



**ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE,
PROJECT MANAGEMENT DEPARTMENT**

**Assessment of Communication in Project Management Effectiveness:
A Case of Telecom Expansion projects in Ethio-Telecom**

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**Assessment of Communication in Project Management Effectiveness:
A case of telecom expansion projects in Ethio telecom**

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Declaration

I hereby declare that the study which is being presented in this thesis entitled “**Assessment of Communication in Project Management Effectiveness: A case of telecom expansion projects in Ethio-telecom**” is my original work. It had not been presented for a partial fulfillment for any educational qualification at this university or any other and in any projects by any means, and all the resources materials used for this thesis had been accordingly acknowledged.

Nishan Solomon

Date

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Definition of key terms/ Abbreviations

Broadband internet -	Internet service with land line
Fixed Line -	Wired telephone services
HUWEI -	Vendor Telecom Company
ICT-	Information Communication Technology
PCM –	Project Communication management
PCMP-	Project Communication Management process
PM -	Project management
PMI-	Project management institute
PRO-	Project Rollout office
SOP –	Standard Operating Procedure
TEP-	Telecom Expansion Projects
UMEA -	University town and center of education
ZTE-	Zheng Xing Telecommunication Equipment's

Abstract

Communication regulates the relationship between the project stakeholders and the project manager and how the members of the project work to achieve the established project objectives (Rodríguez, 2017). It is very important to investigate how communication affects the project activities and the overall performance of the project. The general objective of this research work is to show the role communication has for the effectiveness of project management in telecom expansion projects in Ethio telecom. Communication practice, the relationship between project communication and project management will be assessed. This research applied Quantitative and Qualitative approaches. Descriptive research design was adopted. Primary data came from information gathered by questionnaires and observations. Secondary data is used from reviewing written documents. Random sampling was used to select the participants of the research work. The Major findings of the research show there weren't suitable communicational technologies choices for the company. The respondents were well aware of the importance of using the communication process and its contribution in improving the project management. The research found out Non-verbal communication channels are not suitable for daily reporting of project progress update however, both formal and informal communication channels can contribute for the improvement of project management effectiveness. New communication technologies help upgrade the project management system. Project communication management process, communication technologies, and channels are the elements of project communication that significantly affected the effectiveness of project management. The researcher recommends the company to focus on improving the appropriate use of communication channels, technologies, and communication process.

Key Words: *Project communication, Project management effectiveness, project management*

CHAPTER ONE

1 INTRODUCTION

Communication is the exchange of project-specific information with the emphasis on creating understanding between the sender and the receiver. Effective communication is one of the most important factors contributing to the success of a project. Communications are a critical deliverable of every successful project and a key project management soft-skill. Laswell's Maxim (1940) in his '5W' Model defines communication as "who says what to whom in what channel with what effect". Communication is exchanging of information from one point of the project to the other point in an efficient manner. Dainty, et.al, (2006) have recognized that the term "communication is in itself a multifarious and complex term, which can mean different things in different context and situations.

Communication in projects is related to many theories like diffusion theory of communication which explains how new viewpoints and ideas spread through cultures. The spread of the idea is influenced by the nature of the idea that needs to be spread, the available communication channels, the social system and time of communication (Westland, 2007). The other example of communication theory in projects is the accommodation theory which explains that; when people communicate, they adjust their vocal patterns and speech to accommodate the needs of the recipient of the message (Mooz, Forsberg, & Cotterman, 2003). It emphasizes on how individuals minimize communication differences by consideration of context, language, and identity. The theory focuses on how individuals adjust to and adopt new characters in communication (Campbell, 2009).

Researchers also articulated theories related to behavioral pattern of team members. Groupthink is a communication theory that explains the behavioral pattern that is within team members in order to avoid conflict and reach to a consensus without a critical analysis of the issue (Binder, 2007). It is a form of peer pressure endorsed by majority leaders on the team members that are less willing to contribute.

Joseph Walther (1992) developed Social information processing theory of communication which states how individuals get to know one another without nonverbal cues. It also explains on how to develop and manage social interactions in a technological environments. It deals with online interpersonal relationship and interactions. It is perceived that online communications are effective than face to face.

The lines of communication, formal and informal, are also evidence of how communication takes place in the telecom projects. Informal communication takes place without influence from the project manager, but influences the project manager's effectiveness. Project communications is one deliverable that has a large influence over the project's management, maintaining quality and timely delivery of the project. The lack of communication within project stakeholders and project team can tremendously affect the project management system. It is very often results in failure to understand correctly stakeholder expectations on what is considered project success disputes between the project team and stakeholders, or between stakeholder groups. Any project is meant to fail when the employees are not motivated to work towards the project goals (Westland, 2007). Even when material motivation is not included, inclusive communication forms a significant asset for participant motivation. PMI's Pulse of the Profession reports that for organizations with high project management maturity, 27% of their projects did not meet their original goals and business intent; and for organizations with low project management maturity, 47% of projects did not meet their original goals and business intent Project Management Institute (2012). In order for communication to work out effectively in project management, it must flow in all directions; upward, sideways, and downward. The participants of the project should have easy access to the project manager to communicate their concerns with guarantee that they will be addressed.

Some researchers explored the reason why many projects fail to exceed the project expectations. Most of the research works in the industry have focused mainly on the influence of factors such as; procurements, health and safety very little work has been done on the „softer“ factors such as project communication and how it affect projects.

Jonna Koivula (2009) Succeeding in Project Communication – assessed effective tools for the purpose of change management. The purpose of the work was to define the underlying problem points which occur in the VR's project organization and to present suggestions for possible solutions. The aim was also to reflect the principles of a communication plan on the practical level of VR's project work. One finding of the work was also to address and activate the communication plan more than it has been done earlier. The results of this thesis can be seen as a consultation work done for the client company.

Ernest Mnkandla (2013) reviewed Communication tools and techniques for successful ICT projects. The research on the approaches, tools, and techniques that are used in agile project

management in relation to those used in the more traditional approaches to project management to effectively manage communication in software development projects in Africa.

This research aims to critically assess project communication within the telecom company expansion projects. The research briefly discuss the positive and negative impacts of project communication on telecom expansion projects in Ethio telecom. Ethio-Telecom is an integrated telecommunication service provider in Ethiopia with a vision to become a world class provider of telecom services. The company provides Mobile services, fixed line and broadband internet. In late 2006 the company signed agreements with three Chinese companies, ZTE, HUWEI and the Chinese international telecommunication construction corporation to upgrade and expand telecommunication services in Ethiopia. The project has raised the number of mobile subscribers and land line telephone users. In 2019/2020 total subscribers reached 46.2 million which is an increase of 5.8% from previous budget year. Mobile voice subscribers reached 44.5 Million, Data and Internet users 23.8 Million, Fixed Services 980K and Fixed Broadband subscribers reached 212.2 thousand. As a result, telecom density has reached 46.1%. In its big organizational structure, the company has many divisions which serve different missions and have subsections under them. This research work focuses on the wireless network division, Project rollout section which delivers telecom expansion project works.

The research critically assess the contribution of project communication for the effectiveness of project management. It also determines the features of communication practices and the relationship between project communication and Project management success. The findings from these research helps as a reference for applying project management practices properly for upcoming new projects.

1.1 Statement of the problem

Communication is one of the most serious barriers that any company faces in the process of project management. Use of appropriate communication and communication medium to resolve the telecommunication expansion designs is essential. Effective and efficient communication can change the fate of a project even if there are substantial risks in the beginning. A project manager can mitigate the risk by ensuring that all the stakeholders are very well aware of situation in advance and the ideas are flowing freely from the team.

Project team members must have as much information as possible about the goal of the project, its timelines and deliverables and what is expected from each participant. Project managers should also be sure to provide details on the collaboration software and other project management tools to be used, the timing, quality and format of recurring meetings and the procedures to be followed for changes in scope. Good communication keeps conflict and confusion from project teams and help them to be aligned on project goals and know exactly what's expected of them. It also helps build team-wide trust so everyone works better together from project start to finish. Proper project communication also ensures that employees are able to work together in line with the project goals and objectives (Schmidt, 2009).

The primary role of communication in project management is to make certain that everyone involved shares the vision and the goals of the project. If a project manager can clearly articulate a project vision and make sure that the people working under them understand this vision, completing the project will be much easier. A project manager who can envision a project and make this vision understood by those around them will be better able to make their projects stand out from the crowd.

RajKumar (2010) on Art of Communication in project management, described the role of communication in project management as "there are no more important to the success of project than effective communication. More effective communication means better project management, which is obviously known to everyone in project management, but we do face difficulties in implementing it due to various factors like the nature of the project, structure of the organization, and others".

PMI's Pulse(2013) The essential role of communication research finds that effective communications leads to more successful projects, allowing organizations to become high performers (completing an average of 80 percent of projects on time, on budget and meeting original goals). These organizations risk 14 times fewer dollars than their low-performing counterparts. The report also focuses on communications challenges that prevent organizations from accomplishing more successful projects, and identifies key initiatives that can help organizations improve their communication as they face their own unique challenges in such a complex and risky environment

Communication is also required from the stakeholders in order to understand exactly what they want and how their needs can be met. For example, a project that is working on software development of a specified party must communicate regularly with the client to understand the desired specifications of the project (Taylor, & Dow, 2013).

Abraham (2019), Assessed the effect of project communication on project performance. The researcher found out that barriers to communication had statistically negative significant influence on project performance. Meron (2018) have studied the impact of project communication on the performance of projects and how to improve the performance. The researcher established the conclusion that poor communication had resulted in project delays, Project cost overrun and project abandonment. Therefore, organizations should regularly articulate it policies, goals and objectives to it workers in other to improve work performance. A lack of or poor communication leads to misunderstanding in the workflow, weak return on investment, and even loss of revenue. According to the Project Management Institute, the lack of communication leads to project failures over 30 percent of the time. Work efficiency is all about collaborative minds pooling ideas and concepts together to resolve issues as they surface. A lack of communication will automatically lead to inadequate teamwork. People need not only to talk but also to immerse themselves in what their colleagues have to say and share. Samu Festus Femi (2020).The study reveals that poor communication can affect workers performance. Productivity or progress is vital for work or business projects. When it comes to a project, employees need to see consistency, scalability, and visibility. Everyone has a role to play to make sure that the project runs through the right course. This is difficult and sometimes impossible in the absence of good communication.

Project managers who overlook the importance of communication are putting their projects at serious risk. In fact, according to the Project Management Institute, 40% of all project failures can be directly attributed to a lack of effective communication. Understanding the value of communication in every phase of a project can help managers and team members keep information flowing, even during difficult periods. PMI (2012). A study conducted by the Project Management Institute (PMI) revealed that ineffective communication had a negative impact on successful project execution. And this problem still holds true today. Likely anyone ever involved in a project of any size knows this basic fact. The number of projects lacking effective communications management and the resulting magnitude of economic impact this deficiency has on projects.

