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Assessment on Construction Sport Facilities Project Delays:The Case of Addis Ababa City, Addis Ketema Sub-City Administration

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A THESIS SUBMITTED TO PROJECT MANAGMENT SCHOOL OF GRADUATE STUDIE ST. MARY'S UNIVERSITY IN PARTIAL FULLFILMENT OF THE REQUIREMENTS OF MASTER PROJECT MANAGEMENT

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I declare that this MA project paper is my own original work and that it has not been presented and will not be presented to other university for a similar or any other degree award.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University School of Graduate Studies forexamination with my approval as a university advisor.

Zerihun Kinde (PhD)

__Jan 02,2025

Advisor Signature and Date

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Abbreviation

RII - Relative Importance Index

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Abstract

The problem of delays in the construction industry is a global phenomenon and the construction industry in Ethiopia is no exception. The main purpose of this study is to identify the delay factors and their impact (effect) on project delay. Earlier studies either considered the causes or the effects of project delays, separately. This study takes an integrated approach and attempts to analyze the impact of specific causes on specific effects. A questionnaire survey was conduct to solicit the causes and effects of delay from clients, consultants, community and contractors. About 112 respondents participate in the survey.

The questionnaire design was processed by developing a sample containing 78 attributes & nine group factors from intensive review literature. Moreover, the identified factors were validated by experts on the scope of the study. In addition, a pilot test was also conducted with ten experts from the client, contractor, and consultant of the sport facilities construction project.

To overcome the challenges of the extracted critical delay causing factors in sport facilities construction project, the suggestions are recommended for the key stakeholders of project.

Key Words: Addis Ababa City administration Addis Ketema Sub City Sport Facility
Addis Ababa City administration Sport commission
Delay of sport facilities construction project

CHAPTER ONE
BACKGROUND OF THE STUDY

1.1 Introduction

Delays in sport facility construction projects are considered one of the most common problems causing a multitude of negative effects on the project and its participating parties. Along with delay, the frequently faced consequences are project failure, reduction of profit margin, and loss of belief of citizen in government funded projects, etc. When delays do occur, they are either accelerated or have their duration extended beyond the scheduled completion date. These are not without some cost consequences. Delays also give rise to disruption of work and loss of productivity, late completion of project increased time related costs; third party claims, abandonment and termination of contract (Abdul-Rahman 2006)

The main causes of delay and cost overrun in building construction is improper project management and claim administration. Due to unforeseen incidences and contract management problems, construction projects experience delays which directly impacts all parties involved. Communities they give their trust on the Sport Facilitiesare the one who are suffering most and are no control on the matter. Trauner *et al.* (2009) defines that construction delays make something happen later than expected, to cause something to be performed later than planned, or to not act timely.

Construction delays result in claim by contractors. Claims related to construction projects are inevitable and there is no way of eliminating all project risks, as some are unforeseeable. However, if scope of the project is well thought and transferred in the design, duties of all parties clearly defined and played, most uncertainties will be eliminated. This thesis was examining causes of delay sport facility in an integrated manner and determines show critical delay causes are most influential in project performance. This was providing owner, consultants and construction companies involved inconstruction sport facility projects which such strategies – on how to avoid delays - can be developed in the future. This thesis was focus on Sport Facilitiesconstruction projects in Addis Ketema sub city was assess for delay causes and

examines the corresponding effects identify and provide recommendation based on the findings to improve project performance within the Sport Facilities development projects

1.2 Statement of problems

Failing to complete the project on time is of course not the single most serious problem in Sport Facilities sector in Ethiopia, though; it's a common feature in the multimillion costs. Sport Facilitiesdevelopment is one of the industries of the country in recent years. There are many SportsFacilities project that are actively involved in the communities. Although the number of developers is increasing recently, the gap between demand of communities and facilities remains the same with all its negative images and complaints

In Ethiopian construction practice, it is very rare that construction projects arecompleted on the time specified or agreed upon. Ismeal (1996) reported thatdelays are endemic to construction projects in Ethiopian. His study indicates, most of the projects experience delay from 100% to 460% of the original contract time. The study will show how important it is to investigate and study ondelay causing factors in construction projects of Ethiopia and find solutions to reduce the effect.

Construction projects have been consistently increasing in Ethiopia. Nevertheless, few studies were conducted as country and project level and as perception of the researcher in the area of study, so this shows that as per the researcher's awareness there is insufficient research which was conducted in the study area. The statistical abstract document of GZFED (2009 E.C) showed that only 15% of the project were completed based on agreed time schedule. So, delay of construction project is critical and serious problem in Ethiopia.

Even though a number of studies have been carried out previously on the subject under current study focuses, the previous study does not fully address all possible delay attributed to project delay. Because of the unique features of projects, the causes of project delay may vary for specific project from country to country, region to region, office to office and even project toproject, therefore, further study can be also undertaken to investigate major causes and the magnitude of their effect on totally on project and specifically sport facility.

Therefore, this study tried to assess the factor of delay in construction Sport Facility projects in Addis Ketema Sub City. Because the researcher needs to know the reason of the delay and to improve the productivity of the organization, to eliminate the wastage correlated with construction delay

Shewaferahu (2016), his study on construction of educational projects found that none of the case study projects completed within the contract period and consultant and contractor caused delay factors are the two most responsible factors for most delays. The total delay ranges from 200% to 329% of the initial contract times excluding the time required to complete the projects. This study was conducted on educational building of Addis Ababa University which was government run.

The method of contractor and consultant selection in government project is conducted by the rules and regulation. Whereas, in case of the private project's contractor and consultant selection procedures are different and the client conduct selected companies on closed bid. Apart from this, in education projects certain construction material like cement and reinforcement bar is provided by the government at certain fixed unit rate which makes it completely different from the private run projects. Hence, it is important to research the delay causing factors and effects in the private run construction because the modalities of contractor selection and procurement are quite different. Therefore, this research was duly investigating delay causing factors in Sport Facilitiesprojects in Addis Ketema Sub city to forward visible and scientific solution to improve project performance

1.3. Research Gap

Construction projects have been consistently increasing in Ethiopia. Nevertheless, few studies were conducted as country and project level and as perception of the researcher in the area of study, so this shows that as per the researcher's awareness there is insufficient research which was conducted in the study area. So, delay of construction project is critical and serious problem in Ethiopia.

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specific project from country to country, region to region, office to office and even project toproject, therefore, further study can be also undertaken to investigate major causes and the magnitude of their effect on totally on project and specifically sport facility.

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1.4 Research questions

On the basis of the above stated facts, the following would be the research questions.

1. What are the factors that causeAddis Ketema sub city sport facilities projects to be delayed?
2. What are the primary influencing derived factors that cause theAddis Ketema sub city sport facilities projects to be delayed?
3. What Corrective Measures can be made in order to minimize significantlythe causes of delay intheAddis Ketema sub city sport facilities projects

1.5 Research objectives

1.5.1 General objectives

Broadly, this study examines the causes of delay in sport Facility project in Addis Ababa Ethiopia.

1.5.2 Specific Objectives

The study wasbeing attempted to address the following research objectives:

1. To identify which factors,influence that cause project delay of Addis Ketema sub city sport facilities projects.
2. To assess the relative significant of the derived factors that causes delays.
3. To provide management suggestions for each derived factor that cause project delay

1.6 Significance of the study

There were several valuable benefits expected by implementing this study. The significance of establishing the issues related to the Sport Facilities construction project delays were to provide a greater insight and understanding on the causes of delays particularly among the main project players: contractors, client and consultants. This can be achieved by applying theoretical concepts discussed in many literatures into practice in real projects. It is hoped that these findings will guide efforts to improve the performance of the construction industry and was useful to the construction players. Therefore, these findings might encourage the practitioner to focus on delay problem that might haveexisted in their present or future projects. Other than that, this study will expect to provide a better ways and methods in delivering construction projects by minimize the major causes of delays.

1.7Scope of the research

The research was focused on the following matter:

1. This research was comprised in A.A city administration Addis Ketema Sub city Ras Hailu, Asfaw, Woreda 13 and 14 Woreda Sport Facility project.
2. The group of respondents for this research involves client, consultant and contractor companies that were involved in Sport Facilities development and building construction projects.

1.8Limitation of theresearch

A limitation of a research study was identifying potential gaps or problems in the research. In conducting the research, there were limitations that challenge the collection of data from respondents. The busy schedule of the respondents in connection with different assignment made the collection of data hard. It extends the time of data collection through questionnaires and interview. Some respondents were hesitant to tell the truth, about the cause of delay in building

construction project. The research will be also limited to construction projects only takeover in Addis ketema sub city four project site

1.9 Organization the study

This research contains five chapters as described Chapter One is an introductory part containing discussions on background, research problems, research gap aim and objective of the research, significance of the research, scope and limitation of the research and organization or layout of the research ,Chapter Two presents literature review with general descriptions by different researchers on construction, contract, planning, and control and delay, Chapter Three discusses about research design and methodology, Chapter Four present results and discussion of the research findings and Chapter Five contain conclusions and recommendations based on what is discussed in the previous chapters

CHAPTER TWO

LITERATURE REVIEW

2 INTRODUCTIONS

This part of the thesis was on focuses theoretically approaches and empirical to examine the meaning, cause of delay in construction projects. Furthermore, related studies in Ethiopia and other developing countries and their experience related construction delay causes were viewed.

2.1 Theoretical Framework

2.1.1 What is Project?

According to (PMBOK 4th edition), the definition of "project is a temporary endeavor undertaken to create a unique product, service, or result." The temporary nature of projects indicates that a project has a definite beginning and end.

The end is reached when the project 's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. Projects can also have social, economic, and environmental impacts that far outlive the projects themselves (PMBOK 5th edition). (IPMA) defines a project as a time and cost constrained operation to realize a set of defined deliverables up to quality standards and requirements.

According to Robert k.Wysocki, (2014) definition Project is a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specification. A Business focused definition of a Project by the same author Robert k.Wysocki, (2014) is a sequence of finite dependent activities whose successful completion results in the delivery of the expected business value that validated doing the project. Levy S. M. (2006). Also defines a project as a temporary endeavor undertaken to achieve a particular aim. A project is actually the response to a need, the solution to a problem.

Further, it's a solution that promises a benefit typically a financial benefit. The fundamental purpose for most projects is to either make money or save money. By definition, a project is temporary in nature; that means that it has a specific start and finish. A project consists of a well-defined collection of small jobs tasks and ordinarily culminates in the creation of an end product or products deliverables. There will be a preferred sequence of execution for the project ' s tasks (the schedule). A project is a unique, one-time undertaking; it will never again be done exactly the same way, by the same people, and within the same environment Levy S. M. (2006).

2.1.2. Definition of delay

Delays of a construction project can be defined as the late in progress or actual completion of works compared to the baseline construction schedule or contract schedule. Vast majority of project delays occur during the construction phase, where many unforeseen factors are always involved. Previous researchers defined construction delays by their own sentence, however it brings similar meaning. In the context of building contracts, the term 'delay' is used to indicate that the works are not progressing as quickly as intended and, specifically, that as a result completion may not be achieved by the completion date specified in the contract documents. (Chappel *et al* 2005) Delay could be defined as the time overrun either beyond completion date specified in a contract or beyond the date that the parties agree upon for delivery of a project. (Divya & Ramya2015)

According to A. Dinakar, 2014, Delay is the slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project. Aibinu and Jagboro (2002) described delay as a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the original or the stipulated or agreed contract period. In the study of Assaf *et al.* (1995) construction delay was defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. Abd Majid (1997) defined delays as the time overrun beyond the contract date or beyond the date that the critical activities have been delayed. Delay was also defined as an act or event which extends required time to perform or complete

work of the contract manifests itself as additional days of work (Zack, 2003). Majid (2006) interprets delay as a loss of time. 'Time' refers to the duration for completing the construction project. When the project period is delayed, it means the project cannot be completed within original
schedule.

