ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
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Project Communication and Its Effect in The Performance of Electromechanical Construction Projects: In a Case of Edna-mall HTS PLC (EHTS)

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ADDIS ABABA UNIVERSITY SCHOOL OF GRADUATES STUDIES

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Worku Mekonnen (Ph.D.)

Research Project Advisor

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ABBREVIATTIONS

AASTU	Addis Ababa Science And Technology University
CCTV	Closed Circuit Television
EPC	Engineering, Procurement, and Construction
EHTS	Edna-Mall HTS
EPSA	Ethiopian Pharmaceutical Supply Agency
SPSS	Statistical Package For Social Sciences
STATA	Statistics and Data
PM	Project Manager
RII	Relative Importance Index

ABSTRACT

Any type of construction works requires communication between the different stakeholders. This study focused on project communication and its effect on the performance of electromechanical construction projects: In a case of Edna-mall HTS PLC. The objectives of this study were to identify project communication practice and to determine the effect of project communication on the performance of the four electromechanical projects executed or being executed by the organization. Explanatory research design with a quantitative approach was used by collecting a primary data using a research survey questionnaire. A population size of 36 was used which incorporated different stakeholders on the projects such as contractor, subcontractor, client, and consultant where some are directly involved (project manager engineers, supervisors, technician, etc.) and some indirectly involved (Support team form head office like procurement, human resource, finance, etc) in the four projects. The findings of the study show that the projects under this study have a good communication practice. When it comes to the effect of project communication in the performance of the project. It is observed that the practice of project communication and organizational communication have a statistically positive significant influence. While Methods of communication and communication technology have less significance on the project performance. It is recommended that improvement in the method and technology of communication could lead to an increase in performance. At last, further study should be conducted on this topic since this study is limited to the four Electromechanical construction projects.

Key Words: Project communication, project performance, electromechanical construction project

CHAPTER ONE

1.1 Introduction

In this chapter, a brief background of the study, statement of the problem, objectives of the the study, research hypothesis, and significance of the study, and scope of the study will be presented.

1.2 Background of the study

Communication is the process of acquiring and transferring all relevant information, interpreting this information, and effectively disseminating the information to the appropriate stakeholders or responsible person who might need it. Communication is of vital importance to everyone involved in and influenced by, projects (Zulch, 2014). Communication activities and artifacts to support communication vary widely, ranging from emails and informal conversations to formal meetings and regular project reports. The act of sending and receiving information takes place consciously or unconsciously through words, facial expressions, gestures, and other actions. In the context of successfully managing project relationships with stakeholders, communication includes developing strategies and plans for suitable communications artifacts and activities with the stakeholder community and the application of skills to enhance the effectiveness of the planned and other ad hoc communications (PMBOK 6th Edition, 2017).

There are two parts to successful communication. The first part involves developing an appropriate communication strategy based on both the needs of the project and the project's stakeholders. From that strategy, a communications management plan is developed to ensure that the appropriate messages are communicated to stakeholders in various formats and various means as defined by the communication strategy. These messages constitute the project's communications—the second part of successful communication. Project communications are the products of the planning process, addressed by the communications management plan that defines the collection, creation, dissemination, storage, retrieval, management, tracking, and disposition of these communications artifacts. Finally, the communication strategy and communications management plan will form the foundation to monitor the effectiveness of communication (PMBOK 6th Edition, 2017).

The construction industry is a sector of the economy that transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. It embraces the process by which the said physical infrastructure are planned, designed, procured, constructed or produced, altered, repaired, maintained, and demolished. The constructed infrastructures include:

- Buildings
- Transportation systems and facilities which are airports, harbors, highways, subways, bridges, railroads, transit systems, pipelines and transmission, and power lines.
- Structures for fluid containment, control, and distribution such as water treatment and distribution, sewage collection, and treatment distribution systems, sedimentation lagoons, dams, and irrigation and canal systems. Underground structures, such as tunnels and mines.

The industry comprises of organizations and persons who include companies, firms, and individuals working as consultants, main contractors, and sub-contractors, material and component producers, plant and equipment suppliers, builders and merchants. The industry has a close relationship with clients and financiers. The government is involved in the industry as a purchaser (client), financier, regulator, and operator (Ministry of Urban Development , 2012).

Ineffective communication can therefore also lead to misunderstanding with respect to construction projects. Inadequately defined tasks and critical processes, uncertainty regarding responsibilities, scope, or objectives of construction projects may cause construction projects to fail. Managing a project requires constant selling and reselling of ideas, explaining the scope and methodologies of the project to diverse groups of people (the public, management, functional departments, and other stakeholders), threatening or bargaining with service providers and suppliers, or negotiating to settle disputes or interpersonal conflict between project team members or other stakeholders (Steyn H, 2008).

In some cases, miss communication could cause a delay in a project (Čulo and Skendrović, 2010). A delay means loss of revenue through a lack of production facilities and rent-able space or dependence on present facilities. In some cases, to the contractor, a delay means higher overhead costs because of a longer work period, higher material costs through inflation, and due to labor cost increases.

A construction project is successful when it fills the three pillars of project management time, cost, and quality, those three pillars are interrelated and coordinated through proper communication. Project communication in construction is a necessary evil in construction projects. Because entire professionals in various areas need accurate and precise information in the design, material requirement, quality requirement, standards, work methodologies, etc (Tipili and Ojeba, 2014).

Since project communication has a big stake in the project outcome. This study tries to address project communication and its effect of in the performance of electromechanical construction sector.

1.3 Problem Statement

In the construction industry, project information is extensively and inclusively exchanged throughout the duration of project planning and executing. It was outlined that communication is highly required whenever a project is implemented by and involves humans. As coated by (Taleb, H. et al., 2017), Studies confirmed that project managers spend about 90% of their time communicating with the involved parties to the project (Čulo and Skendrović, 2010). Project's results are directly or indirectly affected by the communication and coordination of the project processes that seek to meet the client's expectations, cost resources, and completion date. Thus, PMI (2013c) indicated that 55% of project managers identifies effective communication as the main pivotal factor for project success. Additionally, is it critical to improve communication in the construction industry to increase innovation and positive decision making (Hoezen, Reymen, and Dewulf 2006), and to avoid misunderstanding that causes conflicts of incorrect messages exchanged that result in project failure (Zulch, 2014).

In electromechanical project communication in construction starts from analyzing the design and scope of work, then identifying and suppling required materials to the project and doing the installation and to final handover, to the client/owner there are several communications between the different stakeholder on the project. Basically, the project manager have two communication areas.

1. Internal stakeholders: Procurement department, Finance department, Human Resource & General Service department, and general manager.
2. External Stakeholder: Client (Owner or main contractors), suppliers, subcontractors, and consultants.

Projects live or die by the flow of information, and many problems occur simply because various stakeholders are not kept informed (James, 2011) and also Communication gap or miss communication between the different stakeholder leads to delay on completion time, reworks, cost overruns and poor performance on a project.

It is evident that effective and efficient project communication has a direct impact on the success of a project. Therefore, the study aims to examine the practice of project communication and its effect on project performance in an electromechanical construction company. Where project communication focuses on project communication perspective , organizational communication, communication methods, and technology. Which are the key aspects concerning the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, and the ultimate disposition

of project information (Martinez, 2019). This communications process identifies all aspects of effective communication, including choice of appropriate technologies, methods, and techniques (PMBOK 6th Edition, 2017).

1.4 Research Questions

This study aims at addressing the following specific research questions

1. What is the practice of communication in the selected electromechanical project?
2. What effect does project communication have on the performance of the selected electromechanical projects?

