source: Field survey, (2018)

Table 4.2: Construction category

Variable	Percentage
D1K1/A1B1	8.00
D2K2/A2B2	56.00
D3K3/A3B3	32.00
D4K4/A4B4	4.00
Total	100.00

Source: Field survey, (2018)

4.2.3 Years of experience

Furthermore, the respondents were asked to indicate their number of years of experience. This aided the researcher in ascertaining the depth of the respondent's knowledge in the subject matter thereby giving an indication of the reliability of the

responses. From table 4.3, it can be realized that, 28% of the respondents had below 5 years of experience while 56% respondents had 6-10 years of experience. Also 16% of the respondents had 11-15 years of experience. Thus majority of the respondents had above five (5) years of experience. This gives an indication of the high reliability of the responses given by the respondents.

Table 4.3: Years of experience

Variable	Percentage
Below 5 years	28.00
6-10 years	56.00
11-15 years	16.00
16-20 years	0.00
Above 20 years	0.00
Total	100.00

Source: Field survey, (2018)

4.2.4 Level of education

The respondents were asked to indicate their highest level of education. Similarly, with their level of experience, their educational level gives an indication of how their level of knowledge of the subject matter. From table 4.4, it can be realized that, 56% of the respondents had Bsc while eleven 44% respondents were postgraduates. None of the respondents had an HND degree.

Table 4.4: Level of education

Variable	Frequency
HND	0.00
BSC	56.00
Postgraduate	44.00
Total	100.00

Source: Field survey, (2018)

4.2.5 Number of projects handled

The last question under the background of the respondents wanted to ascertain the number of projects handled by the respondents as shown in table 4.5.

Table 4.5: Number of projects

Variable	Frequency
Below 5 projects	4
5-10 projects	48.00
Above 10 projects	48.00
Total	100.00

Source: Field survey, (2018)

4.3 OBJECTIVE ONE: SUPERVISORS COMMUNICATION MODES

The respondents were asked to indicate the supervisor's communication modes that are used most in the NingoPrampram district assembly. Their responses were analyzed using the mean score ranking technique. From the analysis, the frequently used communication mode in the NingoPrampram district assembly is Face-to-face.

Research has shown that, face to face communication is the most efficient medium of communication for problem solving. Gathering people in an open-space does not mean face-to-face interactions will occur. It is significant to take into consideration how communication can occur in putting up an office space (Stryker and Santoro, 2012). Therefore, it is not surprising that face-to-face communication mode emerged as the most frequently used. The 2nd ranked factor was telephone. Mobile phones are regarded as one of the best things that ever happened to man. It has substantially change the way people communicate. It aids in communicating whiles on the move (Dainty et al., 2006). The 3rd ranked factor was memos and letters followed by meetings. Effective and frequent communication throughout the life cycle of a project is vital as they interact by way of teams. Communication has been defined in various ways. According to Olu (1999), communication has been defined as the process by which people attempt to share meanings through symbolic messages. Communication can be carried out in various formats. They include the use of speech, sigs, behavior, symbols, signals and so on.

A summary of the results is shown in table 4.6.

Table 4.6: Supervisor’s communication modes

Variables	Mean	Rank
Face-to-face	4.44	1 st
Telephone	4.20	2 nd
Memos and Letters	4.08	3 rd
Meetings	4.08	3 rd
E-mails and project portal	4.08	3 rd
Project documents	3.88	6 th
Video conferencing tools	3.40	7 th

Source: Field survey, (2018)

4.4 OBJECTIVE TWO: CHALLENGES ASSOCIATED WITH COMMUNICATION

Also, the respondents were asked to identify the most frequently occurring communication challenge in the Ningoprampram District assembly using a Likert scale of 1 to 5. Similarly, to the objective one, their responses were analyzed using the mean score ranking technique. From the analysis, the highest ranked factor was the perception about the communication. This is when the receiver decides to accept and what to discard in an information based on his perception of priority. The second ranked factor was semantic problem. Words may mean differently to different people. This is a huge barrier to communication and can hinder the recipient from giving appropriate feedbacks. The third ranked factor was lack of education and training. Some project operatives are not educated therefore do not know how to communicate in English. Also, some are not trained enough to read meaning into drawings. The fourth ranked factor was jargons followed by poor written media. A summary of the results is shown in table 4.7.