Different researchers in different countries investigate factors influencing project delay from different perspectives. In this sub section, the mythology used and findings identified on studies conducted on project delay influencing factors are reviewed.

2.1.3. Causesdelay of projects

2.1.3.1. Project Initiation and delay of projects

Chan and Kumaraswamy (1997) have determined and evaluated the factors causing delays for construction projects in Hong Kong. They have identified 83 hypothesized delay factors and grouped them into eight categories. The main reasons for delay were analyzed and ranked according to different groups classified on the basis of (a) role of the parties in the local construction industry (i.e. whether clients, consultants and contractors) and (b) the type of projects.

They collected data from 167 local construction organizations and analyzed it by using the relative impact index method in order to rank the determinant delay factors for different types of construction projects. The results indicate the principal and common causes of delays are: Improper define the project scope and Lack recruit appropriate staff, unforeseen ground conditions, low speed of decision making involving all the project team, Poor job description for a project manager, Lack of comprehensiveness of feasibility study and Analysis client-initiated variations and necessary variations of works.

2.1.3.2. Project planning and delay of projects

Project planning comes into play at the shakedown phase in project development. Poor project planning can easily bring down response strategies where they are at the threshold or the completion stage. Achievements should be measured against project goals. The progress of the response strategies should be monitored actively through set milestones and targets. Two criteria may be used; project management-based criteria should be used to measure against completion

dates, costs and quality. Then operational criteria should be used to measure against the production system. Monitoring and feedback include the exchange of information between the project team members and analysis of user feedback. There should be an early proof of success to manage project. Reporting should be emphasized with custom report development, report generator uses and user training in reporting applications (Sumner, 1999).

Project implementation is generally taking various stages. The first stage is usually project initiation where the project is identified and a feasibility study carried out to establish the viability and build a business case.

The second stage is the project planning stage and in here the project design is carried out, resources and finances allocated.

Project execution which is the third phase involves implementing the designs within the allocated resources in the set duration and to the set specification and quality. Project closure involves handing over the final product to the customer, handing over the as is built drawings, giving the operation and maintenance plan, terminating the contracts and informing all stakeholders that the project is closed.

If project completion date has been frozen without arranging inputs and proper planning, this can lead to hasty and unsystematic work towards the end of the project (JHA et al., 2006). Failure to clearly comprehend the project, all its aspects can lead to works being executed erroneously and the attendant correctional steps to remedy the errors will cause project delay. The consequences are actually 14 graves, ranging from litigation to claims and disputes, to outright abandonment of the project (Olatunji, 2010). When a project delay can no longer be absorbed by the client, the project is abandoned. It helps then to predict and identify problems in the early stages of construction (Hussin and Omran, 2011).

Planning stage is therefore very key to success of construction project. Delivery of materials on site will quite affect the project progress. If that supply does not ensure that quality materials are delivered on site then it will cause delay of project completion (Wambugu, 2013). This is because material not meeting the quality of design will most likely be rejected and the process of getting the right material will be taking more project implementation time. When materials are lacking on site it means that the employees will not have work to do. This is quite demoralizing

and will affect the project delivery negatively. This is largely a product of poor planning in the construction project. Indeed, material availability is the most frequent problem that leads to delay in majority of the countries as identified by Olatunji (2010).

Second to this is inadequate planning methods and ineffective coordination of resources. Failure at the conceptual planning and design stages, Inadequate resource and finance allocation, inadequate estimation of project completion schedule, lack of complete and proper design and specification of projects at right time may lead to significant problems in the successive stages of the project.

Koushki et al. (2005) in a study carried in Kuwaiti illustrates that owner who carried out pre-planning phase prior to the commencement of the planning phase experienced shorter time delays that their counterparts who did not. The amount of time delay also increased with an increase in pre-planning time period.

Sambasivan and Soon (2007) identify contractors improper planning as one of the causes of project delay. If a contractor fails to come up a workable work program at the initial stages, this will affect project timely completion.

A similar observation is made by Jagboro and Aibinu, (2002) in Nigeria. Equally emphasizing on the need for proper planning of construction project is (Pakir et al., 2012) in a study carried out in Sudan. McMinimee et al. (2009) stated that it was clear that investments in advance planning and project development paid off.

Mojahed (2005) states that proper planning in all phases and components of construction project is necessary to avoid re work which in turn leads to delay in project completion. Wideman (2001) concludes that the success of the execution phase of the project is highly depended upon the quality of planning in the prior planning phase.

Wambugu (2013) observes that planning affected the timely completion of rural electrification projects in Kenya and that the 15 qualities and importance of project planning had been considered a major cornerstone of every successful project. Tabishl and Jha (2011) in a study carried out in Singapore conclude that comprehensive site investigation helps in sound planning which in turn helps in clarifying the scope and developing a thorough understanding. This also helps minimize change of scope during construction.

2.1.3.3. Project implementation and Delay of projects

Projects are influenced by a multiple of factors which can be external or internal to the organization responsible for its management and execution. These include poor project management, inadequate opportunities for potential beneficiaries to participate in project identification and design, poor linkages between project activities and project purpose, insufficient attention to external environment during project design, among others. It has also been recognized that projects were likely to succeed when account was taken of socio-economic context in which they operated (Batten, 1957).

According to Theodore (2009) the causes of delay are categorized into 7 groups. The first group has discus the causes of delay occurred by client. Those are poor communication and coordination, delay in progress payments by owner, change orders by owner during construction, slowness in decision making process, delay to furnish and deliver the site, late in revising and approving design documents, delay in approving shop drawing and sample materials, Suspension of work, and conflicts between joint-ownership of the project.

Second group categories of causes is delay occurred by contractor. Those are: difficulties in financing project by contractor, conflicts in subcontractors schedule in execution of project, rework due to errors during construction, conflicts between contractor and other parties (consultant and owner), poor communication and coordination, ineffective planning and scheduling of project, improper construction methods implement, delays in subcontractors work, inadequate contractor's work, frequent change of subcontractors, poor qualification of the contractor's technical staff, and delays in site mobilization

The third group causes of delay is delays occurred by consultant. Those are: delay in approving major changes in the scope of work, poor communication and coordination, inadequate experience of consultant, mistakes and discrepancies in design documents, delays in producing design documents, unclear and inadequate details in drawings, insufficient data collection and survey before design, and un-use of advanced engineering design software.

Fourth group causes of delay is delay occurred by materials. Those are: shortage of construction materials in market, changes in material types and specifications during construction, delay in

material delivery, delay in manufacturing special building materials, and late procurement of materials.

The fifth group identified as causes of delay is delays occurred by equipment. Those are: equipment breakdowns, shortage of equipment, low level of equipment-operator's skill, low productivity and efficiency of equipment, and lack of high-technology mechanical equipment.

The six-group identified as causes of delay is delays occurred by labor. Those are: Shortage of labors, working permit of labors, low productivity level of labors, and personal conflicts among labors.

The final group identified as causes of delay is delays occurred by external factors. Those are: effects of subsurface conditions (e.g. soil, high water table, etc.), delay in obtaining permits from municipality, hot weather effects on construction activities, traffic control and restriction at job site, accident during construction, changes in government regulations and laws, delay in providing services from utilities (such as water, electricity), and delay in performing final inspection and certification by a third party A study conducted in Korean, the causes of delay in mega projects are classified into five categories: insufficient planning, difficulties in acquiring right of way, inefficiency of project management and monitoring system, conflicts between organizations, and strong public resistance.

All of the direct or indirect participants tend to maintain different interests in the same project, making it extremely difficult to properly align them for project success. The sheer size and complexity of the project can easily lead to inefficiency and low productivity. Even though these causes, normally found in Korean mega projects, can be repetitive in any construction project, they tend to bring poorer results than those of smaller projects in both size and complexity (Han et al., 2009).

Likewise, Al-Momani (2000) conducted a quantitative analysis of construction delays by examining the records of 130 public building projects constructed in Jordan during the period of 1990-1997. The researcher presented regression models of the relationship between actual and planned project duration for different types of building facilities. The analysis also included the reported frequencies of time extensions for the different causes of delays. The researcher concluded that the main causes of delay in construction projects relate to designers, user changes,

weather, site conditions, late deliveries, economic conditions, and increase in quantities. Moreover, Assaf et al. (1995) for example, provide a concise summary of the methodologies used by transportation agencies to establish the contract duration used for highway construction projects, and also provide a schedule guide for field engineers during construction. Similarly, Mohammed & Isah (2012) conducted a review on project delays in developing countries during planning and construction stages. In their study they found that the delay and cost overruns of construction projects are dependent on the very early stages of the project

2.1.3.4. Monitoring, Evaluation, and Controlling system and delay of projects

The competence of the project manager during project implementation will also affect the timely completion of a project. Positive attitude of project manager and project participants has emerged to be the most important success attribute for quality compliances at project sites (JHA & IYER, 2006). The authors additionally observed that some of the attributes are with high importance are all related to the project manager.

For example, effective monitoring and feedback by the project manager, project managers technical capability, leadership quality of the project manager, effective monitoring and feedback by the project team members and authority to take day to day decisions by the project managers' team at site.

Furthermore, the success of project hinges on the efficacy of the project team in managing the process (Olatunji, 2010). This indicates adequate capacity of the project manager as well as the project team to ensure proper inspection and investigation of work done on site. A weak link in the process such as a lack of project management experience, could adversely affect timely execution/ timely completion of the projects (Dainty et al., 2003) as cited by Olatunji (2010). When there is no proper inspection/supervision, quality control is greatly compromised.

Chism and Armstrong (2010) agree by stating that inspection and workmanship standards are quite important to achieve quality. Fapohunda and Stephenson, (2010) state that to achieve the pre-determined project objectives, the construction site manager should have a significant influence over cost, time, scope and quality which make it paramount for the manager to have ability of exercising authoritative and absolute control.

Wambugu (2013) concluded in a study that inadequate supervision and inspection of work in construction project led to rework in instances of poor workmanship and this led to delay in project timely completion. This also leads to project cost overrun and may result to project abandonment.

Inadequate site inspection is one of the factors identified as causing project delays 16 in timely completions according to (Jagboro&Aibinu, 2002). Mojahed (2005) states that occasion of rework are mainly attributed to incompetent craftsmen because of insufficient working skills and knowledge of drawings or to incompetent supervisors because of lack of experience leading to deficient supervision.

The study clearly emphasized the impact of management and supervision on the overall success of the construction project. If there is no proper supervision, workers will tend to take break whenever they desire and work will tend to delay. Timely inspection is of great importance to ensure effective operation, material quality, and timely progress of the project schedule. Subsequent activities on a construction schedule may not be carried out before the required inspection is carried out on the preceding activities. Chai and Yusof (2013) identify poor site management and supervision as ranking high in the order of causes of construction project delay.

2.1.3.5. Communication in project teams and delay of projects

Communication plays an important role in leading, integrating people, and taking decisions to make a project a success. There must be shared project vision, where the project manager identifies the interests of all relevant stakeholders and ensures that there is buy in to the project (Yang et al., 2009).

According to (Zwikael 2009) once the project objectives are set and the scope clarified, there must be constant update as the project progresses. Progress on activities assigned to individuals or groups needs to be monitored with a view to achieving overall goals. These updates must be communicated to the relevant parties.