Most of researches done on project communication and PMI reports released show the impact of communication on project performance, project workers productivity, on cost and schedule and it's relation to timely delivery of the project. One can understand barriers in communication are capable of generating problem not only on communication process but also on the projects management system. These researches pointed out communication has a huge impact on the economic aspect of organizations conducting projects. Ethio telecom is among these organizations with Millions of dollar project undergoing each year. The researcher intended to assess the impact that communication has in these huge projects. To raise out how the project management has been affected and what are the communication practices in these projects. The research aims to determine the role of communication for the effectiveness of project management in expansion projects in Ethio-Telecom.

1.2 Basic research questions

In order to fully determine the problem of communication in project management of telecom expansion projects in Ethio telecom the following questions have been articulated for research:

- What are the features of project communication practice in Ethio telecom?
- What is the relationship between project management communication and project management success in Ethio telecom?
- How project managers control the information flow to the project professionals under their project teams?
- How the information is distributed, in a meeting, a memorandum, an email, a newsletter, a presentation?
- What impact does poor communication have on future expansion projects in Ethio telecom?

1.3 Objective of the Study

The General objective of the research is to critically assess communication in project management effectiveness within telecom expansion projects in Ethio telecom. However, the specific objectives of this research work are as follows:

- To determine the features of project communication practice in Ethio telecom.

- To determine how communication affect the effectiveness of the project management of the expansion projects in Ethio telecom.
- To determine how project professionals in Ethio telecom value communication.
- To determine the various communication channels employed by project professionals in expansion projects in Ethio telecom.

1.4 Significance of the research

The development of telecommunication industry is considered as one of the important indicators of social and economic development of a given country. Ethio telecom is one of the public enterprises of Ethiopia that is hugely contributing to the development of the country. Ethio-Telecom aspires to serve its customers and promote ICT in the country. so far, the telecommunication services expansion program especially, to the rural areas of Ethiopia has shown remarkable progress to meet the goals set by the government. Hence, it is a justifiable endeavor to research and add to the knowledge in every aspect of the industry.

Hailemicheal Weldearegay (2012) studied the role of communication in managing projects. The researcher stated that the finding of the study will help to provide valuable information to Umeå2014 project office in how to manage communication internally and externally, give awareness about project management, communication and way of communication in project organizations.

When projects are implemented on sites some project engineers will be able to visualize aspects of the design of the project with a high degree of accuracy, possibly with little information, other aspects of the design will hold little relevance unless the information is presented in a way to develop understanding, hence, communication is extremely relevant in the management of projects on ground. It is essential that communication is effective and that information is understood and processed correctly.

The findings of the research therefore will make these communication challenges available for future project lessons and creates theoretical awareness on the impact of communication on effectiveness of project management. The research work help the organization and professionals to measure the use of Project communication management process, Communication channels and technologies. In addition the study is beneficial to other organizations engaged in conducting similar projects for telecom services. It will also help them in identifying the strong and weak practices of communication in their organizations in

order to maintain strong relationships and business partners. Hemanta Doloi (2009) explored the criticality of trust and confidence, communication and joint risk management in achieving relational partnering success. Future research works can be developed on improving the quality of these communication elements which might lead to effective project management.

1.5 Scope of the study

This Research will concentrate on Ethio telecom's Mobile service expansion projects where the subscribers' number in the company increases in folds each year which directly relates to the economic growth of the country. There will be further concentration on the communication practice of managers and professionals participating in the mobile expansion projects because they are presume to be the users of all the possible effective communication structure this research is likely to deal with. Again, the study will explain the role communication plays on the effectiveness of project management system on telecom expansion projects in Ethio telecom.

1.6 Organization of the study

Chap-1:-Introduction:-This chapter contains background of the study, Statement of the problem, basic research questions, objectives of the study, definition of terms, significance of the study, and delimitation/scope of the study.

Chap-2:-Literature review: - This chapter deals with the literature relevant to To the study. It will have an introduction, theoretical review, empirical review and the conceptual framework of the study.

Chap-3:-Research Methodology:-Under this chapter, the type and design of the research; the subjects/participant of the study; the sources of the data; the data collection tools/instruments were described.

Chap-4:- Data presentation and discussion: - The chapter presents Introduction, General Information of respondents, Quantitative analyzation of results, Contextual Discussion of results.

Chap-5:- Conclusion and recommendation: - This chapter discusses Summary of major findings, Conclusion and Recommendation

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Introduction

On this chapter literature review discusses relevant works prior to this research and creates concrete knowledge of the communication theories and project management process. The chapter is structured in three different concepts, Theoretical which discusses the findings and conceptual models of the issue, empirical discusses the research works of other scholars related to this work. The conceptual framework shows the overall relationship of independent and dependent variables.

2.2 Theoretical Review

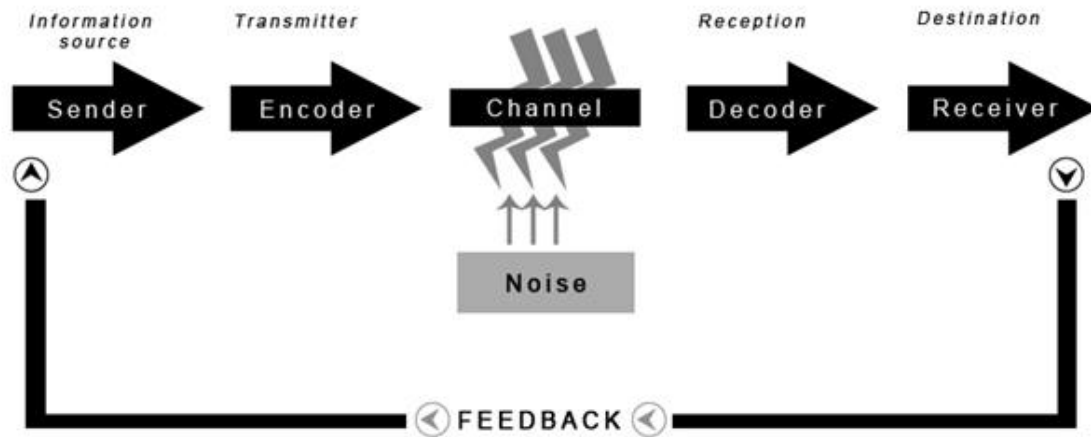
2.2.1 Communication

Dainty, et.al, (2006) have recognized that the term “communication is in itself a multifarious and complex term, which can mean different things in different context and situations. Fisher and Harms, (1983).Genuine communication is therefore a basic human need like food, clothing and shelter. There seems little doubt that communication plays a vital role in the effectiveness of organizations. Although managers in different industries undertake diverse tasks and activities, it has been recognized that they spend most of their time involved in communication. Drucker (1985) emphasizes the importance of communication for managers, and points out that communication ability is essential for success. Cherry (1978) defined communication as the process of interaction between individuals in which meaning is created and shared. In project management, the importance of communication is emphasized by Sievert (1986), who says that a high percentage of the problems in working relationships may be attributed to poor communication. One fundamental process of communication is to exchange of information so, that it will socialize the employees by socialization, coordination and mutual understanding in the projects, since communication is „the nervous system of any organized group and the glue that hold organization together“ Olsson & Johansson (2011).

The following styles of communication have been highlighted by Rory burke, Steve Bannon (2014).

- Formal Written: Emails, letters, faxes, memos, minutes, drawings, specifications and reports

- Formal Verbal: Telephone, voice mail, meetings, video-conferencing
- Informal Verbal: Casual discussion between friends, networking with useful contacts
- Non-verbal: Body language



SHANNON-WEAVER'S MODEL OF COMMUNICATION

Figure 2. 1: Shannon and Weaver model of communication (2019)

2.2.1.1 Factors Affecting Communication quality

The communication quality will also be affected by the following six factors (Robbins and Mary, 2003):

1. Circumstantial factor. Including physical, societal, historical, mental, and cultural circumstances.
2. Difference between the participants. Including physiological, mental, social experience, knowledge, and skill, as well as gender and cultural differences.
3. Message. Including meaning and symbol, encoding and decoding, and formation or organization.
4. Channel. Messages are conveyed through the perceptive channel after formation.
5. Interference. Including external interference, internal interference, and linguistic interference.
6. Feedback. Judging the receiver's degree of understanding of the meaning for the message from the transmitter via feedback.

2.2.2 The Communications Process

Communication process is regarded as one of the indispensable ways that put emphasis upon the fact that communication is regarded as one of the important ways of imparting knowledge and understanding to others (Radhika Kapur, 2020)

The communications process requires a sender and receiver. The sender formulates the message to communicate, which is meant for a receiver. The sender creates the content with some intent in mind. The receiver, of course, receives the message and then deals with it according to personal reactions. He or she may accept, revise, or reject the message.

The process needs a medium to, which is unique and may take any form to reach to the receiver. The receiver may approve the medium depending on the quality of message received. The receiver may change the medium so that he can be able to interpret the message according to his choice.

Al-Nady et al. (2013), the communications process requires a message. The message can take many different forms, usually in hard or soft format. The hard format is usually written on paper whereas soft format is electronic. Regardless of the format, a message is necessary to initiate a communication and stimulate a relationship between two or more people.

The communications process requires feedback between the sender and receiver. Feedback may be positive, negative, or neutral, indicating the receptivity of the sender or receiver. Feedback can also be simple or complex. Simple feedback occurs when it involves just two people; complex feedback is when the process involves three or more people.

In the communication process the receiver may not exactly receive what is sent. Beliefs, values, the emotional impact of a message, and the medium employed can affect the message sent, which are called noise.

In an organization level time, space, and structure of the company may influence the communication results. Days of the week, space is the location of a person, maybe virtual teams. Structure may be the organizational network in place for supporting the communications process of a project.

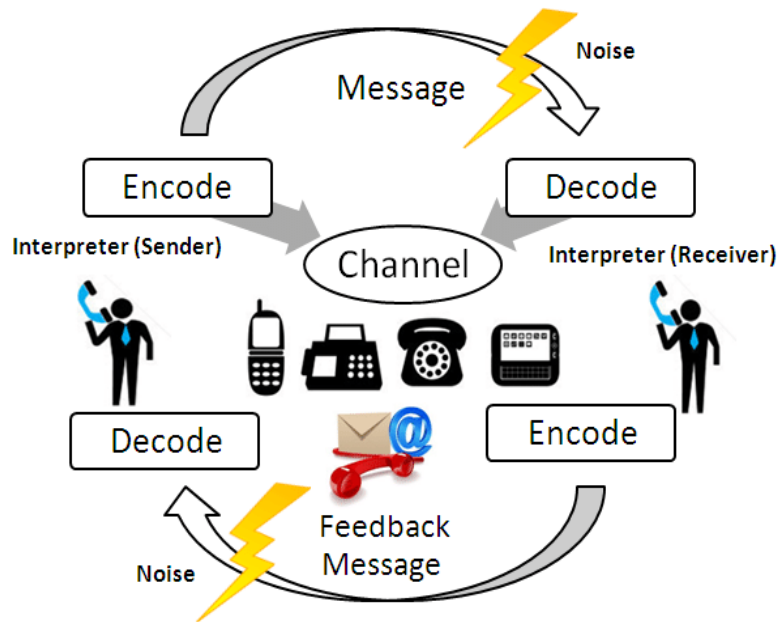


Figure 2. 2: Communication process, combined by Al-Nady et al. (2013)

2.2.3 Types of Communication

2.2.3.1 Verbal communication

Verbal communication is communication using speech that is understood by all parties to the communication. In other words, it's talking. Keep in mind that we're talking about speech, not the written word (Shawn Grimsley, 2014).