1.5 Research Objectives

This study set the following general and specific objectives;

1.5.1 General Objective

The general objective of this study is to examine project communication and its effect on the performance of Electromechanical construction projects: In a case of Edna-mall HTS PLC (EHTS).

1.5.2 Specific objectives

I. To identify project communication practices in the selected electromechanical projects.
II. To determine the effect of project communication on the performance of the selected electromechanical projects.

1.6 Significance of the Study

The findings and recommendations of this study will serve as an ingredient and be informative to the internal and external stakeholders on the significance project communication as well as to the regulatory body in the country to some extent. It will also give a general insight into the academic & professional society regarding project management practices in electromechanical construction. Additionally, the study will have the following significances:

- It will provide valuable information for the regulatory body on the experiences and practices of communication management in project management in the construction sector, especially the electromechanical area.
- It will be used by any stakeholder in evaluating their project operations, identifying their gaps, taking lessons, and taking corrective actions about projects they are implementing and future projects in relation to communication management.
- It will serve as reference material for anyone who will undertake a further study on the same or related topics.

1.7 Scope of the Study

This study focus on the Edna-Mall HTS (EHTS) electromechanical construction company, which is engaged in the supply installation test and commissioning of electrical, mechanical, security, and AV(audio & video) systems. The company is actively executing many projects in this area. Out of this projects the study focus is on four projects which are completed and ongoing. Which are listed as follows:-

- Supply, Installation, Testing, and commission of Data Network infrastructure for Five federal Government building office located in Addis Ababa.
- Installation Test and Commissioning of CCTV, Intrusion, and smoke detection systems for 17 warehouses of Ethiopian Pharmaceutical Supply Agency (EPSA) located in a different area of Ethiopia
- Supply, Installation, Testing, and commission of electrical and mechanical systems for Ethiopian Shipping and Logistics Service Enterprise Building Project
- Supply and Installation of Fiber Backbone System on Turnkey Basis for Addis Ababa Science and Technology University (AASTU)

The company is a Grade 1 electromechanical contractor, which makes it one of the few contractors in Ethiopia in this area.

1.8 Limitation of the Study

As explained in the introduction part above communication management have a vital role in project successes and good performance. The Construction industry is a wide area where different types of projects are undergoing which worth from a few million to billions of birr.

Due to the limitation of time and resources this study is limited to one organization. It would have been good if more than one organization is studied in the electromechanical construction area on this topic.

1.9 Organization of the Study

This study is organized in five chapters. The first chapter consists of the background of the study, statement of the problem, research questions, objective of the study, the significance of the study, the scope of the study, the organization of the study, and limitations of the study. The second chapter presents the literature review. Chapter three deals with the research design and methodology of the research. The fourth chapter contains an analysis of the results. The fifth chapter contains the conclusion and recommendations. Finally, references, appendices, and other important documents are attached as in the last part of the research project

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter under the theoretical literature review, Types of communication, communication model, methods of communication, communication technology, and obstacles of communication will be presented. In addition Empirical literature review and conceptual frame will be presented also.

2.2 Theoretical Literature Review

In relation to projects, communication is the transfer of project related information and data such us work instruction, approvals, etc. which creates a mutual understanding between deferent stakeholders (Caltrans 2007). Therefore, information Communication is a leading key to maintaining project stakeholders well informed of the progress, as well as to keep them on track to achieve project objectives (Muszynska, 2015). Construction projects are no exception as it was confirmed by many scholars that project communication plays a vital role in the successes of project progress every day, the communication between the main stakeholders (client, consultant, and contractor) has to be clear and to the point.

The main reason for project communication being widely mentioned in different literature is due to its importance on developing an approach of information sharing between the different stakeholders. On relation to this, the project communication management planning is fundamental and assists the project manager to define the involved parties, determine the information to be shared, and allocate the most convenient methods of communicating to fulfill the project requirements and clients' needs (Taleb, H. et al., 2017).

As PMBOK 7th Edition 2017, It is necessary to ensure that the information needs of the project and its stakeholders are met through the development of different activity steps and implementation of those activities designed to achieve effective information exchange. So concerning this, project communications management consists of two basic parts developing the strategy and carrying out the activity implementation. The strategy development is to ensure effective communication between stakeholders. In addition, the activities implementation is necessary to utilize the communication strategy. The project communications management processes consists three main parts listed us follows:

1. Plan Communications Management:-The process of developing an appropriate approach and plan for project communication activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project.

2. Manage Communications:-The process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information

3. Monitor Communications:-The process of ensuring the information needs of the project and its stakeholders are met.

In respective of the study at hand, project communication focuses on project communication perspective , orgnaizationla communication ,communcaition methods and technology.which are the key asspecs in relation to the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information (Martinez, 2019).

Let us see in detail the following subtopics on the above points, which will vitally for this study.

2.2.1 Types of Project Communication

There are four types of communication aspects in project communication perspective or viewpoints (Martinez, 2019).

- Project Perspective
- Organizational Perspective
- Formality Perspective
- Channel Perspective

PROJECT PERSPECTIVE

From a project perspective, communication can be looked at as either **internal** or **external** (Martinez, 2019).

Internal communication is the communication that takes place between project team members. Generally, this type of communication is "raw." It may involve a lot of back-and-forth discussion as plans or issues are ongoing.

In relation to construction project such type communication are the communication between project internal teams (such us engineers, technicians, store kippers etc) and different departments in the organization (such us procurement department, Finance department, Human Resource & General Service department and also General manager).

External communication is communication between project team members and the other project stakeholders. Examples include communication with internal and external customers, other projects, and

the media. Generally, this type of communication is cleaned up or otherwise prepared before being presented or sent to the receiving party.

In relation to construction project such type of communication lands between contractor, consultant, client, sub-contractor and suppliers teams.

ORGANIZATIONAL PERSPECTIVE

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

Vertical communication is the *upward* and *downward* communication flow that happens between different hierarchical levels of the organization. An example of *upward communication* is when a project team member provides the project manager with a status update of his assigned tasks. An example of *downward communication* is when the project manager shares the project goals with the project team.

Horizontal communication refers to communication between people at the same organizational level. An example of horizontal communication is when project team members discuss project topics with each other.

Diagonal communication takes place between different functional divisions of the organization. Diagonal communication has become more important as matrix and project-based organizations become more common. To be effective in these types of organizations, a project manager has to be familiar with the different functions and managers within the organization and then plan his communications accordingly.

FORMALITY PERSPECTIVE

Another way to look at project communication is on whether it is **formal** or **informal** (Martinez, 2019).Some examples of

Formal communication include reports, presentations, and media releases. This type of communication is usually planned and takes some time and effort to prepare.

Informal communication includes emails and ad-hoc discussions. Informal communication has increased as many projects start to use social networking.

Many people don't put much thought into their informal communications. However, effective project managers realize this type of communication is just as important as formal communication. Whether

formal or informal, you need to make sure you communicate with a purpose and that you put some thought into how you communicate in order to get the results you want.

CHANNEL PERSPECTIVE

Project managers also need to give consideration to the communication channel they will deliver their message over (Martinez, 2019).This perspective deals with **how** your message will be communicated.