Table 4.7: Challenges associated with communication

Variables	Mean	Rank
Perception about the communication	4.76	1 st
Semantic problem	4.24	2 nd
Lack of education and training	4.24	2 nd
Jargons	4.08	4 th
Poor written media	3.96	5 th
Poor symbolic representation	3.24	6 th

Source: Field survey, (2018)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter fundamentally discusses the summary of findings, conclude and make recommendations for the study. This study begun with the of identifying the influence of supervisors' communication modes on construction project delivery time in Ningo-Prampram district assembly. With this aim, two (2) objectives were set. This chapter begins with a discussion of the summary of findings followed by the conclusion, further studies, limitations and recommendations.

5.2 SUMMARY OF FINDINGS

For the objective one, literature was reviewed pertaining to subject area. From the literature review, seven (7) communication modes were identified which were face-to-face, video conferencing tools, project planning documents, meetings, e-mail and project portal, telephone, memos and letters. With the findings in the literature review, the respondents were asked to rate the communication tools that are used most in the NingoPrampram district assembly. Their responses were analyzed using the mean score ranking technique. From the analysis, it was realized that, face-to-face communication was mostly used in Ningo-Prampram district assembly followed by telephone, memos and letters.

For the objective two, literature was reviewed pertaining to subject area. From the literature review, six (6) communication challenges were identified which were perception about the communication, semantic problems, jargons, poor written media, poor symbolic representation and lack of education and training. With the findings in

the literature review, the respondents were asked to rate the communication challenges that are faced most in the NingoPrampram district assembly. Their responses were analyzed using the mean score ranking technique. From the analysis, it was realized that, perception about the communication was most faced communication challenge in the Ningo-Prampram district assembly followed by semantic problem and lack of education and training.

5.3 CONCLUSION

Communication is a very significant process in the construction industry. It aids in the efficient transfer of information from one person to another. This study has shown that, some communication modes have a statistically significant effect on project schedule performance. Video conferencing communication mode showed a significant effect on project schedule performance followed by meetings and face-to-face communication. Furthermore, it was shown through the study that, face-to-face communication is the mostly used communication mode in the Ningo-Prampram district assembly. It can therefore be concluded that, the delays in the construction process in the Ningo-Prampram district assembly can be attributed to the use of face-to-face communication mode by supervisors in the district assembly. However, the study demonstrated that, there are a number of challenges that hinders the effectiveness of communication in the Ningo-Prampram district assembly. Therefore, strategic plans should be implemented to eliminate these challenges.

5.4 RECOMMENDATIONS

With regards to the findings of this study, it is recommended that;

1. Supervisors should improve on the extensive use of face-to-face communication mode in the Ningo-Prampram communication mode to facilitate the progress of the project
2. Supervisors should switch to the use of other communication modes like letters and meetings as they have been proven to be effective in terms of time consumption.

5.5 LIMITATIONS

This section enlist the limitations associated with this study. These are;

1. The study was limited to the Ningo-Prampram district assembly.
2. The respondents were limited to contractors who have worked with the Ningo-Prampram district assembly.

5.6 FURTHER STUDIES

Further studies can be conducted to expand the scope of the study to various district assemblies. This will aid in comfortably generalizing the findings of the study.

REFERENCES

- Adeleke, A. and Suraju, A.A., 2012. The determinants of customer loyalty in Nigeria's GSM market. *International Journal of Business and Social Science*, 3(14).
- Agents, C., 1998. The World Bank Procurement Audit in Ghana. *Value for Money Audit Report for Ghana, Crown Agents for Overseas Governments and Administrations Ltd, UK*.
- Agyakwa-Baah A., (2007), Stakeholders' perceptions of the causes of delay on construction projects, Vol. 1, pp.1-27.
- Ahadzie, D.K., (2010), A Synthesis of the Historical Development of the Ghanaian Construction Industry, pp.43-47.
- Alwi, S., Keith, H. and Sherif, M., (2001), Effect of quality supervision on rework in the Indonesian context. "*Asia Pacific Building and Construction Management Journal*" pp.2-6.
- Baker, B. N., Murphy, D. C., & Fisher, D. (1974). Factors affecting project success. In D. I. Cleland & W. R. King(Eds.), "*Project management handbook*" Vol.1,pp. 902–919.
- Behavior, Springer, New York, NY, pp. 199-218.
- Betts P. W. (1989), *Supervisory studies*, Pitman Publishing, London.
- Bryman A., (2004), *The Disneyization of society*. Sage.
- Bryman, A. and Bell, E. (2007) *Business Research Methods*, 2nd edition. Oxford University Press
- Caccamese, A. and Bragantini, D. (2012). Beyond the iron triangle: year zero. Paper presented at PMI® Global Congress 2012—EMEA, Marsailles, France. Newtown Square, PA: Project Management Institute.