Jana Samáková (2014) within verbal communication that is to a great extent affected by communication skills especially those of project manager, it is necessary to define the rules of personal meetings:

- Identifying one complex problem of the encounter
- Inviting to meeting only those people which are really needed
- Determining the time frame of the meeting to be followed
- To be interested in different views of all attendees (active listening)
- Use of a terminological dictionary
- Recapitulation of specific tasks arising from the meeting
- Building mutual positive relationships with all participants in the meeting. In verbal communication, it is necessary to deal not only with the rules of personal meetings but also with the phone call policy. These are the following rules:
- Determining who makes a short written record from a phone call
- Determining the person responsible for archiving the record

- Determining who gets written record from a phone call and who will distribute it.

2.2.3.2 Written communication

A ‘Written Communication’ means the sending of messages, orders or instructions in writing through letters, circulars, manuals, reports, telegrams, office memos, bulletins, (Priyali sharma, 2016), when talking about written communication the implemented project must establish the rules of how to conduct email communication within project teams:

- Specify the persons who respond to the message
- Determination of the persons to be indicated in a BCC copy and in a copy (CC) to BCC.
- Specifying the priority of the message.
- Determining who is responsible for archiving of the e-mail communications.

2.2.3.3 Nonverbal communication

Nonverbal communication is a bit more complicated. It is sending a message without using words to convey meaning. It includes include many different elements (Shawn Grimsley, 2014) .Nonverbal communication plays major role in developing the implementation of multicultural projects. Non-verbal aspect is very important in communication as it may enhance or confuse the message passed. Sender’s non-verbal cues affect the receiver’s understanding of the message. The social influence of either often depends on subtle non-verbal cues that willing or unwilling passes during communication (Tarjani Sheth, 2017)

Nonverbal communication can include, for example, visual contact, gesture, mimic, and so on.

2.2.3.4 Formal communication

Formal communications are mostly of the written type such as company manuals, handbooks magazines, bulletins annual reports and are designed to meet the specific need s of the organization. It is associated with the particular positions of the communicator and the recipient in the structure (Kumkum Sharma, 2013). Abiding to a clear set of rules, formal communication has a clear intent. Formal communication can be defined as goal-oriented, explicitly stated, function related communication that shows through the hierarchy, follows prescribed norms, and transcends time and space (Katz & Kahn, 1978). There is little room

for misunderstandings or misinterpretations, as it frequently happens with informal communication (Alice Caln, 2019).

2.2.3.5 Informal Communication

Informal communication refers to the form of communication which flows in every direction, i.e. it moves freely in the organization (Surbih S. 2018). This type of communication happens outside of the business or corporate community or between freely understanding parties. There are no strong rules or guidelines; the only rule is that all the parties should be able to understand each other. This kind of communication does not require a certain topic. It is just normal conversation between known people (Pratibha Sihag and Sihag 2013). Grapevine or informal communication is faster than the formal communication. Being oral in nature, it has little or no cost and can reach maximum number of people irrespective of their positions within a very short time (Priyali sharma, 2016).

2.2.4 Sharing and distributing information

Effective distribution of information relies on the selection of the right tools and methods to ensure to reach the people need to be addressed in the manner suited for them to evaluate and/or make decisions (Gina Abudi, 2009). The system of sharing and distributing of information serves to collect, store, process, and distribute information in the project. According to Hanakawa N. (2004), the final product of a project can be greatly compromised by the way communication is done. Project information must be relatively easily available to all participants in the project. Website serves to share all the information about the project and can be considered as efficient way reaching information easily. Assigned professional by the project manager will handle the output information of the website to project teams in a timely manner. It's the responsibility of the project manager to share the assigned professional's contact to his project team. Project information will be stored on the page, such as organizational chart, project charter, stakeholder table, communication matrix, up-to-all meeting minutes, etc., so that all participants in the project have access to it. (Gina Abudi, 2009) there are pros and cons to different methods of distributing (communicating) project information. It is important to weigh the pros and cons against availability of certain tools/methods, expectations of the individual being communicated to about the project, expectations around formal or informal communication, and the need for formal record keeping.

2.2.5 Communication technology

Communication technology has played big role and transformed many aspects of business; internet is one of most important technology which has created e-commerce and a global digital economy with new opportunities (Al-Nady et al., 2014). Communication technology refers to the tools, systems, and equipment that are used to transfer different information to the stakeholders of the project. Since many technological inventions are emerging every day, the use of technology is a very big part of the communication process in project management. Transfer of technology can take different forms and they can vary from simple written documents to voice calls. Information by means of these technological tools is the primary source of information sharing, because those tools make it is easier to compile, deliver, and access information. However, have such technological means successfully delivered the communication, created the interaction, and built the relationships that strengthen the organization's achievements and goals (Arons, 2010). The choice of these technologies should be based on assessment on the kind of difficulties that confront the stakeholders (Ksenija Čulo, 2010). Staff experience with the technology is another factor. Are the project team members and stakeholders experienced at using this technology, considering the duration of the project and the project environment (PMP, 2018). In this regard the choice of the technology must depend on its acceptance by the stakeholders, its endorsement, and incorporate to the system already in use. The methods used to transfer information among project stakeholders may vary significantly. Common methods used for information exchange and collaboration include conversations, meetings, written documents, databases, social media, and websites. Al-Nady (2012) encourage using of electronic commerce, since EC has a very important role to improve communication and satisfy both parties e-suppliers and e-retailers through using website, e-mails and social media to reach to the maximum number of customers and marketing business in short time.

2.2.5.1 Factors that affect the choice of communication technology

According to Ela Goyal, Seema Purohit. (2010). Factors that Affect communication technology are:

Urgency of the need for information. The urgency, frequency, and format of the information to be communicated may vary from project to project and also within different phases of a project.

Unavailability and reliability of technology. The technology that is required for distribution of project communications artifacts should be compatible, available, and accessible for all stakeholders throughout the project.

Ease of use. The choice of communication technologies should be suitable for project participants and proper training events should be planned, where appropriate Project environment. Whether the team will meet and operate on a face-to-face basis or in a virtual environment; whether they will be located in one or multiple time zones; whether they will use multiple languages for communication; and finally, whether there are any other project environmental factors.

2.2.6 Communication channels

A project manager should adjust its choice of communication by considering if the communication channel appropriately deliver the information to the appropriate stakeholder in a timely manner. He/ She should share why there is a need to follow the communication plan to make sure that, all members of the project team understand and be ready for their responsibilities to communicate with external stakeholders. (PMP, 2013) These communication channels can be grouped in to vertical, horizontal and diagonal communication channels. Communication channels can be calculated using the formula: $N(N-1)/2$ where N = the number of people. The number of potential communication channels can indicate the complexity of the project. The total number of potential communication channels where n represents the number of stakeholders. In the initial communication planning process the project manager designs the communication flow by deciding what types of information goes to which project team members and which of them communicate with which of them.

2.2.7 Project Communication management process

PMI, (2013) defines project communications management as the method that includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition

of project information. Although the communications process is typically undertaken after the communications plan has been documented, communications will take place during all phases of the project. This process therefore applies to all formal communications undertaken during the life of the project Hodgkinson, (2009). Clear project communication therefore ensures that the correct stakeholders have the right information, at the right time, with which to make well-informed decisions Saunders, (2009). Project communication management is not an auto-mated process because each project is different and needs different project communication managements, Jana Samakova, (2018).

2.2.7.1 Plan communications Management

The aim of communication plan is to create the right information in the right time and place in an appropriate way for the audience ,Hartley, (1997) highlights the importance of planning for reducing risks and mistakes. According to PMI Guide(6th edition) Plan Communications Management is the process of developing an appropriate approach and plan for project communications activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project. It is a process of determining the project stakeholder information needs and defining a communication approach (PMI, 2013). The communication plans also shows the flow of information intended to perform by the project manager, the plan usually contains information that needs to be collected and information that needs to be distributed. Tonnquist, (2008). The project communication management plan outlines how to achieve the project communication objectives Burke and Barron (2014) .The key benefit of this process is a documented approach to effectively and efficiently engage stakeholders by presenting relevant Information in a timely manner. This process is performed periodically throughout the project as needed. Rajkumar (2010), identified urgency of information, technology, project staffing, project length and project environment as factors that may have an effect on communication plan. Majority of Project managers agree that planning project communications is inevitable for the project success and mostly follow the theoretical framework Olena Lys, (2015). Planning of project communication includes project stakeholders (analysis of stakeholders, list of stakeholders, stakeholder's expectations, responsibility matrix of project communication); methods, tools, and support of communication (identification of methods, tools, and support of communication, groupware matrix, and communication schedule); and content of communication (communication matrix) Jana Samáková, (2018).

2.2.7.2 Manage Communications

Managing communications involves collecting, creating, distributing, storing, retrieving and managing project information. Effective techniques, technologies, and methods need to be used. Stakeholder expectations are important when managing communications. The process should also facilitate stakeholders to respond with feedback, ask for additional information or clarification PMI (5th edition).

George Lewis. (2017), this process involves managing and executing communication with stakeholders as per the communication plan. Manage communications is the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information. Managing communications enables an efficient and effective information flow between the project team and the stakeholders. This process is performed throughout the project. The Manage Communications process identifies all aspects of effective communication, including choice of appropriate technologies, methods, and techniques.

According to kodebryan Hossac, (2011). Considerations for effective communications management include but are not limited to:

Sender-receiver models-Incorporating feedback loops to provide opportunities for interaction/participation and remove barriers to effective communication.

Writing style-Appropriate use of active versus passive voice, sentence structure, and word choice.

Choice of media- This how decisions about application of communications artifacts, such as decision whether to communicate in writing or orally, when to prepare an informal memo versus a formal report, and when to use push/pull options and the choice of appropriate technology about the needs of specific activities.

Meeting management- Preparing an agenda, inviting essential participants, and ensuring they attend. Dealing with conflicts within the meeting or resulting from inadequate follow-up of minutes and actions, or attendance of the wrong people.

Presentations-Awareness of the impact of body language and design of visual aids.