Newton (2005) believes that a detailed communication plan is necessary for the effective dissemination of information. To this end, frequent project meetings are necessary. Apart from consulting with the community, local direct involvement is a key element for project success.

Given the relatively high unemployment rates in South Africa, consideration must be given to local residents. This could include sourcing materials from local suppliers and employing local residents. It is advisable to use an influential community member as a liaison between the project manager and the community (Teo, 2010). Finally, proper handover procedures need to be developed. This is an important consideration, given that the construction industry is being increasingly viewed as a service industry (Karna et al., 2009)

Project communication management ensures timely and appropriate generation, collection, dissemination, storage, and disposition of project information. Open and clear communications are required among planners, implementers, and all levels of the organization for project success. It includes having a communication plan, information distribution path, progress reporting, and information sharing system for management and customers (Kwak &Ibbs, 2002). Project communication management should also include methods and techniques to build trust and relationships among team members, as well as propagate desirable personal behaviors and clear communication rules.

Findings indicate that, in case of many projects, activities in the field of communication management are disordered, supported mainly by project managers' intuition or neglected (Paasivaara &Lassenius, 2003; Adera, 2013). Research on project communication management in industrial enterprises in Slovakia revealed that in 66% of them no written document (methodology, process steps) to manage project communication has been prepared (Samakova et al., 2013)

2.1.3.6. Project closure and delay of projects

Project delivery system will also affect project timely completion or not. Project delivery system refers to the various processes required in materializing the goals and objective of a client into a project through integrated project team efforts (Chen et al., 2011) the same authors also state that the project delivery system acts as a management function of the owner in project execution. It is quite important that the right choice on the project delivery system is made. The decision made in the selection of the project delivery system for a project impacts all phases of execution of the project and greatly impacts the efficiency of project execution (Oyetunji & Anderson, 2006).

The choice of the project delivery system largely depends on the funding available. A funding agency will most likely determine the project delivery system that will be able to guarantee the cost control and in the end the project control. This choice is based on past practices, traditions and experiences, advice of consultants, funding sources and constraints.

Other project stakeholders' views will also be factored. When the project is closed, ensure that any outstanding tasks in the project plan that are to continue after the project is closed are included in the formal project close tasks which are addressed in the Close phase. These outstanding tasks may need to be included in post-project implementation planning and may have an impact on the business outcomes and benefits realization from the project

2.2 Empirical Literature

2.2.1 Causes of delays.

Traditional contractual approach is still dominant in Ethiopia construction sector and this may likely continue to be a trend. Ethiopian construction sector comprises the clients or project owners, contractors, subcontractors, suppliers, and others key professional actors responsible for design and supervision of projects. These professionals include architects, engineers and quantity surveyors. Due to this mixed variety of parties involves in projects, they often encounter difficult situations and some degree of pressures.

Delays occur in every construction project and the significant of these delays varies considerably from project to project. Many researchers have studied the causes of project delays in public construction industry.

The findings of such studies have been reviewed for this research. According to Abdella and Hussien (2002) causes of delay can be categorized in to the following eight major groups first Client related factors including finance and payment of completed work, owner interference, slow decision making and unrealistic contract duration imposed by owners. SecondContractor related factors including site management, improper planning inadequate contractor experience, and mistake during construction, improper method and delays caused by subcontractors. Delays caused by sub-contractors are included among the contractor's factors because the latter is fully responsible for the delays caused by his sub-contractors. Third Consultant related factors include

contract management, preparation and approval of drawings, quality assurance/control and long waiting time for approval of tests and inspection. The Forth material factor including quality and shortage. Fifth Labor and equipment factor include labour supply labour productivity, and equipment availability and failure. Sixth Contract factors include change orders and mistake s and discrepancies in contract document seventh Contractual relationships factors include major disputes and negotiations during construction, inappropriate organizational structure linking all parties involved in the project, and lack of communication EighthExternal factors include weather conditions, changes in regulations, problems with neighbors and site conditions.

While traditional delay analysis approaches tend to focus on the design and construction phase, delays and inefficiencies can often result due to circumstances which occur long before the first drawing is produced. Although these early factors are more difficult to identify as delay 'events', typical factors which can result in programmers containing inherent delays before the first delay event culminates on-site include: poor project definition, use of an inappropriate form of contract, inappropriate contract packaging strategy, ambiguities present in specifications, contract drawings, bills, employer's requirements ,the appointment of inexperienced managers and supervisors ,insufficient budget allowances or contingencies (e.g. cost and time) for unforeseen events and design development ,poor plant selection ,failure to communicate plans/intentions to local authorities ,ineffective site logistics planning; and/or ,Incorrect assumptions regarding neighboring sites, land-owners or other interested stakeholders. (Keane *et al*2008)

In a study of delay analysis in construction project (Dinakar 2014), classified delay causing factors into seven major groups, these are owner contributed factors, contractor contributed factors, consultant contributed factors, material contributed factors, equipment contributed factors, and labor contributed factors and external factors. The contribution of Contractor in delay of the construction project is more than the client and consultant side. And the external factors contribute the least in delay of construction project. Improper communication between the involved parties is found as the major problem while external reasons like lack of qualified labor, equipment and material when needed comes next in row. Samarah & Abu Bekr (2016) studied causes and effects of delay in public construction in Jordan. They identified 55 delay

causing factors and grouped them in to four categories: client's group, contractors' group, consultants' group and external circumstances. They conclude the research by identifying the top 10 most significant causes of construction delays for public sector project Inadequate management and supervision by the contractor, Inadequate management and supervision by the contractor, Client's changes of the design, Inadequate planning and control by the contractor, Using lowest bid that led to low performance, Changes in the extent of the project ,Errors in design and contract documents, Progress payments are not made in time by the client, Rework due to mistakes during construction, Changes in the original design and Low level productivity.

Srdić *et al* (2015) studied causes of delay in construction industry of Slovenia. They categorized the causes in to 11 groups and conducted research. The results show that the causes of the majority of delays can be attributed to the legal issues, slow decisions of the owner or his representative, and to design that lacks details important for the contractor.

Many of the issues within these categories appear in the very beginning of the project, and can be mitigated (partially or fully) by the owner; while their costs are far away from being excessive. Sambasiva and Soon (2007) conducted a study to identify the causes and effects of the project delays in Malaysian construction industry. They have initially identified 28 causes for delay of construction industry. They are dividing in to eight categories as fallows,

One Client related causes: - Finance and payment s of completed work, Owner interference, Slow decision making, Unrealistic contract duration and requirements imposed.

Two Contractor related factors: -Subcontractors, Site management improper planning, Construction methods, Improper planning Mistake during construction stage, Inadequate contractor experience.

Three Consultant related causes: - Contract management, Preparation and approval of drawings Quality assurance /control, waiting time for approval and inspection.

Four Material related causes: - Quality of material and Shortage of material.

Five Labour and equipment category causes, Labour supply, Labour productivity, Equipment availability and failure.

Six Contract related causes: - Change order Mistakes and discrepancies in contract document.

Seven Contract relationships related causes, Major disputes and negotiations, inappropriate overall organizational structure linking to the project, Lack of communication.

Eight External causes: - Weather condition, Regulatory changes Problem with neighbors, Unforeseen site condition

Accordingly, major causes of project delay in Malaysia construction industry are identified as fallows, contractors improper planning, contractors poor site management, inadequate contractors experience, inadequate clients finance and payment for completed work, problems with subcontractors, shortage of material, labour supply, equipment availability and failure, lack of communication between parties and mistakes during the construction stage (Sambasiva*et al* 2007)

Same kind of study was carried out by Alagbari*et al* (2007) to identify the main causes of delays in building construction projects in Malaysia. Four major categories are identified: client related causes, consultant's responsibility, owner's responsibility and external causes. Client related causes include delay in delivery of material to site, shortage of material on site, construction mistakes and defective work, poor skills and experience of labour, shortage of site labour, low productivity of labour, financial problem, coordination problems with others, lack of sub-contractor's skills, Lack of site coordinator's staff, poor site management and Equipment and tool shortage on site.

Consultants'responsibility includes finance and payments of completed work, absence of consultant s site staff, lack of experience on the part of the consultant, lack of experience on the part of the consultants site staff (managerial and supervisory personnel), delayed and slow supervision in making decisions, incomplete documents and Slowness in giving instructions. Owners' responsibility includelack of working knowledge, slowness in giving decision, lack of coordination with contractor, contract modifications (replacement and addition of new works to the project and change in specifications), financial problems (delayed payments, financial difficulties and economic problems.

External causes include lack of material on the market, lack of equipment and tools on the market, poor weather condition, poor site condition (location, ground, etc.), poor economic condition (currency, inflation, etc.) and changes in laws and regulatory. The main

causes of project delays in Malaysia building construction projects were identified as follows: financial difficulties and economic problems, supervision too late and slowness in making decisions, slow to dive instructions, lack of material on market, poor site management, construction mistakes and defective work, delay in delivery of materials to site, slowness in making decisions, lack of consultant experience and incomplete document (Algabari *et al*, 2007).

The findings of Algabari*et al.* (2007) were different from that of Sabasivam*et al* (2007), although both researches were carried out in Malaysia at the same time period. This shows that the causes of project delays can be vary from project to project with in the country based on the type of construction procurement system, location within the country and type of construction.

Koshe& Jha (2016) studied causes of delay in construction of Ethiopia. They have identified 88 delay causing factors under eight broad categories namely: client related, consultant/supervisor related, contractor related, designer related, labor related material related equipment, and external related.

Accordingly, major causes of project delay in Ethiopian construction industry are identified as fallows (Koshe*et al* 2016)Difficulties in financing project by contractor, Escalation of materials price, Infective project planning, scheduling or resource management, Delay in progress payments for completed works, Lack of skilled professional in construction PM (project management) in the organization ,Fluctuating labours availability season to season/Seasonal labours availability ,Late delivery and shortage of materials, Low productivity of labour,unqualified/inadequate experienced labour,insufficient data collection and survey before design

Assaf et al. (1995) identified 56 main causes of delay in Saudi large building construction projects and their relative importance. Based on the contractors surveyed the most important delay factors were: preparation and approval of shop drawings, delays in contractor's progress, payment by owners and design changes. Koushki et al. (2005) carried out research in Kuwait and identified estimates of time delays and cost increases and their causes. The three main causes of delays are changing orders, owners' financial constraints, and owners' lack of experience. And three first causes of cost overruns are contractor- related problems, material-related problems and

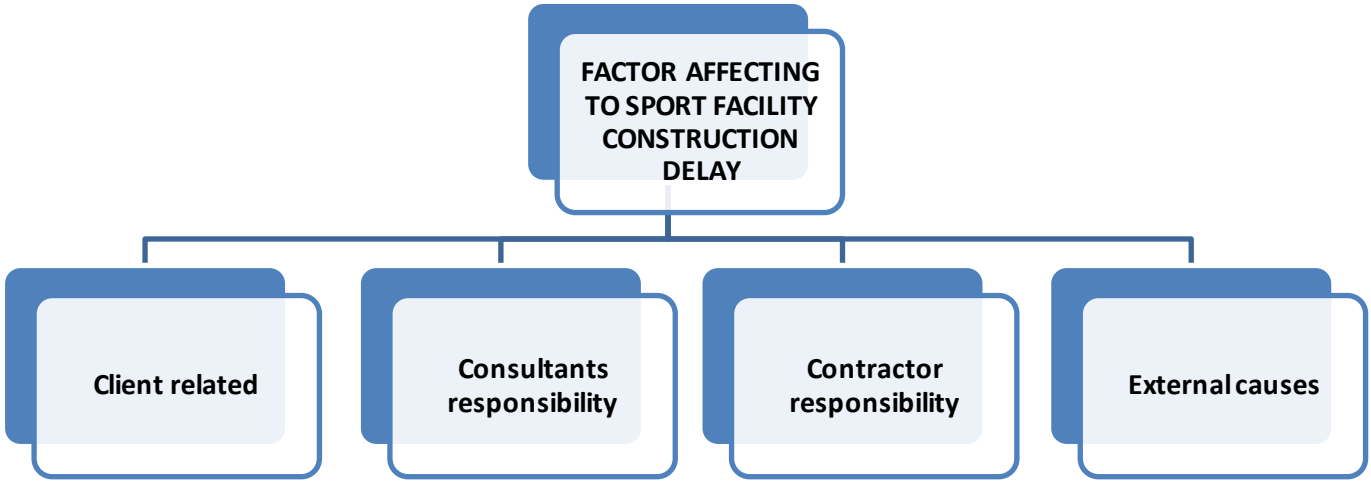
owners' financial constraints. According Ashraf and Ghanim (2016)the top ten factors causing delays for public sector projects in Jordan are: inadequate management and supervision by the contractor, client's changes of the design, inadequate planning and control by the contractor, using lowest bid that led to low performance, changes in the extent of the project, errors in design and contract documents progress payments are not made in time by the client, Rework due to mistakes during construction, Changes in the original design and Low level productivity.