- Carrie W., (2007), Research method, “*Journal of Business and Economic research*”, Vol 5, pp.
- Chan, A. and Chan, A.P.L. (2004), Key performance indicators for measuring construction success, “*Benchmarking: An International Journal*”, Vol. 2, pp.203–216.
- Clevenger Jr, T., 1959. A synthesis of experimental research in stage fright. *Quarterly Journal of Speech*, 45(2), pp.134-145.
- Creswell, J. (2003). Research design: Qualitative, quantitative and mixed methods approaches (2ed.). Thousand Oaks, CA: SAGE Publicationsnd
- Dainty, A., Green, S. and Bagilhole, B. eds., 2007. *People and culture in construction: A reader*. Routledge.
- Dalton, D.R. and Kesner, I.F., 1987. Composition and CEO duality in boards of directors: An international perspective. *Journal of International Business Studies*, 18(3), pp.33-42.
- Dance, F.E., 1970. The “concept” of communication. *Journal of communication*, 20(2), pp.201 210.
- Dansoh, A., (2005), Strategic planning practice of construction firms in Ghana, “*Construction Management and Economics*”, Vol. 2, pp.163-168.
- De Vaus A. D., (2001), Research Design in Social Research, pp.1-52.
- de Wit, A. (1988), Measurement of project success, “*Project Management Journal*”, Vol.3, pp. 164–170.
- Eckles, R.W., Carmichael, R.L., Sarchet, B.R. and Eckles, R.W., (1975). Supervisory management. Wiley.

- Gabriel D., (2013), Inductive and deductive approaches to research, assessed at [<http://deborahgabriel.com/2013/03/17/inductive-and-deductive-approaches-to-research/>] on 24thNovember, 2017
- Ghana. Statistical Service, (2015). Annual Gross Domestic Product.pp.1-9.
- Gorse, C.A. and Emmitt, S., (2007), Communication behaviour during management and design team meetings: a comparison of group interaction. *Construction Management and Economics*, 25(11), pp.1197-1213.
- Gudykunst, W.B., 2003. *Cross-cultural and intercultural communication*. Sage.
- Hartman, F. and Ashrafi, R., (2002), Development of the SMARTTM Project Planning framework. *International Journal of Project Management*, 22(6), pp.499-510.
- Hatash Z. and Skitmore M., (1997), Evaluating contractor prequalification data: selection criteria and project success factors,“*Construction Management and Economics*”, Vol. 15, pp.129-147.
- Hawkins, L. and Brawner, J., (1997). Educating Children Who Are Deaf or Hard of Hearing: Total Communication. ERIC Digest# 559.
- Huang H. B. (2010), What is a good action research, Vol 1, pp. 99-109.
- Jessop, B. (2001). Institutional re(turns) and the strategic relational approach,
- Leedy, P. and Ormrod, J. (2001). *Practical research: Planning and design* (7th ed.). Upper Saddle River, NJ: Merrill Prentice Hall. Thousand Oaks: SAGE Publications.
- Lim, C. S. and Mohamed, M. Z. (1999), Criteria of project success: An explanatoryre-examination. “*InternationalJournal of Project Management*”, Vol. 17, pp. 243–248.

- Mehra, V., (2009), System and method for using virtual directories to service URL requests URL requests in application servers. U.S. Patent 7,552,189.
- Ofori G. (2012). Developing the Construction Industry in Ghana: the case for a central agency, Vol.1, pp.45-64.
- Okoh, R.N., 2004, March. Global integration and the growth of Nigeria's non-oil exports. In *African conference* (pp. 21-22).
- Olu Pearce, T., 1999. She will not be listened to in public: Perceptions among the Yoruba of infertility and childlessness in women. *Reproductive Health Matters*, 7(13), pp.69-79.
- Rameezdeen, R. (2005). Study of linkages between Construction sector and other sectors of the Sri Lankan economy.
- Shutt, T., Ellman, B., Barnes Jr, P.D., Cummings, A., Da Silva, A., Emes, J., Giraud-Héraud, Y., Haller, E.E., Lange, A.E., Ross, R.R. and Rich, J., (1992), Measurement of ionization and phonon production by nuclear recoils in a 60 g crystal of germanium at 25 mK. *Physical review letters*, 69(24), p.3425.
- Smith, L. M. (1979), An evolving logic of participant observation, educational ethnography, and other case studies. *Review of Research in Education* 6: pp. 316-377.
- Songwe V., (2014), Africa's Capital Market Appetite; Challenges and Opportunities for Financing Rapid and Sustained Growth. *Foresight Africa Report*; pp.1-44.
- Spector, P.E., (2006), Method variance in organizational research: truth or urban legend? "*Organizational research methods*", 9(2), pp.221-232.
- Spencer-Oatey, H., (1993), Conceptions of social relations and pragmatics research. *Journal of Pragmatics*, 20(1), pp.27-47.