- Verbal or Non-Verbal
- Written or Oral
- Face-to-Face or via Telephone

These are just a few examples out of the many communication medium, you can use nowadays.The below are some of the factors that should be taken into account when deciding what channel to use

- Purpose of the communication
- Audience
- Type of information

2.2.2 Communication Model

Communication is a two way process of transferring information or data from one person or entity to the other. When it comes to project it's the exchange project specific information or data between the project stakeholders. In reference to PMBOK 7th Edition ,2017 and Project management skills website, there are two basic types of communication models. Such models can represent the communication process in its most basic linear form (sender and receiver),in a more interactive form that encompasses the additional element of feedback (sender, receiver, and feedback), or in a more complex model that incorporates the human elements of the sender(s) or receiver(s) and attempts to show the complexity of any communication that involves people. As such the following are the basic communication models (PMBOK 6th Edition, 2017)

A. **Sample basic sender/receiver communication model**

   This model describes communication as a process and consists of two parties, defined as the sender and receiver. This model is concerned with ensuring that the message is delivered, rather than understood. The sequence of steps in a basic communication model is:

   Encode: The message is coded into symbols, such as text, sound or some other medium for transmission (sending).

   Transmit message: The message is sent via a communication channel. The transmission of this message may be compromised by various physical factors such as unfamiliar technology or

inadequate infrastructure. Noise and other factors may be present and contribute to loss of information in transmission and/or reception of the message.
Decode: The data received is translated by the receiver back into a form useful to the receive

B. **Sample interactive communication model**

This model also describes communication as a process consisting of two parties, the sender and receiver, but recognizes the need to ensure that the message has been understood. In this model, noise includes any interference or barriers that might compromise the understanding of the message, such as the distraction of the receiver, variations in the perceptions of receivers, or lack of appropriate knowledge or interest. The additional steps in an interactive communication model are:

Acknowledge: Upon receipt of a message, the receiver may signal (acknowledge) receipt of the message, but this does not necessarily mean agreement with or comprehension of the message—merely that it has been received.

Feedback/response: When the received message has been decoded and understood, the receiver encodes thoughts and ideas into a message and then transmits this message to the original sender. If the sender perceives that the feedback matches the original message, the communication has been successful. In communication between people, feedback can be achieved through active listening.

As part of the communication process, the sender is responsible for the transmission of the message, ensuring the information being communicated is clear and complete, and confirming the message is correctly interpreted. The receiver is responsible for ensuring that the information is received in its entirety, interpreted correctly, and acknowledged or responded to appropriately. These components take place in an environment where there will likely be noise and other barriers to effective communication (PMBOK 6th Edition, 2017).

Noise refers to any interference to the message traveling along the Channel or in the decoding and interpretation by the Receiver. For example, if communicating via mobile phone and the line isn't clear, your intended message may not be received correctly. Another example is if you send a message in English to a non-native English speaker, an uncommon word or phrase may get interpreted incorrectly.

The Feedback Loop is how the sender interprets the receivers response to his message.

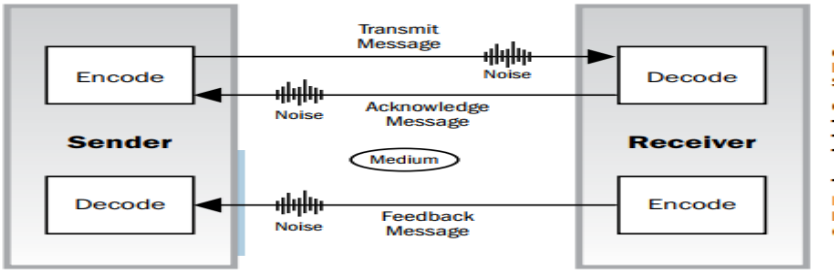


Figure 1: Basic of communication

This communication model and its enhancements can assist in developing communication strategies and plans for person-to-person or even small group to small group communications.

2.2.3 Methods of communication

Communication methods is the way of sharing information among project stakeholders. According to PMBOK 7th Edition, 2017, There are several communication methods that are used. These methods are broadly classified as follows:

Interactive communication: Between two or more parties performing a multidirectional exchange of information in real time. It employs communications artifacts such as meetings, phone calls, instant messaging, some forms of social media, and videoconferencing.

Push communication: Sent or distributed directly to specific recipients who need to receive the information. This ensures that the information is distributed but does not ensure that it actually reached or was understood by the intended audience. Push communications artifacts include letters, memos, reports, emails, faxes, voice mails, blogs, and press releases.

Pull communication: Used for large complex information sets, or for large audiences, and requires the recipients to access content at their own discretion subject to security procedures. These methods include web portals, intranet sites, e-learning, lessons learned databases, or knowledge repositories.

In respective of the above ways different approaches should be applied to meet the needs of the major forms of communication some of are:

Interpersonal communication: Information is exchanged between individuals, typically face-to-face.

Small group communication: Occurs within groups of around three to six people.

Public communication: A single speaker addressing a group of people.

Mass communication: There is a minimal connection between the person or group sending the message and the large, sometimes anonymous groups for whom the information is intended.

Networks and social computing communication: Support emerging communication trends of many-to-many supported by social computing technology and media.

Possible communications media and methods include but are not limited to:

- Notice boards,
- Newsletters/in-house magazines/e-magazines,
- Letters to staff/volunteers,
- Press releases,
- Annual reports,
- Emails and intranets,
- Web portals and other information repositories (for pull communication)
- Phone conversations,
- Presentations,
- Team briefings/group meetings,
- Focus groups,
- Face-to-face formal or informal meetings between various stakeholders,
- Consultation groups or staff forums, and
- Social computing technology and media

2.2.4 Communication Technology

In the preparation for communications management, it is crucial for project teams to also consider using reliable communication technology. Communication technology refers to the tools, systems, and equipment that are used to transfer different information to the stakeholders of the project. In fact, the use of technology to transfer information is very vital to address different concerns within the project. Communication technology can take different forms and they can vary from simple written documents to voice calls.

This item determines what vehicles or methods project team members will use to carry out the necessary communications. With the Internet and email, many creative solutions can be found, such as servers, or a project intranet with postings, updates, and a message board (Figure 2). The obstacles that confront all the stakeholders of the project should be assessed before considering which vehicle to use for each communication item. The methods used to transfer information among project stakeholders can vary significantly. For example, a project team may use techniques from brief conversations all the way

through to extended meetings, or from simple written documents to material (e.g., schedules and databases) that is accessible online as methods of communication (Čulo and Skendrović, 2010).

Communication technology

Type/technique	Description
E-mail	Allows project teams to communicate text, audio, and video files between the team members
Interoffice memos	Provides a formal forum to communicate key dates, policies, and procedures
Instant Messaging (IM)	Allows team members to communicate real-time
Project status meetings	Provides regular status updates and reviews of the project
Telephone/video conferences	Provides a medium to involve team members located in other geographic regions
Intranet, Internet boards	Formally communicates status, progress, highlights, and objectives to all
Project road show	Provides feedback to stakeholders or users
Walk-about	Involves a hands-on face-to-face approach with your team and clients

Figure 2: Communication technology

There are different factors that affect the type of communication technology that you can use for the project management scheme. One of the factors is the urgency or need for the information. Urgent information should be communicated immediately using effective methods. Another factor is the availability of technology. Using communication technology that is compatible and accessible for the stakeholders is very important (PMBOK 6th Edition, 2017).

The project environment is also very important in determining the type of communication technology that should be used by the team. For instance, if the team members are scattered in different zones, the using the internet is a good way to transfer information effectively among team members (PMBOK 6th Edition, 2017). Finally, all information channeled through different communication technology should be kept confidential among all team members.