Facilitation- Building consensus and overcoming obstacles such as difficult group dynamics, and maintaining interest and enthusiasm among group members.

Active listening- Listening actively involves acknowledging, clarifying and confirming, understanding, and removing barriers that adversely affect comprehension.

2.2.7.3 Monitor Communications

The project manager needs to control the flow of communication and the information shared in the communication. About 85-90% of the project manager's time is spent in communicating Meetings there are several rules for meetings PMI (5th edition).

George Lewis. (2017), the monitor communication phase is the step which makes sure the information needs of the project teams and stakeholders. The key benefit of this process is the optimal information flow as defined in the communications management plan and the stakeholder engagement plan. This process is performed throughout the project.

Jana Samakova, (2018), the aim of the project communication control is to develop the report about the management of project communication, which is part of a comprehensive project status report. The process of determining if the information needs of the project Stakeholders are met. Control Communications, The process of making changes to the communications when required, to ensure the information needs of the project Stakeholders are met. PMEducation, (2014) the monitor communication phase helps control if the project activities have had any effect on the stakeholders support growth. For stakeholder engagement assessment matrix. Monitor Communications may require a variety of methods, such as customer satisfaction surveys, collecting lessons learned, observations of the team, reviewing data from the issue log, or evaluating changes.

2.2.8 Project management

Project management is considered as the process of organizing, planning, directing, coordinating and controlling of all project resources from inception to completion to achieve project objectives on time, within cost, and to required quality standards. Maylor (1996) define project management in the aspects of four important success factors; goal oriented (the final end point of the project), constraints (resources & time), measurability of the output and

change of the project. Robert & Wysocki, (2014) described Project Management as it is an organized common-sense approach that utilizes the appropriate client involvement in order to meet sponsor needs, expectations and delivers expected incremental business value.

Most authors agree that project management is about achieving time, cost and quality targets, within the context of overall strategic and tactical client requirements, by using project resources. Payne et al., (2011) Project management has been defined as a “structured and formalized way of managing change in a rigorous way”. PMI (4th edition) states that project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through with the appropriate application of these five process groups. Ashley (2007) did a study on the analysis of project implementation success and concludes that effective project implementation is repeatable and requires a great deal of work to understand it for achieving cost effectiveness and competitive position. They identify planning effort; project team motivation; project manager goal commitment; project manager technical capabilities; control system; and scope and work definition as the important factors.

There is also general agreement that project management is concerned with the life cycle of the project: planning and controlling the project from inception to completion. Although numerous different organizational structures are possible, usually occurring because of particular project characteristics such as size and complexity, a useful distinction can be made between internal and external project-management structures.

2.2.8.1 Project management effectiveness

Kelechi Udoagwu, (2016), Effective project management means having a firm grasp on the scope, budget, resources, personnel, and timeline dedicated to a project. An effective project manager is able to manage unplanned issues while keeping the ball rolling on company goals and tasks in progress. The role of different project management techniques to implement projects successfully has been widely established in areas such as the planning and control of time, cost and quality. In spite of this, the distinction between the project and project management is less than precise Duncan, William R. (1996). PMI's Pulse of the Profession, (2020), "organizations that undervalue project management as a strategic competency for driving change report an average of 67% more of their projects failing outright."

2.2.9 Constraints that operate in projects

2.2.9.1 Scope

Scope is a statement that defines the boundaries of the project. It tells not only what will be done, but also what will not be done. In the information systems industry, scope is often referred to as a functional specification. This document is the foundation for all project work to follow. It is critical that the scope be correct. Robert K. Wysocki (2019) Scope is the most important of the six factors as it changes over the life of the project and can cause significant changes to the project plan. Landscape project manager, (2018) Scope is considered as Statement of Work (SOW). Scope may also be referred to as a document of understanding, a scoping statement, a project initiation document, or a project request form.

2.2.9.2 Quality

A sound quality management program with processes in place that monitor the work in a project is a good investment. Robert K. Wysocki (2019) Not only does it contribute to client satisfaction, but it helps organizations use their resources more effectively and efficiently by reducing waste and revisions. Quality management is one area that should not be compromised. The payoff is a higher probability of success-fully completing the project and satisfying the client. Quality is defined as delivering the project outcomes according to the stated or implied needs and expectations of the project beneficiaries and the donor agency in order to meet stakeholder satisfaction.

2.2.9.3 Cost

The dollar cost of doing the project is another variable that defines the project. It is best thought of as the budget that has been established for the project. Robert K. Wysocki (2019) this is particularly important for projects that create deliverables that are sold either commercially or to an external customer. Cost is a major consideration throughout the project management life cycle. Karimi (2008) on the other hand analyzed factors which are critical to cost overruns and established five factors which contribute and these are; project organization, environment, project management, project definition and infrastructure.

2.2.9.4 Time

Time is an interesting resource. It can't be inventoried. It is consumed whether you use it or not. The objective for the project manager is to use the future time allotted to the project in

the most effective and productive ways possible. Future time (time that has not yet occurred) can be a resource to be traded within a project or across projects. Once a project has begun, the prime resource available to the project manager to keep the project on schedule or get it back on schedule is time Robert K. Wysocki (2019). Kagiri (2005) conducted a case study on time and cost overruns in projects locally and concluded that vendor inabilities, improper project preparation, resource planning, interpretation of requirements, works definition, timeliness, government bureaucracy and poor risk allocation as the major factors that lead to delay and cost overruns.

2.2.10 Types of Communication in Project Management

There are various types of communication styles and formats which project communication uses. These types of communication might have some impact on the life cycle of the projects. Michael Martinez PMP (2012), developed types of communication in project management with the below perspectives. It is believed that the below perspectives of project management might be the cause for the creation of these different styles of project communication.

The Project Perspective

When communication is viewed from the perspective of the project itself, it is usually broken into two categories: internal and external communication.

Internal communication typically refers to the exchange of information that occurs between individuals who are actively working on a project, the project manager and their team. It is often characterized by the detailed discussion that happens during planning or issue resolution.

External communication, on the other hand, refers to the flow of information between the members of a project team and key stakeholders not directly a part of the project. This might involve members of the executive team, the CEO, other departments or projects, the press, or internal and external customers.

The Organizational Perspective

Martinez. (2019), Communication from an organizational perspective can be categorized as vertical, horizontal, or diagonal. This perspective takes into account the way organizations are structured

Vertical communication takes place between individuals who operate on different hierarchical levels within an organization and is sometimes referred to as “upward” or “downward” communication. Upward communication might involve a member of the project team updating the project manager about a particular roadblock that is getting in the way of completing a task, or the project manager communicating with their superior on the progression of the project. Downward communication works in the opposite direction, such as when the project manager assigns tasks to individuals on their team.

Horizontal communication takes place between individuals who operate on the same level within an organization. It’s the communication that occurs between peers and colleagues, such as when a team gathers for a daily meeting or stand-up to align on what tasks will be completed.

Diagonal communication is typically limited to businesses and institutions with more organizational complexity and refers to the communication that takes place between individuals within different functional divisions or departments within the organization.

The Formality Perspective

When communication is viewed through the lens of formality, it is generally split into informal and formal communications, which are rather straightforward in their definitions. Informal communications are often synonymous with internal communications outlined above. Daily emails, touch bases, and unplanned meetings form the bulk of this communication, which is generally raw and unpolished. Martinez, (2019), Formal communications, on the other hand, are seen more as products to be consumed. Reports, press releases, and presentations to key stakeholders often fall into this bucket.

The Channel Perspective

The channel perspective refers to the channel or medium by which communication is transmitted or delivered. Martinez, (2019). Common communication channels include verbal vs. non-verbal communication, in-person vs. remote or virtual communication, and written vs. oral communication. It's up to the project manager to understand which channel best applies to their unique needs, and to balance those needs accordingly against the potential drawbacks of each channel.

2.3 Empirical Review

The empirical review of this Literature will present related works to the topics project management, Project management effectiveness, Project communication process, communication channels and Communication technologies. An empirical literature review is more commonly called a systematic literature review and it examines past empirical studies to answer a particular research question (Gohavacyf, 2020). Project organizations and training centers in Ethiopia haven't been focusing on the importance of proper communication that can affect the project performance and the project management system. Many researches are not found who analyzes the importance of the communication on project management system. There are researches that assess the role of project communication on the performance and delivery of project works.

2.3.1 Project management

Mwangi (2006), conducted a case study on major factors that affect project management locally. Meron Asrat (2018) conducted a research work on the Role of Project communication management in improving project performance of building construction projects. This research aimed to identify the gap created due to lack of proper communication management, to discover the consequences of poor communication management gap and determine which communication ways works best. The researcher concluded internal and external communication of the project office almost shares the same channel of communication and the company emphasizes more on the external communication. The researcher mentioned that the company have well organized communication system but didn't list out the communication management gap.

BG Zulch (2014) conducted a research with the aim of determining if communication might be a foundation area of project management and the means of achieving the trade off, as pillars or support. Secondly, to determine if communication might be seen as the area that combines and coordinates the various processes and project management activities. The researcher concluded that communication is needed to effectively communicate the areas of cost, scope and time, and quality. Communication is the function that integrates cost, scope and time to achieve a quality product and may be seen as having a foundation function to support all the areas.

2.3.1.1 Project management effectiveness

.Effective project management has also become more challenging as the environment within which projects are delivered has become increasingly volatile and complex (Coulson-Thomas, 1990; Goodwin, 1993; Mendzela, 1998). Zhongqing Wang and Qiang Hu (2012) they studied the relations between project communication and project performance. The researchers collected the data by questionnaire and used SPSS software to analyze it. In their conclusion, they showed that project communication has the most significant impact on project schedule Project communication process. In reference, Muszynska (2015) percent of Project Managers agree that effective communication with all stakeholders is the most critical success factor in project management.

2.3.1.2 Project communication management

Fekadu Tadesse (2018) assessed communication management factors that influence successful project delivery. The research work presented the communication modes of the internal project team throughout the project life cycle and determined by whom communication occurs to shape their reputation on the project. The researcher used exploratory qualitative study design and collected data in the form of questionnaires, interview schedules and guides. The researcher reached to conclusion that the communication mode varies across project's phase and concerned stakeholders and the commonest communication modes utilized to shape the reputation of the project with external stakeholders are face-to-face meetings and discussions, telephone calls, and e-mail.

Safapour, E. (2019), effective communication facilitates a project's process and expedites the steps and tasks that are necessary for a successful completion. Ineffective communication acts against the normal project flow, decreases the processing pace of the project, and

jeopardizes its ultimate success. According to Jana et al, (2012), focused on the project communication management, communication in the project is a very important factor for the success of the project and one of the biggest problem that threaten the success of the project is project communication. Jana et al, (2012), focused on the project communication management, communication in the project is a very important factor for the success of the project and one of the biggest problem that threaten the success of the project is project communication.