- Stryker, S. and Serpe, R.T. (1982), “Commitment, identity salience, and role behavior: theory and research example”, in Ickes, W. and Knowles, E.S. (Eds), *Personality, Roles, and Social*
- Stumpf, G.R., (2000), Schedule delay analysis, “*Cost engineering-and labor then morgantown*”, *Vol. 7*, pp.32-32.
- Swan, W. and Khalfan, M.A. (2007), Mutual objectives setting for partnering projects in the public sector, “*Engineering, Construction and Architectural Management*”, *Vol. 2*, pp.119–30.
- Tabish, S.Z.S. and Jha, K.N., (2011), Identification and evaluation of success factors for public construction projects. *Construction Management and Economics*, *29(8)*, pp.809-823.
- Tashakkori, A. and Teddlie, (2003), *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, CA: SAGE Publications.
- Wampler S. (2006), Collocated teams: 7 problems with face-to-face communication, [<https://www.technoetic.com/face-to-face/>].
- Westerveld, E. (2003), The project excellence model: Linking success criteria and critical success factors, “*International Journal of Project Management*”, *Vol. 21*, pp. 411–418
- Westring, G., (1997), Ghana public procurement reform. *An Audit Report prepared for the World Bank, Stockholm: Advokatfirman Cederquist KB*.
- World Bank (2003), The state of the construction industry, pp. 22-36.

APPENDIX

RESEARCHQUESTIONNAIRE

TOPIC: A STUDY OF THE EFFECTS OF SUPERVISORS' COMMUNICATION MODES ON CONSTRUCTION PROJECT DELIVERY

TIME: A CASE STUDY OF NINGO-PRAMPAM DISTRICT ASSEMBLY

SECTION A

RESPONDENT'S PROFILE

1. Please indicate the type of construction your company is involved in.

- Building construction
- Civil construction
- Other; Please specify

2. Please indicate your category in the Construction industry?

- D1K1/A1B1
- D2K2/A2B2
- D3K3/A3B3
- D4K4/A4B4
- Other; Please specify

3. Please indicate your years of experience in your profession?

- Below 5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Above 20 years

4. What is your highest level of education?

- HND
- BSc
- Post Graduate
- Others (specify).....

5. Please indicate the number of projects you have worked on for the assembly?

- Below 5 projects
- 5 – 10 projects
- Above 10 projects

SECTION B

OBJECTIVE ONE: SUPERVISORS COMMUNICATION MODES

6. Please indicate the communication modes used **OFTEN** by supervisors in the Ningo-Prampram district assembly

Please use the response scale below:

1 = Not often 2 = Slightly often 3 = Moderate 4 = Often 5 = Very often

No.	Communication modes	1	2	3	4	5
1	Face-to-face					
2	Video conferencing tools					
3	Project documents					
4	Meetings					
5	E-mails and project portal					
6	Telephone					
7	Memos and letters					
	<i>If other, please specify</i>					

SECTION C

OBJECTIVE TWO: EFFECTS OF COMMUNICATION MODES ON PROJECT

SCHEDULE PERFORMANCE

8. Please indicate the communication challenges that occurs **OFTEN** in the Ningo-Prampram district assembly.

Please use the response scale below:

1 = Not often 2 = Slightly often 3 = Moderate 4 = Often 5 = Very often

No.	Challenges associated with communication	1	2	3	4	5
1	Poor symbolic representation					
2	Poor written media					
3	Semantic problem					
4	Lack of education and training					
5	Jargons					
6	Perception about the communication					
	<i>If other, please specify</i>					

SECTION D

OBJECTIVE THREE: EFFECTS OF COMMUNICATION MODES ON PROJECT SCHEDULE

8. Please indicate the **SEVERITY** of the supervisor’s communication modes on project schedule performance in the Ningo-Prampram district assembly

Please use the response scale below:

1 = Not severe 2 = Slightly severe 3 = Moderate 4 = Severe 5 = Very severe

No.	Severity of communication modes on project schedule	1	2	3	4	5
1	Memos and letters					
2	Telephone					
3	Face-to-face					
4	Meetings					
5	E-mails and project portal					
6	Video conferencing tools					
7	Project documents					
	<i>If other, please specify</i>					