2.3Conceptual Frame Work

The aim of this section is to summarize the idea about past literature and to bring out the contributions for this study area. Thus, this part starts with the idea generated and the contribution follows. The general idea from the past literature shows that there is a relationship between delay causing factors and construction delay; and also, the delay effects consequently.

Conceptual frameworks, according to Kothari (2008), are structured from a set of broad ideas and theories that help a researcher to properly identify the problem they are looking at, frame their questions and find suitable literature. The general idea from the past literature shows that there is a relationship between delay causing factors and delay effects. Most academic research uses a conceptual framework at the outset because it helps the researcher to clarify the research questions and aims.

Based on literature review the independent variables causing projectdelay are poor project initiation, poor project planning/design system, improper implementation project, poor project monitoring, evaluation and controlling system, poor communication, improper project closure, and the dependent variable is project delay and alsoEmpirical Literature Reviewindependent variables causing projectdelay contractor related factor, consultant related factor, client related factor and external to the project factor and the dependent variable is project delay. Come up with the following conceptual framework as below


FACTOR AFFECTING TO SPORT FACILITY CONSTRUCTION DELAY
Client related
Consultants responsibility
Contractor responsibility
External causes

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the research methodology that wasapplied in this study. It explains the research design that wasadapted in this study. It also describes the methods through which the objectives of the study can be answered. Various methodological issues discussed including: research design and approach, population and sampling techniques, source of data and collection techniques and data analysis method that have used to conduct the study.

3.1 Research approaches

Quantitative, qualitative, and mixed research methods of research approaches used in research. These approaches have their own strengths and limitations. Hence, this research used Quantitative research approach due to the fact that almost all ofthe data collected was using a closed ended survey questionnaire and the responses were codified in to quantitative.

According to Croswell (2014) when selecting research approach, it is very important to consider the research problem because "Certain types of research problems call for specific approaches. Quantitative research approach is best for such studies like the "identification of factors that influence an outcome'' (Croswell ,2014) So considering the above-mentioned fact the research approach that was used in this research is a quantitative approach and collect the relevant data the survey used standardized questionnaire.

3.2 Research Design

Research design refers to the arrangement of collecting and analyzing data in manner that aims to combine relevance to the research purpose with the economy in the procedure (Babbie, 2007).

In this research both descriptive and exploratory factor analysis research designs applied to

analyze the factors that determine delay of the construction projects the case of sport facility construction projects. The descriptive design used to characterize the social and demographic characteristics of respondents such as clients, contractors, experts and consultant's age, education experience, job position and Relative Importance Index was designed to compute the relative importance of the project delay causing attributes and extracted variables. Moreover, exploratory research design was employed to Extract and analyze the Major factors causing project delay

3.3 Population and sampling techniques

3.3.1. Population of the study

This research wastarget the total population of consultants, contractors, clients andother concerned experts who have a concern in the project Endeavour. Hence, there were 4(four) sport facility construction project sites Addis ketema sub city in Addis Ababa. Therefore, all the above targetpopulations were the concern of the research. For this end, the total target population of the study was 112 and among these, 10 contractors, 10 were project consultants and 92 clients. Hence, the total target population of the study was 112

3.3.2 Sample size determination

The targeted respondents of the questionnaire were construction professionals who were working in Addis Ababa city sport commission, Addis Ketema Sub City sport facility project, consultant and contractor. The inclusion criteria will the respondents should be construction professionals. This includes project managers, site engineers, office engineers, Architects, supervisors, quantity surveyorscommunities or resident who were directly related to design change in construction sites. The exclusion criteria were an employee of the Addis Ketema Sub City sport facility project whose job is not directly related to construction and non-professional employee like Human resource team, planning and preparation of budget team, property general service team were not included

In scientific research, it is advisable to have a larger sample size to have a good response rateand representation of the target population. Therefore, to arrive at a representative and

sufficientsample size it is good to apply a scientific sample size determination formula. Therefore, for this end a simplified formula of (Yamane, 1967) i.e.

$$\mathbf{n = N/\ 1+(e)2}$$

Where N: is the target population that includes client, contractor and consultant equal to 112

n: is the desired sample size

e = 5% = is the level of precision or error term

$$\mathbf{n= \frac{112}{1+112(0.05)2} = 87.5}$$

Therefore, the sample size for this research was 88 contractors, clients and consultants. To take a representative and sufficient data from each stratum, a proportion was calculated using the formula

$$\mathbf{ni = \frac{n*Ni}{N}}$$

Where: n = is the sample size for ni = is the sample size for the nth stratum

Ni = is the population of the nth strata n = the sample size calculated for all the strata andN is the total target population

Hence, sample size for contractors (n1) = $\frac{88*10}{112}$ = 8

Clients (n2) =$\frac{88*92}{112}$ = 72

For consultants (n3) =$\frac{88*10}{112}$= 8

Table 3.1 Sample size

Stratum	Target population	Proportion in%	Sample size
Contractors	10	9	8
Clients	92	82	72
Consultants	10	9	8
Target Population	112	100%	Total sample = 88

3.4 Data Collection Tools

The instrument of data collection that used in the study was Questionnaires and interview. Which wasconvenient while conducting survey research? Questionnaires a written forms comprising of a set of questions that used to gather the data required from a sample population. Each item in the questionnaire was developed to address the research objectives.

A questionnaire survey design based on the objectives of the study, which were factors ofdelay in sport facility construction projects at Addis Ketema Sub City

The questionnaires are all classified into 2parts partone: Respondent BackgroundParttwoFactors that lead to construction project delay's

Part 1:
Respondent Background in this section, the researcher was trying to obtain the respondents" information. The questionnaire includes: Gender of respondent, Age of respondent, educational background, Year of experience in Addis Ketema Sub City construction office, andWork division of the respondent

Part 2:
Factors that lead to construction project delays. This section was design to evaluate the factor that contributes to construction projects delays at Addis Ketema Sub City Ras Hailu Asfaw, Woreda 13 and 14 sport facility projects from the previous literature review. There were in total of seven groups of factors that leads to construction project delays in Addis Ketema Sub City. The questionnaire will mainly base on scale of 5 ordinal measures from 1 to 5 according to level of contributing: (5) = strongly agree,(4) = Agree, (3) = neutral, (2) Agreeand(1) strongly Agree

3.5 Data Analysis Methods

To meet the objectives stated in the above section, data that was collected from the self-administered questionnaire was first organized, entered in to Excel, edited, cleaned and coded/categorized. Therefore, to analyze the data different methods such as descriptive analysis methods (mean, percentage and frequencies), RII. Moreover, Excel. The details of the Data analysis and validation methods are presented as follows:

3.5.1 Relative Importance Index (RII)

The relative importance of the attributes as to the perception of the respondent was ranked and computed using RII. Hence, the Mean and Standard deviation of each measured variables are not a comprehensive measure to evaluate overall ranking as they don't show any relation among the items (Faridi and El-sayegh,2006); (Jyer and Jha,2005); (Assaf et al,1985); (Kumaraswamy andchan,1998). Therefore, instead of the mean and standard deviation measures, Relative Important Index was designated in this study to compute and rank the causes of project delay factors according their relative importance using the following Formula.

RII j =$\sum WiNi=1/A*N$

Where Wi = the weight given to each question by respondents, (i= 1…, N), (j= 1…,80)

RII j = the relative importance index of the jth delay factor.

A= the highest weight

N= the total number of respondents i= ith respondent;

j = jth delay factor

3.5.2 Data Validity and Reliability

3.5.2.1 Validity

Validity explains how well the collected data covers the actual area of investigation (Ghauri and Gronhaug, 2005). Therefore; the population is homogenous and helps to have a robust and valid data. All possibleefforts exert to make the data collection instruments easily understandable by the respondents sothat the intended information collected thereby increasing trustworthiness of the ultimatefindings. Different procedures are taken to guarantee the validity of this research. First, literaturereview was used to assure content validity. Second, questionnaire was adjusted and the validitywas verified based on the context of the company. In addition, it assess and

examine by theresearch advisor and senior project managers prior to the data collection to examine theinstrument for the content validity.

3.5.2.2 Reliability

It assesses the consistency or reproducibility of quantitative measurements made by different observers measuring the same quantity. The respondents were selected according to the position in the respective construction projects and their experience in the construction industry. In this regard, the response from the respondents is highly expected to be consistent. Moreover, the researcher has delivered most of the survey in person and has explained the respondents about the importance of genuine information and respondents were required to verify their response with an explanation of supporting practices and experiences. Given the above outcomes, the research instrument (survey questionnaire) was found to be consistent and reliable

3.5.2.3. Ethical consideration

Ethical considerations were taken into account throughout the process of conducting this study. Due to sensitivity of some collected information, the researcher holds moral obligation to treat the information utmost propriety and respondents were assured about the confidentiality of the information they provided. The researcher also informed all prospective participants about nature and the objective of the study. It was clarified that their response to the offered questions was only for the purpose of academic research and would never be disclosed to anyone at all times.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

In this chapter the result and discussion are presented. The first part of the section the Descriptive data analysis was presented to characterize the socio-demographic characteristics of the respondents and relative importance index of the different attributes. In the second section Factor analysis is presented results and ranking &computing the relative importance index of the derived factors were included.

4.2. Response Rate

The study distributed 112 questionnaires to different group of respondents namely: Contractors, Clients (Addis Ababa sport commission, Addis ketema sub city administration and resident) and consultants. However, only 84 were complete band correct. The rest 10 questionnaires were incomplete and the other 18 were not filled at all (no response). Therefore, 88 questionnaires were discarded from the analysis and the analysis was made with 84respondents'. a response rate of 88 percent which significantly sufficient response rate for a survey data.

4.3 Demographic characteristics of Respondents

The first demographic variable sought in this study was the sex of respondents. Hence the following table presented the sex distribution of the respondents. Based on the information presented below, 66(79) percent of the respondents were male respondents. Whereas, the rest 18(21) percent of the cohort were female respondents. Hence, the result revealed that majority of the respondents in the study area were male respondent

Table 4.1 Gender distribution of the respondents

No	GENDER	FREQUENCY	%
1	FEMALE	18	21
2	MALE	66	79
Total		84	100

Source own survey questionnaire, November 2024

Table 4.2 Ages of Respondents

age	FREQUENCY	%
18 up to 30	45	54
31 up to 40	30	36
41 up to 50	7	8
Above 50	2	2

Source own survey questionnaire, November 2024

As per result of table 4.2, 54% of my respondent age is 18-30, 36% of the respondent is between 31-40, is 8 % is 41 up to 50 and the rest of them are above 50 which is about 2 %.