2.2.5 Obstacles of communication

As project communication plays a vital role in the project successes and better outcome, there are some factors that could become obstacles to smooth communication. As such obstacle may be constraint that limit project success. According to Awati, K., 2008, there are boundaries between different groups within an project team. Many project communication problems have, in fact, occurred at the boundaries. The most common are:

- Between organizations (e.g. customer-supplier),
- Between departments within an organization (e.g. marketing-production),

- Between teams within a department (e.g testers developers) and
- Within geographically distributed or virtual teams

The main communication obstacles across listed above boundaries can be boiled down to three broad ones (Awati K., 2008):

Political: Whenever there are many groups involved, there is the possibility of vested interests and power games getting in the way of dialogue. Such political obstacles usually originate in the upper ranks of an organizational hierarchy, a step or two above levels at which projects are planned and executed. Project managers therefore need to make special efforts to be aware of the key political players in the organization. In traditional corporate environments these might be functional or senior-level managers who are not always obvious project stakeholders. Once the political players have been identified, the project manager should take steps to gain their confidence and buy-in on project goals. This should help eliminate political barriers to project communications. In my experience, it is best to settle political issues at the level where they originate escalating political problems up the hierarchy (i.e. to the manager's manager) generally doesn't help, and may even be counterproductive. Always keep in mind that political issues need to be broached with diplomacy and discretion.

Cultural: I'll first deal with organizational culture, which is essentially the totality of assumptions and values commonly held within an organization. Clearly, this can vary considerably between organizations some may be more open than others, for example. Communication at the interface between two organizations with vastly differing cultures can be difficult. For example, one might expect some differences of opinion at a joint project planning session involving a very forward-looking, can-do supplier and a conservative, risk-averse customer. Another example: in one organization it might be considered perfectly natural for a developer to air a dissenting opinion at a meeting whereas in another it might not. Project managers can ease such difficulties by understanding the divergences in attitudes between the parties involved, and then acting as intermediaries to facilitate communication.

In geographically distributed (or virtual) teams, differences between regional cultures can come into play. These could manifest themselves in a variety of ways such as differences influence of language, or social attitudes and behaviors. Here again, the project leader, and the rest of the team for that matter, need to be aware of the differences and allow for them in project communications.

Linguistic: Here the term linguistic have a the sense of specialized terminology used by different disciplines such as Accounting, IT, Marketing etc. Often when specialists from diverse areas get together to discuss project related matters, there's a tendency for each side to make assumptions (often implicitly) regarding a common understanding of specialized jargon. This often leads to incomplete (at best) or

incorrect (at worst) communication. If done right, project communication can help align different goals with those of the business.

In addition there are also two other obstacles to look for that could at the early stage of project development signal possible project failure (Čulo and Skendrović, 2010):

Micromanaging everything on the project:

Managers design very detailed project plans and start pushing themselves and the team to get every task done in the most incredible detail. This style of project manager actually stifles the entire communication process as a result of getting too involved with the details. The team soon realizes that a dictator has taken over the project, and they typically refrain from saying too much, or, worse yet, cannot wait to leave the project. This style of management leads to mistrust and eventual frustration. The project manager usually only releases information on an "as-needed" basis and, as a result, the team becomes less creative or unwilling to come up with great ideas.

Allowing too much communication:

Sending too much communication can actually hamper the amount of work that gets done. Sharing every piece of data and information with everyone is the norm for this type of manager. Team members are actively encouraged to speak their minds, share their pains, and, eventually, a 40-hour workweek is made even longer, all due to over communication. The downside here is that when breakdowns do occur because of technical challenges, the project manager will have a tough time trying to bring the project back on track, due to communication paralysis.

2.3 Empirical Literature Review

Project communication is one of the cornerstones in the project management main areas (cost, scope, time and quality) as well as for the means to achieve the trade-off of the project management areas (human resources, risk, procurement, integration, claims, finance, health and safety, and environmental management). The communication methods that are the most important to use during the execution of a project are written, oral and electronic communication, of which written and oral communication are regarded as the most effective communication methods. The construction project manager has to communicate effectively regarding cost, time and quality as three of the four cornerstone factors on which the success of a project depends, followed by scope. Time influences cost, and cost is communicated to the client, functionaries and stakeholders to execute the project within the approved budget and in time, according to the request of the client – the scope. The project manager needs to be a leader to

communicate effectively with all parties. The successful execution of a construction project depends heavily on the construction project manager's abilities as communicate or to lead the team and manage a construction project successfully (Zulch, 2014).

In reference Muszynska 2015, 55 percent of Project Managers agree that effective communication with all stakeholders is the most critical success factor in project management. Effective project communications ensure that the right information reaches the right person at the right time and in a cost-effective manner. Communication is the key to keeping team members, managers, and stakeholders informed and on track to pursue the project objectives, as well as to identifying issues, risks, misunderstandings, and all other challenges to project completion. Effective communication is a critical element of team effectiveness. In addition, the practices of project clear communication channels was one of the critical project success factors in the empirical study of practice in projects management by White & Fortune, 2002. It also worth noting that number 1 factor, which was 'clear goals/objectives' is also strongly dependent on clear and precise communication on the same study.

In another study on critical factors that contribute to the success of a project, the author lists 'effective communication' among the four most important factors, next to 'top management support', 'clarity of purpose and goals' and 'stakeholders involvement' (Ofori , 2013). Effective communication techniques and appropriate leadership styles are emphasized by Nguyen 2013 as the success factors for building and managing high performance global virtual teams .

Thomas et al. 1998, also suggests that effective communications are essential to the successful completion of engineering, procurement, and construction (EPC) projects. Research from the Construction Industry Institute confirms this hypothesis. The study has established a positive and quantifiable link between communications effectiveness and project success. The statistical analysis reveals that 41 % of the variation in perceptions of project success can be attributable to variation in communications effectiveness. This direct relationship strongly suggests that improving project communications can enhance project performance.

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. In this study the impact of project characteristics on the quality of internal communication within primary stakeholders (owners, designers/engineers, and contractors) and

secondary stakeholders (subcontractors and suppliers) was studied. The results demonstrated that the project management team's interactions during the construction phase seriously affect the quality of the stakeholders' internal communication. The clarity of the project's scope and the owner's goals, as well as the number of required approvals, also affect the quality of internal communication within the owners, designers, contractors, and subcontractors. The results also revealed that the characteristics associated with stakeholder management, project resources, and project targets were the most effective indicators for the quality of internal communication.

Čulo and Skendrović 2010, Effective communication creates a bridge between diverse stakeholders involved in a project, connecting various cultural and organizational backgrounds, different levels of expertise, and various perspectives and interests in the project execution or outcome. There are no misunderstandings; there are only failures to communicate. Project managers communicate by using different mediums to convey a message. It is truly critical for project managers to get the message across right the first time to avoid failures in the communication process. The important factors involve communicating how the project will be managed, including how information will flow into and out of the project.

Affare & Bsc. Hons 2012, there research has shown that, project communication strongly affect the performance of professionals within the construction industry. Therefore, clearly establishing and managing the structures of communication on project must always be on the agenda of team leaders and management before the commencement of every project.

Taleb, H. et al , 2017, Communication is the heart of implemented projects of the construction industry, where project managers consume 90% of their time communicating with project participants. However, some barriers occur during this significant process of transferring project information. Therefore, this review paper highlights these constraints and guide project managers to take proper action to avoid them. Furthermore, as project communication needs to be carefully managed, this paper introduces communication management due to its high value, all long with the communication management plan as one of the main elements of the overall project management plan that aims to meet the stakeholders' requirements by delivering successful projects eventually.