There should be also a clear and concise communication plan to address project responsibilities and the types of communication that will take place Ksenija Čulo and Vladimir Skendrović (2010).

Recently, in a research conducted in Addis Ababa University Beruk Tebebu (2019) Assessed internal project stakeholder communication practice in Addis Ababa chamber of commerce and sectorial association. The study focused on how communication between a project manager and internal stakeholders takes place and listing out the challenges and opportunities in communication. The researcher used both primary and secondary data sources for analysis in the form of interview and questionnaire. The data was analyzed qualitatively and quantitatively. As a conclusion, the researcher reached to the point where the project communication management in the company is effective and well managed.

2.3.2 Communication channels

The classic definition of a communication channel characterizes it as the technical (or formal) side of the communication process that allows us to transfer information from sender to receiver and vice versa, Reinsch NL, Jr, Lewis PH (1984). Channel is perceived to be effective when it allows the organization to either send information or to receive responses from the recipient of that information. At the same time, the effectiveness of the channel depends on high efficiency, reliability and speed of communication Westmyer et al, (1998).

The effectiveness of a communication channel is defined by the fact that each channel has a maximum amount of information that can be transmitted within a certain amount of time.

According to McKay (2016), “In the modern business world, people communicate by text, phone, email, written correspondence and verbal communication. In effective communication, you must choose the communication method best suited for the message. Businesspeople who are articulate speakers may not be articulate writers, so the message in

email and written correspondence can sometimes be misconstrued. Individuals or organizations choose alternative channels by reducing reliance on some channels and increasing reliance on others Reinsch NL, Jr, Lewis PH (1984). The principal characteristics for understanding various communications channels are as follows: reliability, speed and effectiveness. A. Sanina et al, (2017)

2.3.3 Communication technologies

Almost by definition, projects require teamwork, and team members must communicate with each other for a variety of reasons and by a number of possible methods. For instance, team members frequently need to update each other on their progress and may employ such means of communication as email, project management software, or social media. Available technology can greatly facilitate such tasks and assure timely and accurate communication between team members. pm4id (2018) Communication technology report. New technologies for communicating electronically appear with increasing frequency. Using a new technology that is unfamiliar to the team increases the technology complexity, which can cause delays and increase costs. Adrienne Watt (2014).

2.4 Conceptual Framework

Variables are given a special name that only applies to experimental investigations. One is called the dependent variable and the other the independent variable. The independent variable is the variable the experimenter manipulates or changes, and is assumed to have a direct effect on the dependent variable. The dependent variable is the variable being tested and measured in an experiment, and is 'dependent' on the independent variable. An example of a dependent variable is depression symptoms, which depends on the independent variable (type of therapy). Dr. Saul McLeod, (2019).

In research, variables are any characteristics that can take on different values, such as height, age, species, or exam score. In scientific research, it is often studied the effect of one variable on another one. The variables in a study of a cause-and-effect relationship are called the independent and dependent variables. The independent variable is the cause. Its value is *independent* of other variables of the study. The dependent variable is the effect. Its value *depends* on changes in the independent variable (Lauren Thomas, 2020). This study assumed the project management effectiveness dependent variable and PCMP and Communication

technology process, communication channel, and communication technology as independent and dependent variables In order to analyze the relationship between them.

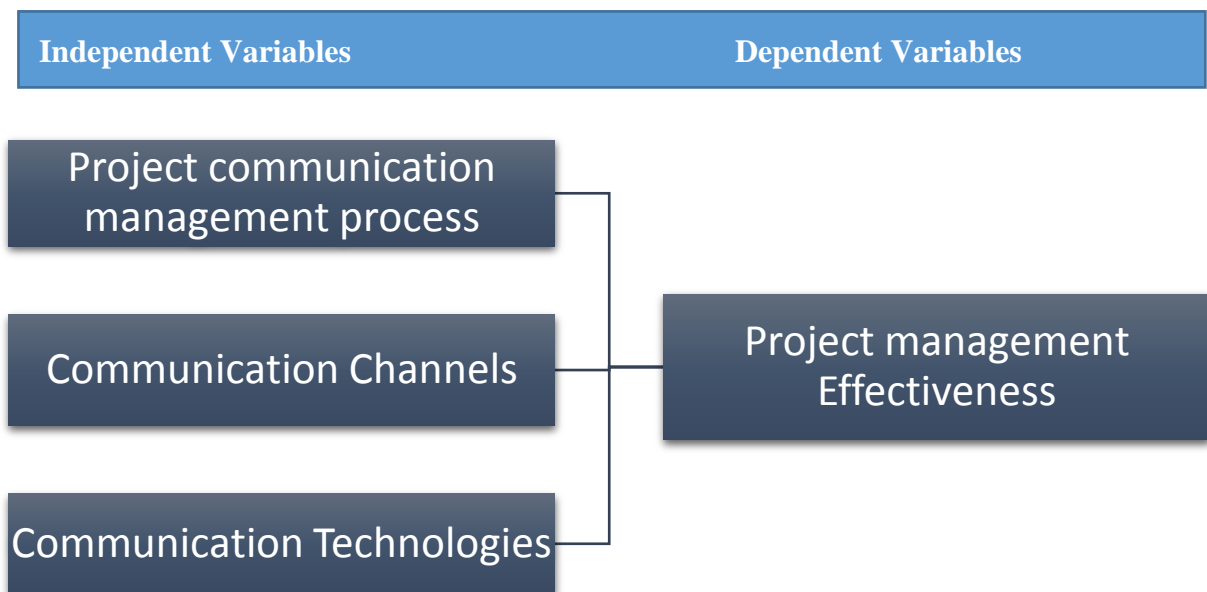


Figure 2. 3: Conceptual Framework of dependent and Independent variables

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter mainly consists of Research methodology the research approach and design, the target population and sample size, the data collection methods, tools and techniques, Data analysis method, validity and reliability, and the issue of ethical consideration implied.

3.2 Research Approach and Design

3.2.1 Research Approach

Research design is the framework of research methods and techniques chosen by a researcher. This research uses Quantitative and qualitative research approach. Creswell (2012) describes research design as a set of distinguishing features that you can use to collect, analyze, and interpret data using quantitative and qualitative research methodologies. Catherine Dawson (2002) Qualitative research tries to get in depth opinion from the target group and explores attitudes, behavior and experiences through interviews or focus groups and questionnaire's. The research approach applied for this study is mixed- method when both qualitative and quantitative data collection and analysis procedures were applied in the research design.

3.2.2 Research Design

Descriptive research describes the characteristics of objects, people, groups, organizations or environments and tries to portray a given situation accurately (Zikmund et al, 2010). This research is an example of descriptive research which defines the characteristics of the variables and validate existing conditions. Oniye (1997), states that the descriptive survey deals with systematic description of an event in a very factual and accurate manner. Descriptive research makes fact-finding enquiries to report what has happened or what is happening (C.R. Kothari, 2004). The researcher applied descriptive research design because of the nature of the study which needs description of the relationship between the dependent

and independent variables. One example of descriptive research is case studies which involve in-depth research and study of individuals or groups. Case studies lead to a hypothesis and widen a further scope of studying a phenomenon.

3.3 Population and Sampling

The target population represents the entire people for which this research study intends to examine. For this study, the project rollout office of Ethio telecom internal stakeholders/project teams are the main participants. The research will evaluate internal stakeholder’s project staffs, supervisors and project managers.

Sampling methods help participants have knowledge about the topic and they can give reliable information which will help to reach objectives of the study. The two most popular sampling techniques are purposeful and convenience sampling because they align the best across nearly all qualitative research designs. The project professional respondents were selected through Random sampling which a probability sampling is suited for when it is difficult to determine the probability of any given element that would be selected in a sample.

3.3.1 Sample size

Random selection of fifty people from the project staffs were given the questionnaire paper, forty one of them filled and returned the questionnaire, From the forty one of the participants 31 of them are Male and 10 of them are Female. Alreck & Settle (2005) states that sample size is determined after considering statistical precision, practical issues and availability of resources. According to Lowler (1984) there is no a single precise way for the determinations of sample size hence there are a number of inadequacy for deciding on sample size.

No	Position In the organization	Number of Respondents
1	Project staff	34
2	Project manager	5
3	Middle management	1
4	Top management	1
Total		41

Table 3. 1: Population sample size

3.4 Data collection

Both secondary and primary data's are collected and analyzed. The primary data refers the first hand information obtained by the researcher himself. The advantages of this method of data collection include; reliability & accuracy and it is a better method for intensive investigation. In this research the data will be collected in the form of document analysis and questionnaire. This study will base itself much on the primary sources of data by means of questionnaire data collection. The questionnaire will be structured in the form of close-ended questions.

Secondary data plays an important role in research activities by providing permanent data, comparative (contextual data) and unforeseen discoveries (Saunders et al., 2009).Secondary data includes reviewing the available relevant literature materials, reports, and the written documents both from within or outside the organization about importance of communication and its role in project management process. The analysis of secondary information provided the general context for initiating the collection, analysis and the interpretation of primary data. In addition to secondary data sources project policy documents and project SOP's will be input information's on how the project team has been guided to communicate each other.

3.5 Data Analysis Method

Data analysis is the process of coding, classifying, and tabulating information required to perform quantitative or qualitative analysis according to the research design and appropriate to the data Mosby (2009). Wolcott (1994) describes analysis as relying on agreed upon knowledge, the recognition of mutually recognized properties or standards which are inherently conservative, careful, and systematic. This research will use Quantitative and Qualitative research approach which depends on the researcher's integrative and personal knowledge of the environment. The analysis of this data collection method can be; charts, graphs and statistics to explore, present, describe the relationship of trends (Saunders et al., 2009). Whereas, qualitative research is a non-numeric data that cannot be quantified, it can also manipulated based on the manipulation of participants.

For qualitative data, the researcher will analyze as the research progresses, continually refining and reorganizing in light of the emerging results. When the data gathered is too large to analyze, often reduction procedure is used by organizing data, identifying categories and

patterns and testing the hypothesis against the data. Researchers using qualitative analysis are expected to have a creative and investigative mindset to analyze the collected data. The other reason to follow this data collection method is that, it can able to look the problem depth when the research approach intends to focus in certain studies. The quantitative data will be feed to SPSS software to measure descriptive parameters. Descriptive statistics measures like percentage, frequency, measures of central tendency (mean and standard deviation) will be used. The results will be discussed in descriptive measurement method and contextually.

3.6 Validity and Reliability

Patton (2001) states that validity and reliability are two factors which any qualitative researcher should be concerned about while designing a study, analyzing results and judging the quality of the study. Validity refers to the extent to which a method of data collection presents what it is supposed to do (Altman. and Bland, 1999). Validity explains how well the collected data covers the actual area of investigation (Ghauri and Gronhaug, 2005). To ensure reliability in qualitative research, examination of trustworthiness is crucial. Trustworthiness of a research report lies at the heart of issues discussed as validity and reliability. In order to increase reliability and validity, the researcher uses the following approaches or techniques: Triangulation, taking of repetitive data, checking for representativeness. Triangulation is the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999).