The other important demographic variable considered in the descriptive study was educational qualification of the respondents. The study aimed to investigate the qualification of the respondents as it could have a significance importance in the reliability and soundness of the responses. Therefore, the result in the following table depicted that the majority of the respondents that accounted 57(68) percent werefirst degree holders, the other 23(28) percent reported that they have achieved a diploma holdersand the rest insignificant number of the respondents that accounted only 4(4) percent were master's degree. Therefore, the result clearly showed that the majority of respondents in this study were first degree holders.

Table 4.3 Educational level of the respondents

No	Educational level	Frequency	%
1	Diploma	**23**	**28**
2	BSC/BA	**57**	**68**
3	MSC/MA	**4**	**4**
4	PHD	**0**	**0**
Total		**84**	**100**

Source own survey questionnaire, November 2024

Experience of the respondent was another demographic variable of interest in the study as it matters a lot for the accuracy of data and its soundness. Hence, the work experience of the respondents was divided with a five-year difference and the first category of the experience was below five years of experience, the second category was from 5 to 10 years of experience and the third category was 11 to 15 years of experience and the last category fall above 15 years of work experience. Based the data bellow in the table 20(24) percent of the respondents have reported work experience below five years, the other 63(75) percent of the respondents work experience fall between 5 to 10 years of experience, the other cohort of the respondents that accounted 1(1)

percent reported their work experience lied between 11 to 15 years of work experience, the last group of the respondents that accounted non (o) percent replied their work experience above 15 years. Hence, the result revealed that most of the respondents that accounted 63(75) percent had reported a year of work experience above five years which indicated the respondents had sufficient work experience.

Table 4.4 work experience of the respondents

Work Experience			
no	No of Years	Frequency	%
1	below 5 years	**20**	**24**
2	6 to 10 years	**63**	**75**
3	11 to 15 years	**1**	**1**
4	above 15 years	**0**	**0**
Total		**84**	**84**

Source own survey questionnaire, November 2024

Job position/occupation was another important demographic variable in the study used to explore the relevance of the respondents for the data. Therefore, it was imperative to solicit data pertaining the job positions respondents assumed during the data collection time. Hence the following table presented the result associated with the respondent's job position/ occupation. Based on the result presented the table below 4(4) percent of the respondents were project managers, the other 8(10) percent of the respondents were site managers in the sport facilities construction projects, the other group of the respondents i.e.8 (10) were office engineers, 54(64) percent reported that they were others such as project coordinator, resident engineer, project supervisor and technical advisor. The other insignificant number of the respondents that accounted 2(2) percent were Directors with client side.

Table 4.5 Job Positions/Occupation of respondents

No	Job position/occupation	Frequency	%
1	Director	**2**	**2**
2	Project Manager	**4**	**4**
3	Site Engineer	**8**	**10**
4	Office Engineer	**8**	**10**
5	Cont. Admin. Officer	**8**	**10**
6	OTHERS	**54**	**64**
6.1	Project coordinator	**4**	**4**
6.2	Resident	**42**	**50**
6.3	Technical Advisor	**4**	**4**
6.4	Project supervisor	**4**	**4**
total		**84**	**100**

Source own survey questionnaire, November 2024

Table 4.6 Summary information about project delay in four project sites of Addis Ketema sub city sport facilities

Description	Ras Hailu	Asfaw	Woreda 13	Woreda 14	Total/AVE
No. of building	**1**	**1**	**1**	**1**	**4**
Project Starting Period	**2016**	**2020**	**2023**	**2023**	
Contract Period/per working days	620- 752	180- 365	180- 365	180- 365	
Average project performance	**100**%	100%	85%	85%	

Source own survey questionnaire, November 2024

4.4. Delay Causing Attributes Identification

A literature review was conducted to look at the main causes of construction delays, with subjects that centered on the causes or cause and effect of construction delays were chosen. Moreover, with respect to the scope of the project, priority was given to studies on sport facilities, building construction, and the construction industry in general, in addition to the range of relevant topics.

The questionnaire design was processed by developing a sample containing 78 attributes & nine group factors from intensive review literature. Moreover, the identified factors were validated by experts on the scope of the study. In addition, a pilot test was also conducted with ten experts from the client, contractor, and consultant of the sport facilities construction project.

Finally, by taking all necessary inputs for the following list of 78 attributes, the clarification, completeness and applicability of the questionnaire were verified to meet the aforementioned objective of the study.

With this in mind to make it clear that the same questions were used for different group factors: poor planning and scheduling, poor communication among stakeholders, and Inadequate experience were grouped with the client, contractor, and consultant-related delay factors. The attribute corruption tendency was also categorized with client, contractor, consultant, and micro & small-scale enterprise. Furthermore, delays due to material delivery on time were also grouped with client and contractor delay groups as material delivery is the responsibility of client and contractor.

Table 4.7 Delay Causing Attributes Identification

Group Factors	Code	Attributes Causing delay
CLIENT RELATED DELAY FACTORS	DF 1	Deficiency in the planning and scheduling of the project
	DF2	Internal administrative bureaucracy and procedures
	DF3	Delay financing the project
	DF4	Delay in decision making
	DF5	Design changes made during construction
	DF6	Late Material delivery
	DF7	Changes in material types and specifications during construction
	DF8	Suspension of work due to cash flow constraints
	DF9	Poor interaction and communication with stakeholders.
	DF10	low Monitoring and feedback mechanism of the project
	DF11	Low level of experience in construction project management
	DF12	Inefficiency in contract administration
	DF13	Not good at documentation
	DF14	Corruption tendency
CONTRACTOR RELATED DELAY FACTORS	DF15	Deficiency in the planning and scheduling of the project
	DF16	Difficulties in financing the project by the contractor
	DF17	Inaccurate cost estimating of the Project by the contractor
	DF18	Poor procurement of construction materials
	DF19	Poor qualification of staff assigned to the project
	DF20	Poor site management and supervision
	DF21	Delay in site mobilization
	DF22	Late material delivery
	DF23	Construction equipment allocation problem
	DF24	Shortage of construction materials
	DF25	Inefficient human resource management
	DF26	Unreliable Subcontractor
	DF27	Poor communication and coordination with other parties
	DF28	Inappropriate construction methods
	DF29	Centralization with the Top Management
	DF30	Corruption tendency By Contractor team
CONSULTANT RELATED DELAY FACTORS	DF31	Deficiency in the planning and scheduling of the project
	DF32	Insufficient estimation of the original contract Duration
	DF33	Mistakes or discrepancies in documents or design &specifications
	DF34	Inadequate details provided in drawings
	DF35	Delay in approval of submittals, design drawings, and samplematerials
	DF36	Delay in approving supplementary agreements
	DF37	Conflicts between consultant and design engineer

	DF38	Delay in approving of change orders
	DF39	Delay in preparing interim payment certificates
	DF40	Delay in performing Site inspection and testing
	DF41	Slow response to contractor inquiries
	DF42	Delay in contract termination &normalization
	DF43	Poor interaction and communication skill among stakeholders
	DF44	Inadequate consultant experience
	DF45	Corruption tendency By Consultant team
MATERIAL RELATED DELAY FACTORS	DF46	late construction materials supply
	DF47	Shortage of materials on site
	DF48	Scarcity of material in the market
	DF49	Material price escalation
	DF50	late procurement of materials
	DF51	Problems with materialtransportation
EQUIPMENT RELATED DELAY FACTOR	DF52	Low Productivity and inefficiency of construction equipment
	DF53	Construction Equipment Failure & breakdowns
	DF54	Insufficient amount of equipment in the market
	DF55	Construction equipment rent escalation
	DF56	Shortage of Skilled equipment Operators
	DF57	Equipment allocation problem
LABOUR RELATED DELAY FACTORS	DF58	Shortage skill of labor
	DF59	Slow mobilization of labor
	DF60	Disputes of Labors
	DF61	Absenteeism of Labors
	DF62	Low motivation/Morale ofLabors
CONTRACTUAL AGREEMENT RELATED FACTORS	DF63	Variation and omission on the original contract
	DF64	Unfavorable contract clauses
	DF65	Legal disputes between various parties
	DF66	poor contract administration
	DF67	Inefficient nomination of subcontractors and suppliers
EXTERNAL RELATED DELAY FACTORS	DF68	Adverse weather condition
	DF69	Political unrest
	DF70	Public right of way Problems with the local community
	DF71	Changes in Rules & regulations
	DF72	Problems of Electric supply
	DF73	Problems of Water supply
	DF74	problem of Access Road
MICRO & SMALL-SCALE RELATED DELAYFACTORS	DF75	Inability to deliver construction materials on time
	DF76	low level of production capacity
	DF77	Corruption tendency
	DF78	Frequent Contract termination

Source own survey questionnaire, November 2024

4.5. Ranking and RII Computation

In this part of analysis, the attributes of all factors were first identified from empirical standard questionnaires and organized in different categories. Therefore, RII was run to see the relative importance or weight of attributes to determine important cause of project delay. For this end, the attributes were arranged in ascending order of ranks, attribute with highest RII or rank 1 indicated that the attribute has the maximum effect on project delay while the attribute with lowest rank indicates that it has the least effect or influence on project delay. Therefore, in this study there were 9(nine) group factors such as client specific, contractor specific, consultant related, material, labor, equipment, contract administration, external factors and micro and small-scale enterprise related group factors.

The overall attributes of the nine categories were 78(seventy-eight). The attributes were coded to identify them in a specific category. Based on the coded data the attributes were ranked from rank 1(one) i.e. the highest rank which has a maximum effect on project delay to rank 78(seventy-eight) i.e. the least rank having the least importance or influence on project delay. In order to minimize the personal biases and assure the reliability and precision of responses each attribute's relative Importance Index was computed and ranked by talking the average response from the three stratums i.e., e client, contractor and consultants. Following the same way, the relative importance of the group factors was also calculated and ranked. The following table depicted the average Relative Importance Index rank of attributes included in RII.