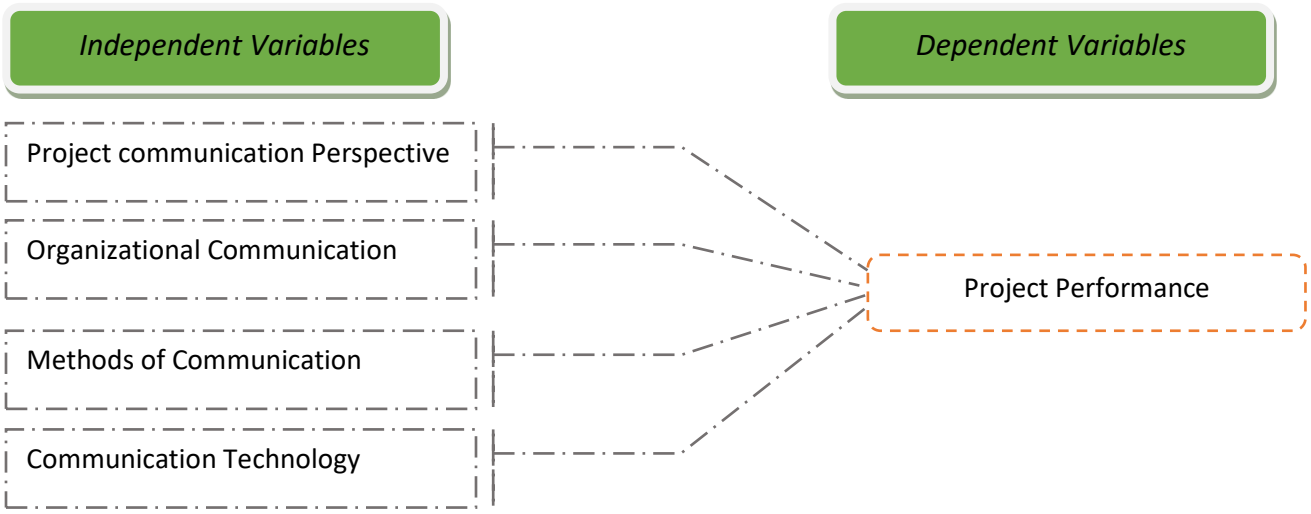
In conclusion, many of these studies shows that project communication in project has impact on project performance using different data analysis. The review of the studies show that little research has been explored the practice of project communication and its effect in project performance in the context of

construction projects and to best of my knowledge, none have been done in electromechanical construction sector. Therefore, this study will attempt to bridge this gap.

2.4 Conceptual Framework (Conceptual Model)

This study aimed to examine the project communication method and channel practiced by project team members in EHTS project, to analyze the relationship between project communication and it effect in project performance in Electro-mechanical projects. The independent variable for this study was project communication perspective s, channel and methods of communication being used; while the dependent variable is project performance as presented in the diagram.

Figure 3: Conceptual frame work of the study (adapted from Kumma , 2019)



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines procedures and activity undertaken. It focuses on the research design, target population, data collection methods and techniques, questionnaire design and ethical consideration used in this study.

3.2 Research Approach and Design

To accomplish the objective a quantitative approach is used by collecting a primary data using research survey questionnaire to help analyses and identify effect of project communication in project performance in electromechanical projects. The research design followed is explanatory. The main aim of explanatory is to identify any causal links between the factors or variables that pertain to the research objective. Such research is also very structured in nature. The main aim of explanatory research is to explain things not just reporting, to determine which of several explanations is best fit and determine the accuracy of the theory. (Mohammed, Denu and Ensermu, 2014).

The explanatory researcher starts with a general idea and uses research as a tool that could lead to the subjects that would be dealt with in the incoming future. It is meant to provide details where a small amount of information exists for a certain product in mind of that researcher. It does not aim to provide final and conclusive answers to the research questions but allows the researcher to explore the research with a varying level of depths (Yousaf, 2017).

Since this study attempts to identify project communication practice and determine the effect of project communication in the performance of electromechanical construction project by utilizing the all the narrated points above .The research design followed is explanatory.

In relation to the above , for this study the data should is analyzed quantitatively and the findings are derived based on the data collected. Hence, the validity and truth of the conclusions is entirely based on the data collected. The data is collected from client, consultant and contractor.

3.3 Population and Sampling

In order to compare and contrast the findings and to help in analyzing effect of project communication in project performance, the sample projects were taken purposefully; one completed one on the verge of completion and the other one still under construction projects.

The names of projects surveyed are

- ✓ A completed project : Supply, Installation, Testing and commission of Data Network infrastructure for Five federal Government building office located in Addis Ababa
- ✓ On the verge of completion :Installation Test and Commissioning of CCTV, Intrusion and smoke detection systems for 17 warehouse of Ethiopian Pharmaceutical Supply Agency (EPSA) located in deferent area of Ethiopia
- ✓ Under construction :Supply, Installation, Testing and commission of electrical and mechanical systems for Ethiopian Shipping and Logistics Service Enterprise Building Project
- ✓ Under construction :Supply and Installation of Fiber Backbone System on Turnkey Basis for Addis Ababa Science and Technology University (AASTU)

The target population for this study was 36 that originated from the above projects participants (client, consultant and contractor). Such us project manager, supervisor, office & site engineers , Installation engineers and technical, procurement & human resource officer , Department managers and subcontractors.

3.4 Data collection

Primary data is collected using research survey questionnaire. Survey instrument was a questionnaire implemented by sending via e-mail or electronics media like Telegram and Whats App. The target populations have access to e-mail or electronics media; using this online tool ensured data integrity. Responses to the survey questions were based on five-point Likert-scale in order to enable project teams respond to each statement in terms of their own degree of agreement or disagreement.

3.5 Data Analysis and Validity

The primary data collected from Likert type questionnaires will analyzed. For the purpose of analyzing the collected data the statistical tools will be used such us SPSS or STATA software to critically analyze the data collected and evaluate the results. Using the statistical tools the reliability test of the questions will be carried out to measure internal consistency. This test of reliability that measures the internal consistency of the questions using the Likert scale.

The primary data refers the first hand information obtained by the researcher himself in his study. The advantages of this method of data collection include; reliability & accuracy and it is a better method for intensive investigation.

3.6 Ethical Considerations

The main ethical issue that can be raised regarding is confidentiality of the information or the data collected through the questionnaires and seeking proper authorization from the respondents in using their responses for analysis and reporting. The researcher have acquired a permission from the organization under study and also send a letter stating the purpose and usage of the data assuring that it will be treated with at most discretion along with the questionnaire to the target population.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The Survey is designed based to use Likert Scale on the objective of the study to examine project communication and its effect in the performance of Electro-mechanical construction projects. The Survey is framed in such a way that the personal view of different people involved in the four projects is collected and analyzed.

4.2 Response rate and demographic data

A total of 36 questionnaires were distributed among the respondents of different backgrounds from contractor, subcontractor, client and consultant which are directly involved (project manager engineers, supervisors, technician, etc.) or indirectly involved (Support team form head office like procurement , human resource , finance etc) in the four projects. All 36 questionnaires have replied.

According to the data collected majority of the respondents were male 28(77.8%) out of which 25 (69.4%) being in the age groups of 20-30yrs. From the data a large majority of the respondents 31 (86.1%) hold Bsc or BA degree and 22 (61.1%) participate in the role of a contractor(Main contractor and sub-contractor) in the project with most of the respondents 19 (52.8%) having a work experience of one to five years. The demography of the respondents were summarized by the following table below (**Table 1**)

Table 1: Demographic characteristics of the respondents in electromechanical construction projects

Variable	Frequency	Percentage
Age		
20-30yrs	25	69.4
31-40yrs	7	19.4
41-50yrs	4	11.1
Gender		
Male	28	77.8
Female	8	22.2
Level of Education		
Diploma	1	2.8
Bsc or BA	31	86.1
Masters degree	4	11.1
Project participation role		
Client	3	8.3
Contractor	22	61.1
Consultant	7	19.4
Sub-contractor	4	11.1
Work Experience		
1-5yrs	19	52.8
6-10yrs	8	22.2
11-15yrs	7	19.4
Above 16yrs	2	5.6

4.3 Results

4.3.1Practice of communication in electromechanical project

In this respect the respondents were asked different question categorized under project practice, organizational communication, methods of communication and communication technology. The answers to the questions were categorized using five points' Likert scales and the result is tabulated below by using statistical formula for each factor group.