3.7 Ethical Consideration

Before the data collection begins the researcher will take time to explain the purpose and objectives of the study to the respondents in advance in order to avoid any misconceptions that could arise due to the nature of questions being asked and the researcher will ask for their consent. Participants will be informed about the intention of the data collection and that all the confidentiality will be maintained.

CHAPTER FOUR

4 DATA PRESENTATION AND DISCUSSION

4.1 Introduction

The objective of this chapter is to analyze the questionnaire's answers in to three categories and interpret qualitatively and discuss the collected data. The findings were analyzed in line to the project objectives of the study which assesses communication in the effectiveness of project management.

4.2 General Information of Respondents

To assess the general information of the respondents the research questionnaire included questions about Sex, age, level of education, work experience, position and years they have participated in the projects. There was a random selection of fifty people from the project staffs which forty one of them filled and returned the questionnaire, which makes the response success rate 82%. From the 41 of the participants, 31 of them are Male and 10 of them are Female. Which makes 75.6% of participant's male and 24.3 of them female. Such a big difference in gender distribution implies that the studied organization has a lack of gender diversity. Even if several researchers argue that women's participation in projects is still Low, but it is recommended to make gender diversity balanced between male and female (Abadi, 2020). The rest of the general information of the respondents of part one of the questionnaire are presented below in the form of pie charts.

4.2.1 Response rate of the questionnaire

Paul J. Lavrakas, (2008), A response rate is a mathematical formula that is calculated by survey researchers and is used as a tool to understand the degree of success in obtaining completed interviews from a sample. In probability samples, where the intent of a survey is to project the results of the data onto a population, statistical theory rests on an assumption that data are collected from every unit, or person, selected. In practice, it is extremely rare for any survey to achieve this perfect level of cooperation from respondents. In turn, survey researchers may consider, examine, and when necessary, compensate for potential problems that this deficiency presents. The project professionals in the organization are mainly engaged

in field works, which made it impossible for the researchers to find them all in the research work schedule.

As it is shown in the table below 50 questionnaires were given to the project, only 41 of the staff filled the questionnaire and returned, this makes the response rate 82% percent.

Total no of questionnaire sent.	Total no of Questionnaire filled and returned	Response rate %
50	41	82%

Table 4. 1: Questionnaire response rate

4.2.2 Age Distribution

From the information collected 26(63%) percent of the general respondents are aged from 31-40 Yrs., 10(24%) percent of them are in the age group of 21-30 Yrs., 4(10%) of them are in between 41-50 Yrs. and 1(3%) of them are above 50.

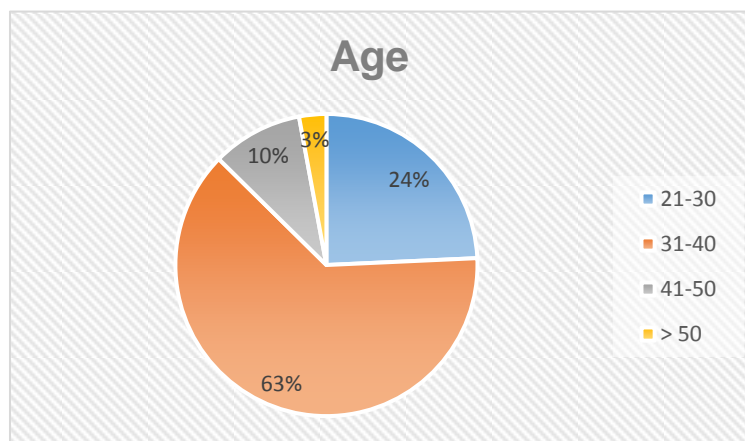


Figure 4. 1: Respondents age distribution

4.2.3 Academic Qualification distribution

As indicated in the pie chart below majority of the questionnaire 26(63%) respondents hold BA/BSC degree , 10(24%) of them hold BA/MSC degree, 4(10%) of them hold Diploma and only one respondent which is 2% of the total respondents hold PHD Degree.

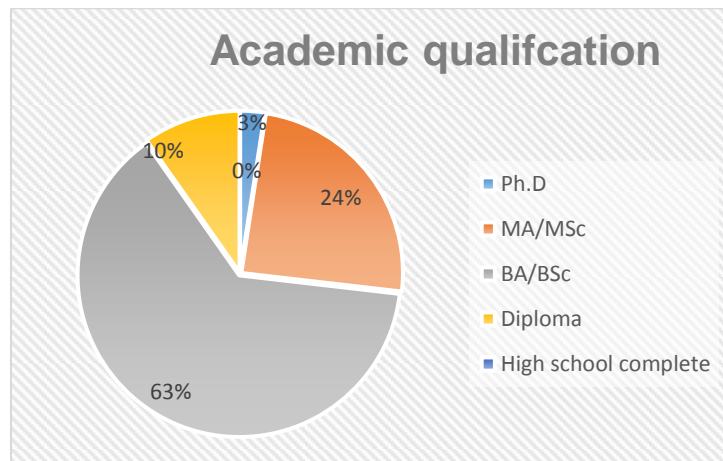


Figure 4. 2: Respondents Academic qualification distribution

4.2.4 Position in the organization distribution

Most of the respondents participated were project staff which are 34(83%), Project managers are 5(12%), Middle managers 5(12%) and top management 1(2%) of all the respondents.

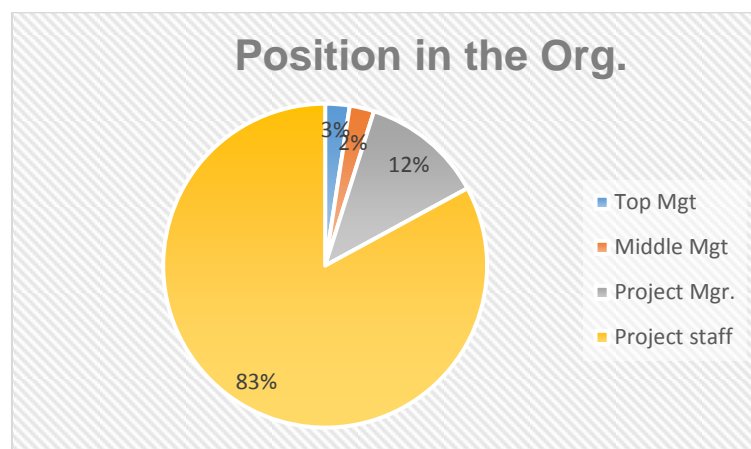


Figure 4. 3: Respondents Position in the Organization distribution

4.2.5 Service year in the organization distribution

From the information extracted almost half of the respondents 20(49%) have an experience of 5-10 years, the other 9(22%) of them fall under the category of 10-20 years of experience, 6(15%) of them have an experience of above 20 years and 6(14%) of them are in between 0-5 Years.

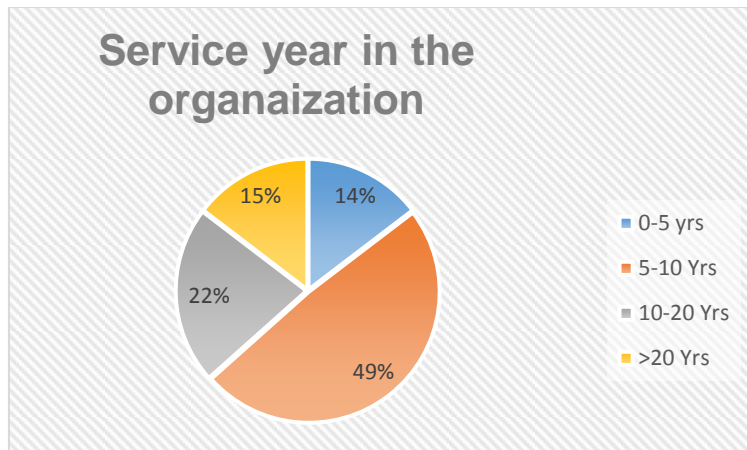


Figure 4. 4: Respondents service year in the Organization distribution

4.2.6 Service year in project section distribution

As shown below on the pie chart 24(59%) of the respondents have 5-10 years of project work experience, 10(24%) of them have more than 10 years of experience and 7(17%) of them worked for 0-5 Years.

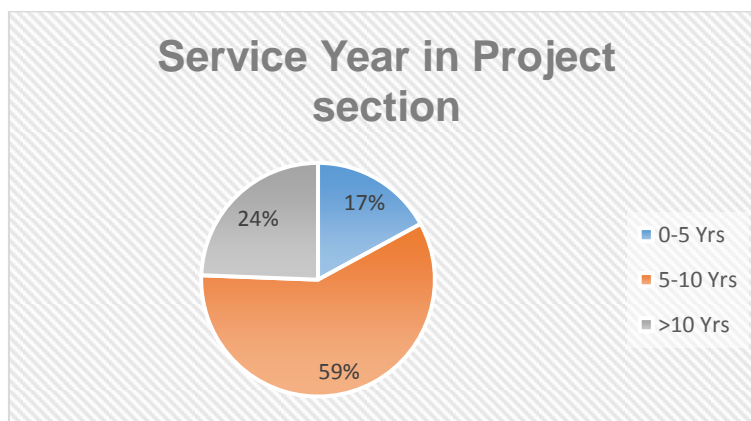


Figure 4. 5: Respondents service year in project section

4.3 Quantitative analysis of results

To answer the objectives of these research work, there are some questions included in the questionnaire that elaborate features of communication practice in Ethio telecom, Relationship between project communication and project management success and how communication affect project management effectiveness, how project professionals value communication and determine communication channels used in project section. These

questions will go through the independent variables and analyze the communication practice in the project section where the research work is targeted.

4.3.1 Features of project communication practice in Ethio telecom.

	N	%	Strongly Agree		Agree		Neutral		Dis agree		Strongly Disagree		Mean	SD
			n	%	n	%	n	%	n	%	n	%		
Plan for communication activities	41	100	8	19.5	16	39	6	14.6	9	21.9	2	4.8	3.463	1.185
Timely and appropriate distribution of information	41	100	0	0	11	26.8	5	12.1	21	51.2	4	9.7	2.561	1.001
Constant and timely briefing on the status update	41	100	0	0	8	19.5	10	24.3	18	43.9	5	12.1	2.512	0.997
Suitable communication technologies	41	100	5	12.1	5	12.1	14	34.1	15	36.5	2	4.8	2.902	1.909
Trainings and assign experts to help team learn communication technologies	41	100	5	12.2	19	46.3	9	21.9	8	19.5	0	0	3.51	0.951

Note: 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree

SD: Standard deviation, n: Frequency

Table 4. 2: Communication practice in Ethio telecom

To determine the features of the communication practice in Ethio telecom the Likert type questions on table 4.1 were presented to respondents to answer as. A weight is given for each of the choices as strongly agree 5, Agree 4, Neutral 3, and Disagree 2 and strongly disagree 1. The mean is the average of the data, which is the sum of all the observations divided by the number of observations. Mean Values have been interpreted by using the criteria suggested by (Scott, 1999). He suggested that for Likert type scale ranging from 1 (Very poor/ highly dissatisfied) to 5 (Excellent/Highly Satisfied), interpretation should be as; mean up to 2.9 is considered as Disagree, from 2.9 to 3.1 means neutral or to central value and mean above 3.1 is considered as an agreement.