Table 4.8 Relative Importance Index values and ranking of attributes

Items Code	Description	AVE RII	RANK
DF46	late construction materials supply	91.33%	1
DF47	Shortage of materials on site	89.90%	2
DF6	Late Material delivery	86.74%	3
DF49	Material price escalation	82.46%	4
DF4	Delay in decision making	80.85%	5
DF74	Problems of Electric supply	80.37%	6
DF50	late procurement of materials	79.94%	7
DF16	Difficulties in financing the project by the contractor	79.27%	8
DF48	Scarcity of material in the market	79.17%	9
DF2	Internal administrative bureaucracy and procedures	78.75%	10
DF75	Problems of Water supply	78.09%	11
DF78	low level of production capacity	77.46%	12
DF32	Insufficient estimation of the original contract Duration	76.62%	13
DF24	Shortage of construction materials	75.95%	14
DF25	Inefficient human resource management	75.78%	15
DF5	Design changes made during construction	75.48%	16
DF1	Deficiency in the planning and scheduling of the project	75.07%	17
DF63	Variation and omission on the original contract	74.86%	18
DF3	Delay financing the project	74.77%	19
DF31	Deficiency in the planning and scheduling of the project	74.54%	20
DF77	Inability to deliver construction materials on time	74.22%	21
DF22	Late material delivery	74.20%	22
DF33	Mistakes or discrepancies in documents or design & specifications	73.81%	23
DF29	Centralization with the Top Management	73.73%	24
DF15	Deficiency in the planning and scheduling of the project	72.81%	25
DF36	Delay in approving supplementary agreements	72.72%	26
DF17	Inaccurate cost estimating of the Project by the contractor	72.34%	27
DF18	Poor procurement of construction materials	72.30%	28
DF38	Delay in approving of change orders	71.93%	29
DF42	Delay in contract termination & normalization	71.89%	30
DF51	Problems with material transportation	71.27%	31
DF28	Inappropriate construction methods	71.16%	32
DF34	Inadequate details provided in drawings	71.01%	33
DF66	poor contract administration	70.98%	34
DF23	Construction equipment allocation problem	70.90%	35
DF35	Delay in approval of submittals, design drawings, and sample materials	70.85%	36
DF20	Poor site management and supervision	70.67%	37
DF8	Suspension of work due to cash flow constraints	70.45%	38
DF26	Unreliable Subcontractor	70.21%	39
DF79	Corruption tendency	69.96%	40

DF67	Inefficient nomination of subcontractors and suppliers	69.72%	41
DF41	Slow response to contractor inquiries	68.71%	42
DF69	Political unrest	68.58%	43
DF52	Low Productivity and inefficiency of construction equipment	68.57%	44
DF19	Poor qualification of staff assigned to the project	68.57%	45
DF7	Changes in material types and specifications during construction	68.06%	46
DF76	problem of Access Road	67.48%	47
DF80	Frequent Contract termination	67.26%	48
DF62	Low motivation/Morale of Labors	67.02%	49
DF21	Delay in site mobilization	66.69%	50
DF10	low Monitoring and feedback mechanism of the project	66.47%	51
DF57	Equipment allocation problem	66.21%	52
DF45	Corruption tendency	66.03%	53
DF53	Construction Equipment Failure & breakdowns	65.91%	54
DF27	Poor communication and coordination with other parties	65.79%	55
DF55	Construction equipment rent escalation	65.69%	56
DF58	Shortage skill of labor	65.63%	57
DF9	Poor interaction and communication with stakeholders	65.37%	58
DF14	Corruption tendency	65.30%	59
DF65	Legal disputes between various parties	64.86%	60
DF54	Insufficient number of equipment in the market	64.81%	61
DF64	Unfavorable contract clauses	64.73%	62
DF39	Delay in preparing interim payment certificates	64.50%	63
DF59	Slow mobilization of labor	64.19%	64
DF11	low level of experience in construction project management	63.83%	65
DF37	Conflicts between consultant and design engineer	62.93%	66
DF70	Public right of way Problems with the local community	62.69%	67
DF13	Not good at documentation	62.55%	68
DF68	Adverse weather condition	62.43%	69
DF12	Inefficiency in contract administration	62.09%	70
DF73	Changes in Rules & regulations	61.82%	71
DF43	Poor interaction and communication skill among stakeholders	61.57%	72
DF44	Inadequate consultant experience	61.46%	73
DF40	Delay in performing Site inspection and testing	60.87%	74
DF56	Shortage of Skilled equipment Operators	60.61%	75
DF30	Corruption tendency	60.43%	76
DF60	Disputes of Labors	60.13%	77
DF61	Absenteeism of Labors	57.83%	78

Source own survey questionnaire, November 2024

As one can see from the above tables the relative importance index values for each attribute has been presented. However, it is important to note that all the attributes ranked are not equally important and acceptable as a determinant of project delay. Hence, according to (Akadiri, 2011), RII values greater than 0.80-1 is leveled as very high, 0.6 to 0.8 leveled as medium and high, RII

values from 0.4 to <0.6 leveled as medium, whereas, values with 0.2 and <0.4 are leveled as medium- low and RII values between 0 to <0.2 are leveled as low. Therefore, based on Kediri's leveling of the RII the result showed that 6(six) attributes revealed a very high, 73(seventy-three) reported high- medium and the rest 1(one) attribute leveled as medium RII. From this one can conclude that almost all of the attributes lie between medium -high to high RII values which indicate that almost all of the attributes can be taken as significant causes of project delay as to respondent's perception.

As far as the nine group delay factors' RII was concerned, the factors were selected or identified from extensive theoretical and empirical literature review and the average relative importance index was calculated by taking the mean values of the attributes relative importance score and then ranked as shown in the table (4.9) below. Hence, as indicated in the table below, the factors identified were Material, Micro and small-Scale enterprises, contractor, Client, Contractual, Consultant, external, equipment and Labor Related factors.

Therefore, according to (Akadiri, 2011) the nine grouped factors were leveled ranging from very High important and medium high. To be Specific, Material related delay factor was leveled as very high important delay factor and ranked first with its RII value 82.3 percent. Whereas, the other remaining group factors aforementioned were leveled as medium high. Hence, Material related factors RII value was 82.3% percent followed by Micro and small-scale enterprises with a RII of 72.23% and Labor related factors ranked last and its RII value was 62.96. However, the RII value of the nine group factors ranked first or last is important factors to determine project delay though the degree and the level varies.

Moreover, the result indicated that the material related delay factor was resulted from client and contractor as both were responsible for timely delivery of materials for the project execution in the case of sport facility project.

Table 4.9 the average RII of each group factors

Group Factors	AVE RII	Rank
Material Related	**82.35%**	**1**
Micro &Small S. E Related	**72.23%**	**2**
Contractor Related	**71.30%**	**3**
Client Related	**71.13%**	**4**
Contractual. Related	**69.03%**	**5**
Consultant Related	**68.63%**	**6**
External Related	**67.70%**	**7**
Equipment Related	**67.69%**	**8**
Labor Related	**62.96%**	**9**

Source own survey questionnaire, November 2024

4.6.1. Relative Importance Index of Extracted Factors

After the validation process of the extracted components was verified, the validation Parameter naming the derived scales followed by Ranking and computing Relative importance index of the extracted scales are presented in the table (4.10) below. The very purpose of Relative Index Importance is to determine the severity of the delay causing factors so that policy recommendations could be made based on the priority of the causes.

Therefore, as it can be revealed in the following table the extracted factors were ranked according to their rank of causing project delay. Therefore, poor planning was found to be the first ranking project delay in the study and the analysis is presented below.

I. Poor planning (by contractor)

Poor project planning factor with three attributes was ranked first to determine project delay in the case study. The attributes included in this variable Shortage of construction materials, late material delivery and Construction equipment allocation problem (by contractor) were the result of Poor Planning by contractor and client that did not consider possible difficulties ahead and Prepare Contingency plan.

Therefore, poor project Planning was perceived in the eyes of the respondents to determine or delay the project completion by 73.7 percent. Shortage of construction material was one of the attributes of project planning that has come as a result a result of poor planning. Hence, if the projects are not provided with necessary materials on time, stoppage and idle time will be the

result. Therefore, this factor has a significant effect on project delay. The other important attribute was delay of material delivery. As shortage of construction materials, untimely delivery of materials plays a significant project delay so that projects could not be completed with the proposed time.

Hence, poor project planning causes or is characterized by delay of materials and as a result the project work be delayed. The last but important attribute of poor project planning was inappropriate equipment allocation for the project. Therefore, a poor project planning results in unfair or inappropriate equipment allocation. This in turn affects the project schedule and efficient utilization of project machinery and equipment as a result this could delay the project completion.

II. Inefficient site Management

The progress of a project is determined by clear technical information, guidance and constructive communication to site management. As a result, a project with well- organized required documentation and effective communication reduces conflict among project stakeholders (Frimpong et al., 2003).

As it can be revealed from the table below, as perceived by the respondents poor site management contributed 68.5 percent for project delay. The factor has consisted of six attributes such as in adequate drawings details, delay in approval of drawings, payment certificates and sample materials, Delay in performing Site inspection and testing, Delay in approving supplementary agreements Mistakes or discrepancies in documents or design & specifications and Poor interaction and communication skill among stakeholders. Therefore, adequate drawing details are the most important issue for a project kickoff and project success. As the project drawings are not properly detailed, finalized or revised periodically, the contractors will not start the project with the proposed scheduled time. As a result of this projects will be delayed to start and to finish.

The other attribute in line with poor/ inefficient site management manifestation is delay in approval of sample materials and payments by the consultant coupled with late request of the contractor, project completion could be delayed significantly. Moreover, site inspection and testing were also another important attribute of inefficient site management that relates checking

or testing of the project progress based on the agreed drawing and inspecting the materials used and the project results in rework that in turn results in project delay. In addition to these attributes flaws and discrepancies in the drawing documents and specification are also indispensable attributes that cause project delay. Hence, as the consultants finalized the drawing and specification, they need to be precise in them did otherwise late revisions will cause a significant irregularities and adjustments this create conflict with contractors. As a result, there could be a high possibility of project delay.

The other attribute include in inefficient site management was poor communication among the project stakeholders or parties namely contractor, consultant and clients. This factor is the most important attribute as it determines project success significantly. Hence, as the aforementioned parties are not communicating effectively, the overall above-mentioned problems such as design drawings, agreements, site handover, payment approval and material deliveries could be in problem as a result projects are more likely to be delayed.

Inefficient Site Management was the Critical Consultant related delay factor which are resulted in due to mistakes or discrepancies in documents or design & specifications; Inadequate details provided in drawings; Delay in performing Site inspection and testing; Delay in approving supplementary agreements and Poor interaction & communication in sport facilities development project in Ethiopia and other developing countries.

III. Organizational Competence

The third important variable ranked 3rd was Organizational competence. the result in the following table showed incompetent contractors and consultants resulted in project delay. This implies, contractors in most cases assigned incompetent and unqualified staff to the project. Hence, this variable had a share of 67.8 percent as perceived by the respondents.

The first attribute to this was assignment of unqualified staff to the project work, this happens due to the negative attitude of the contractors and the loose control of the consultants. Contractors usually believe, government financed projects are not strictly inspected and evaluated; they assign incompetent and unqualified staff. Therefore, these unqualified staff could not properly manage the project as a result specification drawing and agreed documents may not

be performed as agreed. As a result, revisions, reworks and adjustments will be apparent. Hence, projects delayed as result.

The other attribute associated with poor/inefficient organizational competence was Poor site management and supervision, this attribute entails that project sites need to be strictly supervised and managed so as to ensure the project progress and success. This is in fact, the result of incompetent staff assigned to the project or consultants' negligence to supervise the project progress as it was scheduled and proposed.

The third attribute to determine project delay was a tendency of corruption. Corruption is a tendency of bribing, mal delivery of the materials, compromising on quality and time of completion and using substandard equipment and materials for the project. Hence, these and other tendencies result in project delay. In this tendency, in most cases all parties are involved.

Unqualified Contractors project team with low efficiency in site management & supervision and having corruption tendency will highly affect the contractor's Organizational competence and also disturbs the Schedule performance of the project that becomes a reason for project delay to occur in Ethiopia sport facilities constructions.

IV. Difficulties in financing the project

The fourth variable assumed to determine project delay was difficulties in Financing projects. This variable was ranked third to affect project delay with a cumulative average influence of 66.41 percent. This result indicates that as clients are not able facilitate the project with the required finance timely, projects are more likely to be delayed. This variable consisted of three attributes namely: Insufficient amount of equipment in the market, construction equipment failure and breakdown and Low Productivity and inefficiency of construction equipment.

Based on this, the first attribute was insufficient number of equipment has resulted from poor financing by government (as a client) such as hard currency, as a result the project has a high propensity to be delayed. Due to the fact that finance is a problem, contractor in most cases import or use used equipment and machineries which may fail or break down. This significantly hampers the project completion and result in project delayed.