The data from the questioner was statically analyzed using SPSS. The contribution of each of the factors to practice of communication on the project was examined and the ranking of the attributes in terms of their influence as perceived by the respondents was done by use of Relative Importance Index (RII). Relative Importance Index (RII) was computed using equation (Hatkar K B1and Hedaoo N A, 2016)

RII = Σ$W/(A x N)

where W = Weightage given to each factor by the respondents

A = Highest weight (i.e., 5 in this case)

N = the total number of respondents

and the results of the analysis are presented in tables below in their perspective category

I. Project communication perspective

Table 2: Summary of response on project team members perception on significance of project communication perspective in electromechanical construction projects

No	Project communication perspective	Frequency					Mean	RII	Rank by RII
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree			
1	Does Communication plan/method in the workplace clarifies project goals and helps coworkers collaborate	0	0	0	17	19	4.5	0.91	2
2	Information is disseminated timely and effectively	0	2	8	14	12	4.0	0.80	7
3	Site meeting conducted between stakeholders	0	3	8	12	13	4.0	0.79	8
4	Required information or data was delivered to stakeholders	0	1	8	15	12	4.1	0.81	4
5	information or data delivered to stakeholders is clear	1	1	6	15	13	4.1	0.81	4
6	Good communication improves teamwork	0	0	1	10	25	4.7	0.93	1
7	Project stakeholder' communication requirements were clearly defined.	1	5	8	12	10	3.7	0.74	13
8	Timing and frequency of delivering information was adequate.	0	7	8	13	8	3.6	0.72	14
9	Proper documentation of names of people responsible for data distribution was maintained.	0	4	6	20	6	3.8	0.76	10
10	Methods of transfer for each piece of information were clear to project staffs.	0	6	7	13	10	3.8	0.75	11
11	Required resources were assigned for communication execution.	0	3	8	18	7	3.8	0.76	9
12	Line of communication has impact on work at hand	0	2	8	12	14	4.1	0.81	4
13	There was a system of updating and changing the communications plan	4	7	4	15	6	3.3	0.67	15
14	Communication has impact Cost or allocated budget	3	4	5	11	13	3.8	0.75	11
15	Communication has impact quality of work	2	3	2	9	20	4.2	0.83	3

As Table 2 shows that participants were assessed about their understanding and viewpoint on the importance of communication practice in projects. From the assessment good communication to improve teamwork have higher significance (RII=0.93), additionally the SPSS data shows 69.4% of the participants strongly agree and 27.8 % of the respondents agree with this. While Communication plan or method in the workplace for clarifying project goals to help coworkers collaborate shows a secondary significant by 52.8% of the participants strongly agree and 47.2% of the respondents agree. This two indicates there is a good internal project communication perspective on those projects.

In addition communication has impact on the quality of work have third highest significant which indicates the how significant project communication is. Because quality in construction means that the project works were completed in compliance with what was defined in the scope of work, done as per the design and the required/stated standards are met which will have big effect on the perfromance. For this to happen the contractor needs to establish good communication with the client, consultant, supplier and sub-contractor because each have high contribution towards the quality of the work being done.

II. Organizational communication

Table 3: Summary of response on project team members perception on significance of organizational communication in electromechanical construction projects

No	Organizational communication	Frequency					Mean	RII	Rank by RII
		Strongly disagree				Strongly agree			
1	Information flows from the project manager down the hierarchy to project teams.			2	15	19	4.5	0.89	1
2	Information, ideas and opinions flow horizontally.		3	9	14	10	3.9	0.77	2
3	Information flows from the lower level staff to the management of project.	2	12	5	10	7	3.2	0.64	5
4	Ideas of senior staff are taken into consideration in taking decision.	2	6	4	13	11	3.7	0.74	3
5	Every member is encouraged to communicate freely with all other member.	3	5	5	13	10	3.6	0.72	4

According to **Table 3**, flow of communication on the projects , from the table information from the project manager down the hierarchy to project teams was ranked high(RII=0.89). The SPSS data shows 52.8% of the respondents strongly agree and 41.7% of the study participants agree on this pint. Which

means information flow from the top to the top to bottom level is high and the project manager shares more information than the other team members. Whereas, flow of information, ideas and opinions horizontally ranked second(RII=0.77) with 38.9% agree and 27.8% strongly agree which a good indication for information sharing with in the project team members. In addition Ideas of senior staff are taken into consideration in taking decision in the project is third place (RII=0.74) which indicates that ideas in the project are well respected and considered from senior team members.

III. Methods of communication

From Table 4 below on assessment of methods of communication it can be observed meeting or oral (RII=0.87),written(RII=0.86), and electronics(RII=0.81), communication have been ranked from first to third respectively. In addition from the SAPP shows having meetings or oral communication with 50% and 44.4% replying important and extremely important respectively. Using written communication responding 44.4% extremely important and 41.7% important while communicating. And by electronic communication 44.4% important and 33.3% extremely important were leveled as being predominant methods of communication among the participants. This indicates that meeting or oral communication have highest significant in relation to the other communication methods in the projects. which is the Interactive communication method.

Table 4: Summary of response on project team members perception on significance of methods of communication in electromechanical construction projects

No	Methods of communication	Frequency					Mean	RII	Rank by RII
		Not important	Least important	Neutral	Important	Extremely important			
1	Meetings /Oral communication method		1	1	18	16	4.4	0.87	1
2	Electronic communication method		2	6	16	12	4.1	0.81	3
3	Written communication method		1	4	15	16	4.3	0.86	2
4	Visual communication method	2	4	5	16	9	3.7	0.74	4
5	Non-verbal communication method	5	7	17	6	1	2.8	0.55	5

IV. Communication technology

Table 5: Summary of response on project team members perception on significance of communication technology in electromechanical construction projects

No	Communication technology	Frequency					Mean	RII	Rank by RII
		Not important	Least important	Neutral	Important	Extremely important			
1	E-mail	1	3	6	10	16	4.0	0.81	5
2	Interoffice memos or letters	0	1	4	23	8	4.1	0.81	4
3	Instant messaging	0	2	8	21	5	3.8	0.76	6
4	Project status meetings	0	1	4	11	20	4.4	0.88	2
5	Telephone/video conference	2	0	3	16	15	4.2	0.83	3
6	Hands-on or face to face approach with the project team and client	1	0	2	9	24	4.5	0.91	1

As the above **Table 5** shows the result by the respondents on preferring the most important communication technology practice in the project. The result shows face to face or hands on approach with the project team and client (RII=0.91) were extremely important followed by project status meeting (RII=0.88) and telephone/video conference(RII=0.83) respectively.

In addition, it can be observed that the communication technology methods used by the respondents 66.7% saying extremely important for face to face or hands on approach with the project team and client , 55.6% responding project status meetings were extremely important, 44.4% stating telephone or video conference were important. This shows that in the projects interactive and real time communication technology is more preferred than the others.