Communication planning is a major part of the communication process, to asses that, participants were asked if communication planning is used in their project activities. 58% of them agreed on the idea their company using communication planning doc and 24.6 % didn't agree. The calculated mean for their answer is 3.4634 which falls in to the category of Agreement. Since that the response rate is positive, it is clear that there is positive experience in developing the communication plan document.

For the question timely and appropriate distribution of information, 60.9% of the respondents didn't agree there is appropriate distribution of the information and 26.8%% of them agreed. The mean 2.561 is recorded, which shows the disagreement of most of the respondents and there wasn't a good experience of information delivery in a timely manner.

In response to the question holding a constant and timely briefing of the status update of the projects 56% of the respondents disagreed on the idea and 19.5% of them agreed. The recorded mean for this question is 2.5122, which is in the category of disagreement.

In the answer for applying suitable communication technologies 41.3% of them agreed on the idea and 24.2% of them didn't. The mean of 2.90 tells us there wasn't a good experience of suitable communication technologies been applied.

For the last question which assessed if the company have been assigning experts and training them when there are new communication technologies to be applied regarding to the project, 58.53% of them agreed 19.5 of them didn't agree. From the mean 3.5122, it is clear that there is a good amount of focus given to train employees with new communication technologies.

4.3.1.1 Discussion of the result features of project communication practice

- A solid communication plan increases the consistency of how the project is handled. The participants who follow the plan should communicate consistently with one another. The management should also need to ensure that all stakeholders have the same information on the project requirements and changes (Shelley Frost, 2019). To answer if the company is using communication plan 58% of them agreed, which shows the company has been practicing planning for the communication process. The result can be considered as a positive finding.
- To increase the efficiency of the workforce, it is essential that all employees are on the same page. Key information should be evenly distributed throughout the organization, without any particulars left out. A good communication process keeps stakeholders engaged and project teams motivated, (PMI pulse, and 2013). It's crucial to internal and external stakeholders to keep informed any new thing comes up. The recorded mean for the timely and appropriate distribution of information is 2.561, which shows there wasn't a positive experience. Information distribution is a part of effective communication, it's directly related to project and organization success. PMI pulse of profession (2013), organizations that communicate more effectively have more successful projects, and findings show that high performers are more effective communicators.
- Constant and timely briefing on the status reports are very crucial for project progress and cost overrun control. Through these reports, all those involved are able to track the current progress of the project and compare it against the original plan. They can identify risks early on, and take corrective action (Jose Maria, 2019). The respondents result recorded a mean of 2.51, which indicates there should be improvement of briefing on the status update of projects in the organization.
- The recorded mean for suitable communication technology is 2.902 which can be considered as a negative experience. The company should use appropriate technology to enable for more effective and efficient communications with stakeholders and others, depending on the nature of the message transferred. Be sure to use the appropriate tool/technology for the appropriate situation (Derosa & Lepsinger, 2010).
- As the result for providing training for new communication technologies shows, 3.51, there is a good experience of equipping project team with necessary trainings, which

can be considered positive findings of this research. Training and development have an impact on the performance of employees with regards to their jobs (Aidah Nassazi, 2013).

- An observation done to answer the question, which was included in the questionnaire, if there is any practice of using project management software for managing complex projects. Enterprise resource planning ERP software deployed in recent years. A research conducted by Enderas Adisse (2017) concludes the employed ERP system was not properly implemented as the basis of the selected variable. As a result there is a lack of top management commitment; lack of appropriate training for all system users and as well as lack of allowing user to participate on the implementation process.

4.3.2 Relationship between project communication and project management success

	N	%	Strongly Agree		Agree		Neutral		Dis agree		Strongly Disagree		Mean	SD
			n	%	n	%	n	%	n	%	n	%		
Importance of using project communication management process	41	100	23	56	15	36.5	3	7.3	0	0	0	0	4.487	0.637
Using communication management process to boost project management	41	100	17	41.4	23	56	1	2.4	0	0	0	0	4.390	0.542
Managing communication process contribute for effective information flow	41	100	12	29.2	22	53.6	4	9.75	2	4.8	1	2.4	4.002	0.907

Note: 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree

SD: Standard deviation, n: Frequency

Table 4. 3: Relationship between project communication and project management success

To assess the relationship between the project communication and project management success, some questions related to the topic were included in the questionnaire. From total of 41 respondents, 92.5% of them agreed and none of them disagreed on the importance of using project management communication process. The mean 4.4878 indicates that there is strong agreement on the statement.

On the assessment of the positive relationship between communication process and management success, 97.4% of the respondents agreed on the idea. The recorded mean is 4.390 which indicates the respondents believe in communication process can improve the project management system.

82.8% of the respondents answers were agreement on the idea of managing communication process can create effective information flow between project stakeholders. Only 7.2% of them disagreed and the mean 4.0244 indicates a high level of agreement.

4.3.2.1 Discussion on the Relationship between project communication and project management success

- PMI (2013), one out of three projects suffers from a communication failure, according to the PMI report. In fact, companies risk \$135 million for every \$1 billion spent on a project and new research indicates that \$75 million of that \$135 million (56 percent) is put at risk by ineffective communications, indicating a critical need for organizations to address communications deficiencies at the enterprise level. From the respondent's answer of this questions, 92.5% of them agreed on the relationship between project communication and project management success in Ethio telecom expansion projects.
- As the result of the second question indicates communication management process have the ability to improve project management. 97.4% of the respondents agreed that communication boosts the project management.
- Project Communications Management includes the processes necessary to ensure that the information needs of the project and its stakeholders are met through development of artifacts and implementation of activities designed to achieve effective information exchange (George Lewis, 2016). Information flow is simply the movement of information from one point to another, over time. There is a direct relationship between managing communication process and effective information flow. The recorded mean of 4.00, in response to the relationship between managing

communication and information flow, confirms a significant relationship between the two.

4.3.3 Determine how communication affect the effectiveness of project management

For deep analyzation purpose of the study, some questions which directly relate to project management were included. These questions assess the role communication plays on the effectiveness of project management. As shown on the conceptual frame work diagram, the research assumed there are independent variables which can affect the project management system success. The independent variables, communication management process, communication channels and communication technologies were used to examine the effect communication has on project management effectiveness.

	N	%	Strongly Agree		Agree		Neutral		Dis agree		Strongly Disagree		Mean	SD
			n	%	n	%	n	%	n	%	n	%		
Importance of formal communication channels	41	100	22	53.6	16	39	3	7.3	0	0	0	0	4.463	0.63
Importance of In formal communication channels	41	100	15	36.5	16	39	6	14.6	3	7.3	1	2.4	4.00	1.02
Communication technologies in reducing cost, time and prevent mistakes	41	100	15	36.5	20	48.7	6	14.6	0	0	0	0	4.219	0.68
New communication Tech's shape PM	41	100	16	39	16	39	6	14.6	3	7.3	0	0	4.097	0.91
Project status report to top managements can affect PM	41	100	12	29.2	21	51.2	4	9.7	2	4.87	2	4.87	3.95	1.02

Note: 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree SD: Standard deviation, n: Frequency

Table 4. 4: Impact of communication on the project management

On question one and two of this table, respondents were asked to provide answers if using formal and informal communication channels can be good factors in contributing to the effectiveness of project management. 92.6 And 72.1% of agreed on using formal and informal communication channels with the means of 4.463 and 4.000 respectively.

On the issue of digital communication channels 85.1 % which is a mean of 4.2195, agree that digital communication channels can upgrade the project management effectiveness.

For the response to the question of new communications can shape project management, 72% of the respondents agreed and 7.3 % didn't agree. The mean for this response is 4.097.

For the project status report to top managements can affect project management, 80.4% of respondents agreed that report to top managements would affect and 9.74% of them didn't. The mean recorded for this response is 3.95.

4.3.3.1 Discussion on the impacts of communication on the project management

- If the formal communication is the skeleton of the company, informal communication is the nervous system that drives the process, thoughts and action in to business unit as argued by (Fischbach & Gloor, 2009). Formal communication is usually planned and takes some time to prepare. This includes reports, presentations and media releases. Informal communication channels provide a rich infrastructure for transmitting messages within the project, as well as developing and improving teamwork and the performance of individual team members. However, in order to derive maximum benefit from these channels, the proper conditions for maintaining their existence and stability over the long haul should be developed (Micro LU, 2021). The mean for the importance of formal communication is 4.463 and for the importance of informal communication is 4.00, which both of the numbers indicate significant positive value supporting the idea.
- Since communication technologies emerging each time and changing the communication process, it was very important asking respondents if they agree that communication technologies can save cost, time and prevent mistakes done during the communication process and add positively to project performance and project management. Andy Holtman, (2011), Construction projects all too easily run over budget and behind schedule, and in an industry with thin profit margins, that can be a

big problem. Luckily, the construction industry is beginning to innovate by introducing new technologies which help increase productivity, reduce costs. Like Andy Holtman (2011). Some researchers have worked on the issue of technologies saving cost and time of projects and shape the project management. The question on the above table assessed if this could be applicable on this research scope. The mean for technologies saving project cost and time and the mean for technologies shaping project management are 4.219 and 4.097 respectively. Which proves communication technologies have impact on both project and project management.

- According to project manager, ultimate guide to project status report, project status reports give an overview of where the project currently is, and helps determine if the project is on time and under budget. For the last question raised to assess the project status report affecting project management, the mean is 3.95 which falls in the category of agreement and could be considered as a positive response of the finding.

4.3.4 How project professional value communication

	N	%	Strongly Agree		Agree		Neutral		Dis agree		Strongly Disagree		Mean	SD
			n	%	n	%	n	%	n	%	n	%		
Planning communication management engage relevant information	41	100	3	7.3	24	58.5	9	21.9	5	12.1	0	0	3.609	0.802
Communication management plan can be included in PM plan doc.	41	100	4	9.7	20	48.7	10	24.3	6	14.6	1	2.43	3.487	0.951

Note: 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree

SD: Standard deviation, n: Frequency

Table 4. 5: Project professional value communication

When project professionals have a good awareness about project communication it will smooth out the process of communication and eases the team work. This research work is also intended to assess how project professionals perceive project communication. 65.8% of participants agree that planning communication management can engage relevant information and the response to disagreement rated 12.1%. The mean of 3.608 indicate that project professionals agree that planning communication management is important. On the question that assess if communication management plan can be included in the project management plan document, they answered with a mean of 3.4878 which is in the agreement category. According to (PMP) communication management plan report, the communications Management Plan is a component of the Project Management Plan.