The other attribute was the low productivity of equipment. Here is the chain of the problem that has come as a result of poor financing by the contractor and using used or substandard equipment and machinery this again cause worn out and breakdown while the equipment is on work. Therefore, this tendency has a significant effect on project delay.

V. Poor Human Resource Management

The last variables used for analysis ranked last or ranked 5th was Poor human resource management. Human resource management is a critical factor in determining the project success. The variable perceived to determine project delay with 63 percent. This variable included attribute such as managing dispute among labor, absenteeism, slow mobilization of labor, shortage skilled labor and low motivation of labor. Hence, the inability of the contractor in managing disputes results deliberate curtailment of work, slow downing work, and machine and equipment breakdowns and down times this tendency then significant affect the efficiency and project completion. In addition to this, absenteeism and late arrival of labor will also largely determine a project delay as labor productivity is significantly affected. Moreover, skill labor to a project endeavor is a significant factor to determine a project delay. Hence, contractors in most cases hire and assign semi-skilled labor or unskilled labor to a project in order to reduce variable costs.

Therefore, the poor labor skill contributes to poor productivity as a result projects delayed. The other important element in human resource management was motivation of employees. Naturally, employees need financial and non-financial motivations. However, the respondents affirmed a low motivation of workers either in monetary or intrinsic rewards. Contractor always believes in transactions the labor performed i.e. how much of the job they did. This affects the labor moral and the low morale of workers has a significant implication on project delay.

Table 4.10 Extracted Factors RII Rank

Items	Retained items & Scales	Items RII	Scales Average RII Rank
FACTOR1: Inefficient site management			
DF43	**Inadequate details provided in drawings**	**61.57%**	**2**
DF33	**Delay in approval of submittals, design drawings, and sample materials**	**73.81%**	
DF36	**Delay in performing Site inspection and testing**	**72.72%**	
DF40	**Delay in approving supplementary agreements**	**60.87%**	
DF35	**Mistakes or discrepancies in documents or design & specifications**	**70.85%**	
DF34	**Poor interaction and communication skill among stakeholders**	71.01%	
Average RII		68.47%	
FACTOR2: Poor Human Resource Management			
DF62	**Disputes of Labors**	**67.02%**	**5**
DF58	**Absenteeism of Labors**	**65.63%**	
DF59	**Slow mobilization of Labor**	**64.19%**	
DF61	**Shortage skill of Labor**	**57.83%**	
DF60	**Low motivation/Morale of Labors**	**60.13%**	
Average RII		**62.96%**	
FACTOR 3: Lack of Organizational Competence			
DF30	**Poor qualification of staff assigned to the project**	**60.43%**	**3**
DF18	**Poor site management and supervision**	**72.30%**	
DF20	**Poor procurement of construction materials**	**70.67%**	
DF19	**Corruption tendency**	**68.57%**	
Average RII		**67.99%**	
FACTOR 4: Difficulties in Financing			
DF52	**Insufficient amount of equipment in the market**	**68.50%**	**4**
DF53	**Construction Equipment Failure & breakdowns**	**65.91%**	
DF54	**Low Productivity and inefficiency of construction equipment**	**64.81%**	
Average RII		**66.41%**	
FACTOR 5: Poor Planning			
DF23	**Shortage of construction materials**	**70.90%**	**1**
DF22	**Late material delivery**	**74.20%**	
DF24	**Construction equipment allocation problem (by contractor)**	**75.95%**	
Average RII		**73.68%**	

Source own survey questionnaire, November 2024

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The study was aimed at analyzing the causes of Project delay in sport facilities Addis Ababa city administration Addis Ketema sub city construction project in line with three specific objectives were design to address the problem namely: identifying the causes of project delay, analyze degree of influence of extracted factors on project delay and provide management suggestions. Therefore, in order to address the aforementioned objectives a descriptive research design and exclusively quantitative research approach were employed. A target population of 112 contractors, clients and consultants were enumerated and sample of 88 were selected with stratified and simple random sampling techniques. The survey data were collected from primary sources using a self-administered closed ended questionnaire directly from clients, consultants and contractors.

The overall, study indicated that out of the 112 questionnaires distributed to the three categories of the respondent's84i.e.75 percent of the response rate was reported which was a high response rate.

Regarding the first objective of the study i.e. identification of factors that cause project delay of sport facilities project 9 factors were identified with 78 attributes and Relative Importance Index of the attributes was ranked from rank 1st to rank 78th. The next step was grouping the nine group factors and computing their RII values. Based on this computation, Material Related factor was ranked first with RII value of82.3% and labor related factor was ranked last. Moreover, the RII value of the nine factors were leveled ranging from very high important to Medium high important.

The result of the Relative importance Index of the variables was an important analysis to determine the rank or degree of influence of factors to cause project delay. Based on the RII result, poor planning variable composed of three attributes was ranked first to determine or cause project delay. This implies the inability of sound planning premise, poor scheduling, poor planning of resources such as human, financial, material and other resources necessary for the

project. Hence, poor planning resulted shortage of materials, in proper allocation of resources so that it could cause a sever project delay. Hence, poor planning accounted 73.68 percent cause for project delay. Furthermore, from extensive empirical studies we conclude that poor planning is found to be the major project delay factor in Ethiopia like other developing countries due to the fact that in developing countries project planners have not good practice in using Project planning software technologies, Project planning tools and techniques Properly. However, poor project planning is not critical cause of project delay in developed countries.

The other important variable ranked second according to RII was insufficient Site Management by consultant. The implication was the problem of site management relates to poor drawing or design, late approval of materials and payments, flaws in agreements and specifications, negligence in inspection, poor communication skills. The variable was consisted of six attributes and the cumulative relative importance index of the variable wasaccounted 68.47 percent to cause project delay. The study affirmed that poor site management characteristics aforementioned were the second most important project delay cause. Hence, the study found that poor site management i.e., poor drawings and designs, late approval of submittals (payments and materials), poor communication skills, flaws with agreements and specification, poor supervision tendencies have a significant effect on project delay. Moreover, the study consistence with other empirical studies shows that inefficient site management becomes a serious delay causing factor in developing countries like Ethiopia was due to consultant engineers' professional inefficiency and lack of professional ethics.

The third important variable ranked third and consisted of four attributes was poor organizational competence by contractor. Unqualified Contractors project team with low efficiency in site management & supervision and having corruption tendency will highly affect the contractor's Organizational competence which also affect the Schedule performance of the project that cause project delay in Ethiopia sport facilitiesconstruction. Moreover, the delay in procurement of construction material by the contractor worsens the Organizational competence of the contractor. Poor organizational competence implies poor knowledge, skill and ability in project management work. The problem has come due to the fact that contractors usually assign workers, site coordinators and other employees having less skill, knowledge, experience and ability in performing a project work with an intention that most government projects are not strictly

supervised and managed so that they could minimize the cost of employee's salary and wages. This intent therefore, has a significant effect on project delay in that poor qualification of the project staff, poor supervision and site management, poor procurement of materials and above all, the corruption in projects is a paramount cause for projects to delay. The over all, RII of the variable to cause project delay was 68 percent. In addition to this lack of organizational competence by contractor was seen as common deficiency in the construction industry of developing countries.

Difficulty in Financing of projects was perceived to be ranked 4th by respondents. This variable was consisted of three attributes such as insufficiency of construction equipment, failure and breakage of equipment and low productivity and inefficiency of construction equipment. These factors have a significant effect on project delay. This problem has happened because the contractors and government could not import quality and standardequipment due to shortage of currency. Therefore, buying or importing used equipmentresults in failure and breakdown and thereby low productivity and efficiency are the result. Hence, projects will be delayed because of frequent equipment breakdowns and failures. The RII value of the variable was 66.41 percent. Furthermore, Due to imported economy of developing countries that result in difficulty of financing the project by the contractor, which causes shortage of modern construction equipment and construction equipment inefficiency were critical & common challenge in developing countries than developed countries as it was confirmed from other related studies in different countries.

The last important variable ranked 5th to cause project delay was poor human resource management by contractor. This is related to dispute of labor, absenteeism of labor, slow mobilization of labor shortage skilled labor and low motivation and employee's morale. The variable ranked with RII value of 62.96 percent to cause project delays. The implication is when there is acute labor dispute, absenteeism, slow mobilization of labor for project work and schedules, and low motivation for project staff, the labor productivity will go down and deliberate curtailment of performance and machine breakdowns could be the results this in turn possibly cause project delay. Farther more the challenges of labor related delay factors of Ethiopia were not only shortage of skilled labor but also the available one unskilled labor has low labor productivity. Generally speaking, in some of developing countries like Ethiopia critical

labor related challenges were Shortage of skilled labor and in some others were shortage of labor.

Generally, the factors causing project delay the case of sport facilities were identified based different procedures and statistical validations. In the beginning nine variables were identified from a rigorous review of literature and context of the case construction.

Hence, the finding of this study has passed through a rigorous methodology and statistical analysis and all the statistical results were compared with standard and criteria set in the different theoretical and empirical literatures and were valid.

Furthermore, the result associated with exploratory factor analysis and the RII has affirmed the variables identified to cause project delay were important variables empirically supported with many more previous scholarly studies. Moreover, as it was discussed in empirical literature review, we can see that clearly the types and sources of delay causing factors varied as to geographical location differences and internal delay causing factors mainly depends on the socio-economic development of the countries.

5.2Recommendation

To overcome the challenges of the extracted critical delay causing factors in sport facilities construction project, the following suggestions are recommended for the key stakeholders of project.

5.2.1 Poor Planning Related Recommendations

According this study result, the most important and top prioritized variable that was perceived to cause project delay significantly and ranked first was poor planning.

For Client

The owner of the project Addis Ababa City Administration sport commission and Addis ketema sub city administration should consider the following recommendations critically.

Even though the project delay factor due to poor planning is basically accountable contractor's project manager, the Client's Project offices on site have to evaluate and control the contractor's project manager resource schedules before and after verified. As a result, the project office can

support to minimize or avoid shortage of construction material, late material delivery and construction equipment's allocation problems on project sites. Moreover, the Project owner has to avoid improper selection of contractors by exhaustive study on their company profiles.

For Contractor

The Contractor project manager should prepare an efficient resource plan based on the detailed design and specification requirements on the project's main contractual agreement. This enables the project manager to prevent his company from the consequences of non-compensable causes of delay types: the shortage of material, late material delivery, and construction equipment allocation problems that can caused by the contractor starting from pre-construction stage to project end over. In addition to this, either the contractor should hire experienced personnel or arrange training to fill the gap of the personnel that can result in poor planning and other managerial deficiencies.

Furthermore, the contractors should provide the technologies and facilitate trainings on Project planning software technologies, Project planning tools and techniques to mitigate the planning deficiency by contractor project team.

For Consultant

The consultant has to confirm whether the contractor has prepared a practicable resource plan or not earlier at every construction stage of the project on behalf of the client to significantly minimize the project delay caused by poor planning. Furthermore, the consultant company has to assure that their staffs have the technical capability which enables them to manage such type of problems.

5.2.2 Inefficient Site Management Related Recommendation

The second sever factor that cause project delay was Inefficient Site management that was ranked second with six attributes average RII value. The attributes to this variable were concerning the consultant's and client problem due to improperly managing project sites related to Inadequate details provided in drawings, Delay in approval of design drawings and sample materials, Delay in performing Site inspection and testing, Delay in approving supplementary

agreements, Mistakes or discrepancies in design & specifications and Poor interaction and communication skills.