4.3.2 Effect project communication in the performance of the selected electromechanical projects

To review the overall performance of the four projects the a questioner was distributed to the respondents and the result is summarized in table 6 below.

Table 6: Summary of response on project team members on the overall project performance in electromechanical construction projects

No	Project performance	Frequency					Mean	RII	Rank by RII
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree			
1	The length of time this project has taken is within the schedule that was set before commencement.	11	10	5	8	2	2.4	0.49	8
2	Based on the current progresses of project, can this project be projected to be completed within the time set for its completion.	10	13	3	8	2	2.4	0.48	9
3	There has been no problem in getting the resources required and therefore there is no likely reasons for delays in finishing the project.	10	16	4	6	0	2.2	0.43	10
4	The cost that the project has consumed so far is within the budgeted figure based on the level the project has reached.	1	12	8	13	2	3.1	0.62	5
5	There has been no shortage of finances for running the project, as finances are being managed well.	7	11	5	11	2	2.7	0.54	7
6	Monitoring and Evaluation of the project is carried out by competent team.	0	4	8	18	6	3.7	0.74	2
7	The budget that was initially set for this project is going to be enough to complete the whole project based on the level the project is in and the cost that has been consumed so far.	3	11	8	11	3	3.0	0.60	6
8	Monitoring and Evaluation of the project is carried out on a regular basis.	0	2	11	18	5	3.7	0.74	2
9	There is no member of the contractor's staff who interferes with monitoring and Evaluation and is being carried out by independently team.	3	6	11	10	6	3.3	0.66	4
10	According to my view, the efficiency of the project management practices brings about better performance of the project.	0	5	3	14	14	4.0	0.81	1

According to the above table (Table 6) respondents was asked to reflect the performance of the project which they are involved. Accordingly there response shows they have a high values for the efficiency of the project management practice brings about a better performance (RII=0.81) where 38.9% strongly agree and 38.9% agree on the point. In addition Monitoring and Evaluation of the project is carried out by competent team.(RII=0.74) Where 16.7 % strongly agree and 50% agree on this point and the monitoring and on evaluation of the project is carried out on a regular basis(RII=0.74) 13.9 % strongly agree and 50% agree.

This shows most of the respondents believes that a good project management practice where project communication is part of that could bring a better performance. In addition the projects have a good monitoring and evaluation practice. An overall observation from this table could be the projects are not completed on time and there is a problem of acquiring the required resources limit.

Table 7: Summary of means, standard deviations correlations & 2-tailed test of project performance, Project communication practice, organizational communication, methods of communication and communication technology

Variables	**Mean**	**Std. Deviation**	**Correlation Coefficient / Sig.(2-tailed)**				
			Project performance	**Project communication perspective**	**Organizational Communication**	**Methods of communication**	**Communication technology**
Project performance	3.1389	.82472	1	.625** .000	.469** .004	-.301 .075	-.127 .462
Project communication perspective	4.0000	.82808	.625** .000	1	.758** .000	.131 .447	.224 .189
Organizational communication	3.7778	1.07201	.469** .004	.758** .000	1	.271 .110	.391* .018
Methods of communication	3.8611	.68255	-.301 .075	.131 .447	.271 .110	1	.647** .000
Communication technology	4.0833	.64918	-.127 .462	.224 .189	.391* .018	.647** .000	1

**** correlation is significant at the 0.01 level (2 tailed)**

*** correlation is significant at the 0.05 level (2 tailed)**

Table 7 above summarizes the statistical description of project performance with the main variables of project communication, which are project communication perspective , organizational communication, communication methods and communication technology. Where communication practice and organizational communication have significant correlation with the project performance.

The level of statistical significance is often expressed as a *p*-value between 0 and 1. The smaller the p-value, the stronger the evidence that you should reject the null hypothesis. The null hypothesis states that there is no relationship between the two variables being studied (one variable does not affect the other) and also It states that results are due to chance and are not significant in terms of supporting the idea being investigated. Thus, the null hypothesis assumes that whatever you are trying to prove did not happen. A *p*-value less than 0.05 (typically ≤ 0.05) is statistically significant. It indicates strong evidence against the null hypothesis, as there is less than a 5% probability the null is correct (and the results are random). Therefore, we reject the null hypothesis, and accept the alternative hypothesis. A *p*-value higher than 0.05 (> 0.05) is not statistically significant and indicates strong evidence for the null hypothesis.

Considering the above point Table 7 shows a high significance between project performance with project communication perspective and organizational communication (P=.000<0.05 & P=.004<0.05 respectively) and methods of communication and communication have no significance on project performance(P=.075>0.05 & P=.462>0.05 respectively). Both Table 7&8 have been derived from the statistical analysis done using the SPSS on the data collected using Spearman correlation.

4.4 Interpretation and Discussion

The outcome of this study is focused on four electromechanical project completed or undergoing in one company. Where the center of the study was to examine project communication and its effect in the performance of electromechanical construction projects.

Table 7 above shows In relation to project communication perspective , the results show the projects have the projects have a high communication practice(mean= 4 and SD= .82808) and usage of communication technology(mean= 4 and SD= .64918). In addition the projects have a good practice in relation to the organizational communication (mean= 3.77 and SD= 1.07201)and method of communication (mean= 3.86 and SD.68255).

Table 8 Regression analysis between the dependent and independent variables for effect of project communication in the performance of the selected electromechanical projects

*1) **Model Fitting Information***				
Model	**-2 Log Likelihood**	**Chi-Square**	**df**	**Sig.**
Intercept Only	95.103			
Final	59.891	35.213	12	.000
2)Goodness-of-Fit				
	Chi-Square	**df**	**Sig.**	
Pearson	64.744	98	.996	
Deviance	48.540	98	1.000	
3)Pseudo R-Square				
Cox and Snell	.624			
Nagelkerke	.653			
McFadden	.315			

Regression analysis shows a statistical relationship between the dependent and independent variable. Using SPSS regression analysis was conducted between the dependent variable (project performance) and independent variables (project communication perspective , organizational communication, methods of communication and communication technology) the result is shown in table 8 above.

From table 8 above it can be observed that the model fitting information shows that significance value of .000 $\leq$ 0.05 which will enables to reject the null hypothesis, which shows that there is a statistically significant relationship between the dependent, and independent variable. In the Goodness-of-Fit we can observe that significance value of Pearson .996 $\geq$ 0.05 which shows that data is significantly fitting the model. The Pseudo R-Square the Nagelkerke value is .653$\leq$ 0.7 which shows that more independent variables should be considered than the one considered in this analysis. Overall we can concluded that there a good significant relationship between the dependent and independent variable which means that there is a high probability that project communication perspective , organizational communication, methods of communication and communication technology have effect on the project performance.

In addition from table 7 it can be seen that, when it comes to the effect of project communication on the performance of the projects. The Project communication perspective (correlation coefficient =.625 P value= .000≤ 0.05)and organization communication(correlation coefficient =.469 P value= .004 ≤ 0.05) have higher significance on the performance as the correlation coefficient shows they have a positive relation, which means improvement on them can lead to a better performance on the project. While method of communication and communication technology have lease significance on the performance of the projects.

Other research tends to show similar findings when it comes the practice and the effect of project communication on the performance. As such Zulch ,2014 states 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; the means that assist in achieving the cornerstone areas. In addition Kumma , 2019 also concluded that practice of project communication management, communication method, and communication channel had statistically positive significant influence on project performance. Tipili & Ojeba 2014 also stated that poor communication had resulted in project delays, project cost overrun and project abandonment. Project communications/communication management was also shown to strongly affect the performance of professionals within the construction industry.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter includes the summary ,conclusions and recommendations on the study to examine project communication and its effect in the performance of electromechanical construction projects.