4.3.5 Various communication channels applied by project professionals

	N	%	Strongly Agree		Agree		Neutral		Dis agree		Strongly Disagree		Mean	SD
			n	%	n	%	n	%	n	%	n	%		
Applying different types of channel for different result	41	100	13	31.7	17	41.4	10	24.3	1	2.43	0	0	4.024	0.821
Nonverbal (written) channel better suits for daily report	41	100	15	36.5	15	36.5	6	14.6	3	7.31	2	4.8	3.926	1.126
More number of communication channel more complex communication	41	100	8	19.5	9	21.9	15	36.5	7	17	2	4.8	3.341	1.131
Communication info. flows (upward, horizontal, diagonal are applied)	41	100	1	2.43	10	24.3	7	17	14	34.1	9	21.9	2.512	1.164

Note: 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree

SD: Standard deviation, n: Frequency

Table 4. 6: Types of communication channels applied by project professionals

Communication channel is assumed as one of the factors affecting project management process. For the first question of the table above, applying different communication channels which can result different results 73.1% of the respondents agreed and 2.43% of them disagreed. In response to the second question 73% of participants agreed that nonverbal communication channels better suit for daily project status update reporting. Only 4.8% of the respondents didn't agree.

On the third question, participants were asked if application of more number communication channel can result complexity of the communication, 41.4 % agreed and 21.8% of them disagreed. That puts the neutral response to 36.5%.

On the last question, the response rate confirms that the communication information flows were not being applied properly. From the total respondents, 56% of them disagree on the proper application of communication information flows in the organization.

4.3.5.1 Discussion on various communication channels applied by project professionals

- Sebastian (2019), number of communication channels in a project helps project managers plan, manage and monitor project communications. It can also be an indicator of the complexity of communications management in a project. On the third question which asked if more number of communication channel can cause complexity of communication if, the calculated mean of 3.341 was recorded and could be interpreted as an agreement which is supported by Sebastian (2019) theory mentioned above.
- Keith Davis (1969), Nonverbal communication is an effective means of conveying large amounts of information. Written communication is an effective channel when context, supporting data, and detailed explanations are necessary to inform or persuade others. Many researchers believe for a large number of data like project reports, it is conventional to use nonverbal communications. Which the mean for 3.926 confirms its validity.
- As an answer for the question that asked respondents if the communication flow paths of upward, horizontal, diagonal are applied in the projects, the registered mean was of 2.5122 which shows the disagreement of the respondents. Communication that flows to a higher level in an organization is called upward communication. It provides feedback on how well the organization is functioning. Communication that flows from a higher level in an organization to a lower level is a downward communication.

Lateral / Horizontal Communication: Communication that takes place at same levels of hierarchy in an organization is called lateral communication. Communication that takes place between a manager and employees of other workgroups is called diagonal communication. Application of these four communication flows contribute to the performance.

CHAPTER FIVE

5 CONCLUSION AND RECOMMENDATION

This chapter summarizes major findings of the previous presented results aligning with the objectives of the research work in the first chapter. The conclusion answers the specific objectives of the research work based on the findings of the questionnaire result. This chapter aims to place the findings from chapter four into the context of the aim and objectives, the role of communication for project management effectiveness, which represents the original motivation of the study.

5.1 Summary of major Findings

- To determine the features of project communication practice, participants were asked if there is a practice of communication planning if the company delivers project information in a timely manner, and if the company provides training and awareness sessions new communication technologies. The results from the analysis in chapter four indicate that even though there is a positive practice of communication planning, the company isn't applying appropriate distribution of the project information. Information distribution is a part of effective communication, it's directly related to project and organization success (PMI pulse of profession, 2013). Since more than half of the respondents agreed on the importance of the communication process, using communication process in the projects brings significant advantage in improving the project management effectiveness and it contributes to efficient information flow between the project team. Constant and timely briefing on the status update of the projects is one of the weak features of communication practices found out. As the analysis in chapter four indicates, the choice of communication technologies wasn't exactly suitable for the nature of project activities.
- The results in the relationship between project management and project communication process indicate, using appropriate communication management process positively affects the project management success. And also, managing the communication process help for effective and efficient information flow.

- The findings confirm that formal and informal communication channels can help the project management process to improve. New emerging communication technologies upgrade the project management system and reduce cost, saving time and prevent mistakes. Delivery of project status reports have a significant effect on project management effectiveness
- As the result indicates most of the respondents have a good perception of project communication and they agree on the importance of using the project communication process.
- Respondents believe that non-verbal communication channels are not suitable for daily reporting of the status update of the projects. There wasn't a good practice of the four types of information flows in projects.

5.2 Conclusion

One of the main objectives of this research was to determine the communication practice of the of telecom expansion project of Ethio telecom. On the questions intended to assess the communication practice respondents also agree that there is a good practice of planning communication. Effective communication is a building block of successful organizations, In other words, communication acts as organizational blood. There wasn't use of appropriate communication process for the project activities and the communication technologies doesn't consider the choices of the project professionals. The communication practice assessment it is clear that there should be room for improvement.

Project professionals have good knowledge in the area of communication and its relationship with a project management system. Regarding communication channels, communication technologies, and these independent variables are statistically significant and have a positive influence on project management.

From the results, it can be concluded that communication has highly affected the project communication system in the TEP projects.

When project professionals have a good awareness about project communication, it will smooth out the process and eases teamwork. Most of the respondents have a good perception of project communication and they agree on the importance of using the project communication process.

Choosing appropriate communication channel and communication technologies which matches the project section structure and considers the project activities can be a good factor for the improvement of the project management system. In the response to the communication channel questions, the respondents agreed formal and informal channels are valuable depending on the structure of the message. The project professionals believe in using suitable communication technologies to ease the communication process.

In conclusion, Project communication management process, communication technologies, and channels are the elements of project communication which their relation to project management proved and significantly affect the effectiveness of project management in Ethio telecom expansion projects as seen on both descriptive analyses.

5.3 Recommendation

This research work reached to the conclusion that communication highly affects project management effectiveness, it is advisable that Ethio telecom apply complete project communication management process steps and embed it with all its project activities. Communication technologies can shape the project management system, making an appropriate choice of these communication channels and suitable technologies depending on the nature of the project's activities would be a wise decision for Ethio telecom. The researcher recommends Ethio telecom could focus in improving the quality and appropriate use of communication channels, technologies, and communication process.

5.4 Suggestion for further study

In this research different forms of communication have been compared and contrasted with their benefit to project management effectiveness, the practice of communication management processes implementation, communication technologies and channels have been assessed and the focus given by the study organization to communication management also evaluated. However, in this research, the constraints of project and their impact for project management has not been studied.

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APPENDIXES

Questionnaire

ADDIS ABABA UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE

PROJECT MANAGEMENT DEPARTMENT

My name is Nishan Solomon from Addis Ababa University school of Commerce. I am conducting a research on ' *The Role of communication for project management effectiveness* ' partial fulfillment of the requirements for the award of the degree of Masters of Arts (MA) in project Management. All information collected through this questionnaire will only be used for academic purposes.

Instructions

Kindly answer the following questions either by ticking the appropriate box. You don't need to write your name. If you have any questions and if you need to know the final results of the study please contact me through my cell phone number 093001171 or email me with nishan53@gmail.com. Thank you in advance for your voluntary participation.

Part I: Background information of participants

1.1 Sex: a. Male b. Female

1.2 Age: a. 21-30 b. 31-40 c. 41-50 d. above 50

1.3 Academic qualification:

a. Ph.D b. MA/ MSc c. BA/ BSc d. Diploma e. High School completed

If other, please specify-----

1.4 Position in the organization:

a. Top management b. Middle management c. Project manager d. Project staff

1.5 Service year in the organization.

a. 0-5 years b. 5-10 years c. 10-20 years d. 20 and above

1.6 Service year in project Section

a. 0-5 years b. 5-10 years c. 10 and above

Part 2: Project management communication process

2.1 Do you agree on the importance of using project management communication process?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.2 Do you agree that using communication management process helps boost the project management system?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.3 Is communication management process is applied to all telecom expansion projects?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.4 Do you agree that managing communication process contributes to efficient and effective information flow between the project team and the stakeholders?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.5 Have your organization used plans for project communication activities in TEP projects?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.6 Do you agree that planning communication management effectively engage relevant information in a timely manner?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.7 Does communication planning can be included in the project management plan document?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

2.8 Is there timely and appropriate distribution of project information in your organization?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

2.9 Does your project section hold constant and timely briefing on the status update of projects?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.10 Does your project section collect customer satisfaction surveys, lessons learned and observations of the team to assess stakeholder engagement?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

2.11 Do you think that the current communication management process practice affect the project management system in future projects?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

Part 3 Project management communicational channel

3.1 Do you agree in applying different communication channels, on a project team, which can give different results in the communication success?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.2 Do you agree that formal forms of communication channels (Reports, Proceedings...) within the project team can be a good factor for the effectiveness of the project management?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.3 Do you agree that informal forms of communication channels, like verbal communication, within the project team can be a good factor for the effectiveness of the project management?

a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.4 Do you agree on the statement of Nonverbal (written) communication system better suit for daily reporting on the status update of a project?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.5 To what extent you agree that your project status report to top managements can affect the overall management process?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.6 Do you agree on the thought that digital communication channels (emails, intranet and project management tools) are more appropriate for your company's structure and eases the project management flow?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.7 Do you agree on the idea that the more number of communication channels exist in project teams, the more complex the communication would be?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.8 What is the degree of your agreement with the statement that the number of communication channels you establish for your project team must be dependent on the number of team members you have?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.9 Do you agree that the four types of organizational communication flows (upward, horizontal, downward and diagonal) are applied in your project teams and all stakeholders?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

3.10 To what extent you agree that communication can contribute to the project management process?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

Part 4: Project management communication technology

4.1 Does your organization apply suitable communication technologies (Software's, project logs and web logs...etc) to ease the project management system?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

4.2 Do you believe that communication technologies can be useful in bringing virtual project teams from different regions together for some project update and meetings?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

4.3 Is there an experience of using any project management software's that can be used for complex and big projects?

- a. Yes b. No

4.3 Do you agree that communication technologies provide a competitive advantage for your project by reducing cost, saving time, or preventing mistakes which upgrades the project management performance and project success?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

4.4 Does your communication technology choices depend on the ease of use and being user friendly?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

4.5 Does your company provide trainings and assign experts to help the project team learn quickly new communication technologies deployed for the project work?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. Strongly agree

4.6 Do you believe that new emerging communication technologies can shape the project management system, in your project rollout section, in a good way?

- a. Strongly disagree b. Disagree c. Neutral d. Agree e. strongly agree

Thank you!