For Client

First of all, the Addis Ababa City Administration sport commission and Addis ketema sub city administration has to revise the salary scale of the client project team based on the contemporary market in the construction industry. This improvement will create the opportunity to attract personnel with adequate experience in construction project management. Consequently, the client project team will develop a capacity to early identify and correct the causes of inefficient site management. The other option to ensure efficient site management in a sport facilities construction project by the client-side is organizing training based on the skill gap on the client's project team. Furthermore, there should accountability system on those who let them happen the aforementioned attributes due to corruption tendency within the client's project team. In addition to this, the client has to select the consultant companies using multi criteria to insure efficiency.

For Consultant

Consultants project team have to improve the inadequacy details and mistakes in designs, drawings and specifications problems that cause project delay by taking appropriate time to finalize the drawings and designs and assign skilled staff to develop the design and approval with the contractor and other stake holders such as the client should be agreed before the final drawing and design is hand over.

The other Consultant related causes of inefficient site managements are Delay in approval of design drawings and sample materials, Delay in performing Site inspection and testing, Delay in approving supplementary agreements. Hence, those types of problems are generated from the consultant engineers below standard performance to finalize the deliverables on time. Therefore, either, the consultant company should assign enough number of personnel to the work load on project site or hire qualified and experienced engineers to improve the service delivery expected from consultant side. Moreover, to deliver technical assistance on the aforementioned problems the consultant project team should have efficient communication skills and interaction with stakeholders of the sport facilities construction project.

5.2.3 Poor Organizational Competence Related Recommendations.

The other important variable assumed to cause project delay was Organizational competence of the contractor. The attributes were poor qualification assigned to a project, corruption, poor supervision and poor material procurement.

For Client

The owner of the project Addis Ababa City Administration sport commission and Addis ketema sub cityadministration should follow a strict technical evaluation criterion during contractor selection based on company profile. Moreover, the client should develop an integrated platform and get agreed with private and government banks to exchange information about the contractor's guaranty bonds and bankruptcy related cases and develop a stringent accountability procedures and systems so that this could be binding.

For Contractor

To exploit and get benefits from the growing Ethiopian construction industry, the contractor should give attention to organizational competency. The contractor's Organizational competence can develop if and only if the contractor can hire a qualified staff that can perform efficient site management and supervision governed by professional ethics as organizational culture.

The procurement system of the contractor is centralized and need to decentralize so designing a stringent and self-monitoring system of materials procurement process to be effective. Thereby, the party involved in the procurement process would take accountability for irregularities and inconveniencies. Moreover, the contractor's companies should introduce transparency and accountability practices to discourage corruption tendency.

For Consultant

The consultants should periodically evaluate and supervise the staff deployed to the project work and assure the competence of the contractor.

5.2.4 Difficulty of Financing the Project Related Recommendation.

The fourth important factor to determine the project cause was Difficulty of financial the project. The result of the study affirmed that failure and breakdown of equipment, low productivity and efficiency of equipment and shortage of construction equipment in the market were the major attributes of the variable that cause project delay.

For Concerned Government Authorities

The government should give attention in financing and regulating the construction industry to manage the shortage of construction equipment supply in the market. Moreover, Addis Ababa finance office needs to approve standards and stage of technological life cycle of imported equipment by the contractor.

For Client (project owner)

To minimize the effect of contractor's difficulty of financing the project, the client should release progress and advance payment payments on time.

For contractor

Contractors should avoid bidding to get advance payments rather than relying upon their own working capital. They should also stop looking for new more projects for bidding before finishing most of the projects already they have. Furthermore, they should have efficient financial administration system within their organization.

For Consultant

The Consultant shall closely evaluate the equipment deployed by contractor to the project to assure the project smooth running.

5.2.5 Poor Human Resource Management Related Recommendations

The last variable reviewed to determine project delay was poor human Resource management. As a result of the challenges such as labor disputes, poor labor productivity, low motivation, absenteeism, slow mobilization of workers and so on.

For Contractor

The project is more likely to be delayed. Hence, the contractor needs to give training to those employees who showed a skill and ability gap. Inceptives and rewards system must be worked by the contractor in order to motivate hardworking employees and apply deterrent to those who have a frequent record of absenteeism. Moreover, the contractor should work hard in mobilization of labor on time to expedite the project performance and avoid feeding of employees from one project to another.

Therefore, the contractor should give attention & work hard to mitigate the shortage and low productivity of labor challenges in Ethiopia state sport facilities construction through training, incentives and efficient human resource management practice including on project s

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Assessment on Construction Sport Facilities Project Delays: The Case of Addis Ababa City, Addis Ketema Sub-City Administration

QUESTIONNAIRE

This questionnaire is prepared to conduct a study for the partial fulfillment of a Master's Degree in Project Management (MBA) research thesis atST.Mary's university entitled with "Factors affecting Construction Sport Facilities Project Delays: The Case of Addis Ababa City, Addis Ketema Sub-City Administration''. Hence, you are kindly requested to give the necessary information to the research questions. The accuracy, honesty, and fairness of your response will have a great impact on the outcome of the research.

Aim of the questionnaire:

This questionnaire is developed to assess the views of owners (Sub city administration or the resident), consultants, andContractors to identify important factors contributing to delay in the sport facilities construction projects under Addis Ababa City Addis ketema sub city

General guidelines:

Please read each question (hypothesized factor) carefully and make a tick (√) or any sign under each value.

This questionnaire consists of two sections:

Section A: General question, respondent and project profile and project description

Section B: Questions about Hypothesized factorsthat contribute to causes of delays.

Name of student: Masresha Zerihun Gutema

Advisor: Dr Zerihun Kinde (Associate Professor)

Thank you in advance, for your time.

General Instruction

- **No need to write your name**
- **Your response confidentiality is maintained**
- **Instruction for each part of the questionnaire is given at the beginning of the questions**
- **Please mark by "√"**

SECTION – A: GENERAL QUESTION

1. **Gender**

1/ Male 2/Female ☐ ☐

2. **Age**

1/18-30 3/41-50 ☐ ☐

2/31-40 4/Above ☐ ☐

3. **State the Grade of the organization or company**

……

4. **What is the type of organization or company you are currently working at?**

Client ☐ **ConsultantC** ☐ **ctor** ☐

Others please specify …….....

5. **State the number of years of experience the organization (company) has in the sport facilities construction industry.**

   ☐ **1- 5 years** ☐ **0years 10-15ye** ☐ **15years** ☐

6. **State the number of years of experience the organization/company hasin sport facilities in particular to date?**

   ☐ **ars 5-10year** ☐ **15 years >15 y** ☐ ☐

7. **How many sport facilities projects does the companycurrently have?**

   ☐ **- 5 5-10 > 1** ☐ ☐ ☐ ☐

8. **Respondent profile**

   I ☐ **or Project manag** ☐ **engineer** ☐

   ☐ **Office engineer** ☐ **Contract Administration** ☐ **r others, please specify……**

SECTION – B

Factors affecting Construction Sport Facilities Project Delays (Basic information)

Each scale represents the degree of contribution the delay to occur

(5) = Strongly Agree (SA)(4) = Agree (A) (3) = Medium (M)

(2) = Disagree (D)(1) = Strongly Disagree (SD)

Questions: How did the following related factors below contribute to the causes ofdelays on the sport facilities construction project?

A. CLIENT(sub city administration and the resident) RELATED DELAY FACTORS

NO	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Deficiency in the planning and scheduling of the project**					
2	**Internal administrative bureaucracy and procedures within the project office**					
3	**Delay of financing (Budget) the project by the client.**					
4	**Delay in decision making by the client (project office)**					
5	**Design changes made by the client (project office) during construction**					
6	**Delay due to material delivery on time**					
7	**Changes in material types and specifications during construction**					
8	**Suspension of work due to cash flow constraints by the client.**					
9	**The client's project team (project office) has Poor interaction and communication with stakeholders.**					
10	**The client's project team (project office) has low Monitoring and feedback mechanism of the project**					
11	**The client's project team has a low level of experience in construction project management**					
12	**The client's project team inefficiency in contract administration**					

13	The client's project team is not good at documentation.					
14	Corruption tendencies in the client's project team					

B. CONSULTANT RELATED FACTORS

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	Deficiency in the planning and scheduling of the project					
2	Insufficient estimation of the original contract Duration					
3	Mistakes or discrepancies in documents or design & specifications issued by consultants					
4	Inadequate details provided in drawings					
5	Delay in approval of submittals, design drawings, and sample materials, etc.					
6	Delay in approving supplementary agreements					
7	Delay due to Conflicts between consultant and design engineer					
8	Delay in approving of change orders					
9	Delay in preparing interim payment certificates					
10	Delay in performing Site inspection and testing					
11	Slow response to contractor inquiries					
12	Delay in contract termination & normalization					
13	The consultant has poor interaction and communication skill among stakeholders					
14	Inadequate consultant experience					
15	Corruption tendencies on the consultant side.					

C.CONTRACTOR RELATED DELAY FACTORS

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	Deficiency in the planning and scheduling of the project					
2	Difficulties in financing the project by the contractor					
3	Inaccurate cost estimating of the Project by the					

	contractor					
4	**Delay due to Poor procurement of construction materials**					
5	**Delay due to Poor qualification of staff assigned to the project.**					
6	**Poor site management and supervision**					
7	**Delay in site mobilization**					
8	**Delays due to material delivery on time**					
9	**Delay due to Construction equipment allocation problem**					
10	**Delay due to Shortage of construction materials**					
11	**Delay due to inefficient human resource management.**					
12	**Delay due to Unreliable Subcontractor**					
13	**Poor communication and coordination with other parties**					
14	**Delay due to inappropriate construction methods**					
15	**Delay due to Centralization with the Top Management**					
16	**Delay due to Corruption tendencies on the contractor side**					

D. Material Related Delay Factors

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to late construction materials supply**					
2	**Delay due to Shortage of materials on site**					
3	**Delay due to Scarcity of material in the market**					
4	**Delay due to Material price escalation**					
5	**Delay due to late procurement of materials**					
6	**Delay due to Problems with material transportation**					

E. Equipment Related Delay Factors

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to Low Productivity and inefficiency of construction equipment**					
2	**Delay due to construction Equipment Failure**					

	&breakdowns					
3	**Delay due to Insufficient number of equipment in the market**					
4	**Delay due to Construction equipment rent escalation**					
5	**Delay due to shortage of Skilled equipment Operators**					
6	**Delay due to Equipment allocation problem**					

F. Labor Related Delay Factors

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to shortage skill of labor**					
2	**Delay due to Slow mobilization of labor**					
3	**Delay due to Disputes of Labors**					
4	**Delay due to Absenteeism of Labors**					
5	**Delay due to Low motivation/Morale of Labors**					

G. Contractual agreement Related Factors

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to variation and omission on the original contract**					
2	**Delay due to Unfavorable contract clauses**					
3	**Delay due to Legal disputes between various parties**					
4	**Delay due to poor contract administration.**					
5	**Delay due to inefficient nomination of subcontractors and suppliers**					

H. External Related Factors

No	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to adverse weather condition**					
2	**Delay due to political unrest**					

3	**Delay due to public right of way Problems with the local community**					
4	**Delay due to changes in Rules & regulations**					
5	**Delay due to the problem of Electric supply**					
6	**8 Delay due to the problem of Water supply**					
7	**Delay due to the problem of Access Road**					

I. MACRO & SMALL ENTERPRISE RELATED DELAY FACTORS

NO	Factors	1(SD)	2(D)	3(M)	4(A)	5(SA)
1	**Delay due to inability to deliver construction materials on time**					
2	**Delay due to low level of production capacity**					
3	**Delay due to Corruption tendency**					
4	**Delay due to frequent Contract termination**					