5.2 Summary

The objective of this study was to identify project communication practices and to determine the effect of project communication on the performance of projects on four electromechanical construction projects. From the results of a survey administered to the project participants, this study identified the following major points

- The projects have a good communication practice especially towards the communication plan in the workplace , the information distribution, different communication methods and technology.
- Good communication improves teamwork. When communication skills are strong among team members , there are higher chances that good ideas and best practices will be openly shared in the project.
- There is a good downward communication which means there is high flow information from project manager to the team members but the upward flow is poor this will have effect in getting feedback , accurate report etc . A clear and efficient communication is necessary in any direction to accomplish the project target.
- Meetings/oral, written and Electronic communication methods are well practiced than the other methods. And also face to face communication is the preferred communication media.
- The project teams and stakeholders believes that an efficient project management brings a better performance
- Project communication has effect on the performance of project by affecting especially quality work and to some extent time and cost of the project

5.3 Conclusion

It emphasized that unless proper project communication implanted and practiced on projects, the construction sector is likely to perform poorly. This study has also elaborated this statement as there result on effect of project communication on the project performance shows project communication perspective and organizational communication have high significances in the performance project and

they are directly related, as one of those two variable shows improvement there will be a performance increase.

It also be observed that those projects have a good communication practice and also they have problem of acquiring the required resources and they are not or will not be completed on time. Project communication should solve this problem to some extent because it the main bridge between the stakeholders involved which have impact or influence in the required resource and work schedule (time). So having good communication practice doesn't mean we are good to go instead we need to insure that the right and on time information is delivered to the right stakeholder.

Additionally the quality of work is highly affected by project communication. Any kind of effect on the quality work delivered will compromise the performance of the project, which indicates the how significant project communication is. Because quality in construction means that the project works were completed in compliance with what was defined in the scope of work, done as per the design and the required/stated standards are met. For this to happen the contractor needs to establish good communication with the client, consultant, supplier and sub-contractor because each have high contribution towards the quality of the work being done.

5.4 Recommendations

Even if the result shows positive relation between project communication and the project performance. Still there are some areas, which needs improvements as such communication practice with methods of communication, and communication technology have lower correlation and less significance.

Since the communication, methodology insurance the right information is delivered on time to the right stakeholder and also communication technology refers to the tools, systems, and equipment that are used to transfer different information to the stakeholders of the project and fast transfer of information. Therefore, improvement on those areas could lead to a better communication practice, which leads to a better performance.

5.5 Suggestion for further study

However, while the findings of this study are limited to the four Electromechanical construction projects. Research that covers more diverse construction projects is required to confirm the results presented here. So further study should be conducted on this regard.

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APPENDIX: QUESTIONNAIRE

(Adapted from Kuma, 2019)

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

Questioner on Project Communication and Its Effect in The Performance of Electromechanical Construction Projects: In a Case of Ednamall HTS PLC(EHTS).

In Partial Fulfillment of the Requirements for Master's of Arts Degree in Project Management

Dear Participants:

My name is Samson Mekonnen, I am a MA student in Project Management at Addis Ababa University School of Commerce. As part of MA project work, I am studying the project communication and its effect in the performance of electromechanical construction projects. I kindly request you to participate in this research study by completing the attached questionnaire. The information you provide will be used purely for academic purpose and will be kept confidential and please do not write your name. As well I sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable, please take few minutes of your time to complete the questionnaire.

Thank you very much for your time and assistance in my educational endeavors.

I DEMOGRAPHIC PROFILES OF RESPONDENTS

1. What is your age in years?

a) 20-30yrs b)31-40yrs c)41-50yrs d) 50 yrs and more

2. Gender:

a)Male b)Female

3. Level of Education

A)Diploma b) Bachelor's Degree c) Master's Degreed)others: Please specify_____

4. In which project are you involved?

_____

5. What is your role in the project?

Client b) Contractor c) consultant d) Sub-contractor e)others: Please specify _____

6. How many years of experience do you have in project works?

a)1-5 years b) 6-10 years c) 11-15 years d) above 16years

II Project communication perspective

Think of communication practice in your project and choose the number that best describes your agreement on the following.

1=strongly disagree 2=disagree 3 = neutral 4=agree5=strongly agree

S.N.	Items	1	2	3	4	5
1	Does Communication plan/method in the workplace clarifies project goals and helps coworkers collaborate					
2	Information is disseminated timely and effectively					
3	Site meeting conducted between stakeholders					
4	Required information or data was delivered to stakeholders					
5	information or data delivered to stakeholders is clear					
6	Good communication improves teamwork					
7	Project stakeholder' communication requirements were clearly defined.					
8	Timing and frequency of delivering information was adequate.					
9	Proper documentation of names of people responsible for data distribution was maintained.					
10	Methods of transfer for each piece of information were clear to project staffs.					
11	Required resources was assigned for communication execution.					
12	Line of communication has impact on work at hand					
13	There was a system of updating and changing the communications plan					
14	Communication has impact Cost or allocated budget					
15	Communication has impact quality of work					

III Organizational Communication

Think of the communication flow in your project and choose the number that best describes your agreement and disagreement about the following.

1=strongly disagree 2=disagree 3 = neutral 4=agree5=strongly agree

S.N.	Items	1	2	3	4	5
1	Information flows from the project manager down the hierarchy to project teams.					
2	Information, ideas and opinions flow horizontally.					
3	Information flows from the lower level staff to the management of project.					
4	Ideas of senior staff are taken into consideration in taking decision.					
5	Every member is encouraged to communicate freely with all other member.					

IV Methods of Communication

Think of the communication methods that are regarded as mostly important and are used most often in the project that you are working on and choose the number that best describes how you feel about the statements.

1 = not important 2= least important 3= neutral 4= important 5=extremely important

S.N.	Items	1	2	3	4	5
1	Meetings /Oral communication method					
2	Electronic communication method					
3	Written communication method					
4	Visual communication method					
5	Non-verbal communication method					

V **Communication Technology**

Think of the communication Technology that are regarded as mostly important and are used most often in the project that you are working on and choose the number that best describes how you feel about the statements.

1 = not important 2= least important 3= neutral 4= important 5=extremely important

S.N.	Items	1	2	3	4	5
1	E-mail					
2	Interoffice memos or letters					
3	Instant messaging					
4	Project status meetings					
5	Telephone/video conference					
6	Hands-on or face to face approach with the project team and client					

VI Project Performance

Think of your project performance and choose the number that best describes your judgment about the following.

1=strongly disagree 2=disagree 3 = neutral 4=agree 5=strongly agree

S.N.	Items	1	2	3	4	5
1	The length of time this project has taken is within the schedule that was set before commencement.					
2	Based on the current progresses of project, can this project be projected to be completed within the time set for its completion.					
3	There has been no problem in getting the resources required and therefore there is no likely reasons for delays in finishing the project.					
4	The cost that the project has consumed so far is within the budgeted figure based on the level the project has reached.					
5	There has been no shortage of finances for running the project as finances are being managed well.					
6	Monitoring and Evaluation of the project is carried out by competent team.					
7	The budget that was initially set for this project is going to be enough to complete the whole project based on the level the project is in and the cost that has been consumed so far.					
8	Monitoring and Evaluation of the project is carried out on a regular basis.					
9	There is no member of the contractor's staff who interferes with monitoring and Evaluation and is being carried out by independently team.					
10	According to my view, the efficiency of the project management practices brings about better performance of the project.					