



**CAUSES, EFFECTS, AND RECOVERY STRATEGIES OF DISTRESS
IN LASKA-SALAYISH DESIGN AND CONSTRUCT ROAD
UPGRADING PROJECT**

**BY
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**A PROJECT WORK SUBMITTED TO ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER IN
PROJECT MANAGEMENT**

**ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE**

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**SEPTEMBER 2018
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Declaration

I, Israel Abate, with ID Number GSD/o560/07 do hereby declare that this Project Work is my original work and that it has not been submitted partially; or in full, by any other person for an award of a degree in any other university/institution.

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This Project has been submitted for examination with my approval

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Approval

The undersigned certify that they have read and hereby recommend to Addis Ababa University School of Commerce to accept the Project Work submitted by Israel Abate and entitled causes, effects, and recovery strategies of distress in Laska-Salayish design and construct road upgrading project in partial fulfillment of the requirements for the award of a Masters Degree in PROJECT MANAGEMENT.

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Acknowledgment

At the outset the researcher would like to glorify the almighty God who enabled me to start and finish this thesis. The research project would not have been also possible without the support of many people. The researcher wishes to express his gratitude to his advisor, Dr. Worku Mekonnen who was abundantly helpful and offered invaluable assistance, support and guidance. Deepest gratitude are also to my beloved families, Selamawit Moges, Biruktawit Israel, Amen Israel, for their understanding and endless love through the duration of my study. Special thanks to my sisters, Mary Moges and Banchiayehu Abate, for their honest support, and without their knowledge and assistance this study would not have been successful. The researcher would like also thank all his graduate friends, especially to intimate friend Sahlie Tilahun, for sharing ideas and invaluable assistance.

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Definition of Terms

- Cause: -** The person or thing that makes something happens.
- Delay: -** A situation in which something does not happen when it should.
- Distress: -** A situation in which something is in danger or difficulty and needs help.
- Effect:-** A change that somebody or something causes in somebody or something else, result.
- Project: -** A planned piece of work that is designed to produce something new, or to improve something. It is a set of aims, ideas or activities that somebody is interested in, or wants to bring to people's attention.
- Recovery: -** The process of becoming well again or to return a normal state after unusual experience or a period of difficulty.
- Slippage:-** Failure to achieve an aim or complete a task by a particular date.

Abstract

Whenever the performance of a project falls outside nominal values, it is judged to be a project in distress and likely to fail unless some intervention strategy brings it back under control. The objective of this study was to identify the root causes of project distress, the effects of distress, and recovery strategies of project implementation distress. In this study both quantitative and qualitative research designs have been used. Laska-Salayish design and construct road upgrading project was taken as a case study and data was collected from client, consultant, contractor and local administrative officials using questionnaires, interviews and focus group discussion. The questionnaire had a list of factors of which the respondents were asked to rank each according to the three point likert scale. The data obtained was analyzed by using Relative Importance Index (RII) and the factors were ranked accordingly.

Findings of the study indicated that the top major causes of delay include: Lack of accurate execution planning and estimates of resources, lack of adequate controlling and monitoring systems, lack of resources, change orders, turnover of personnel, landslides, incompetent project team, poor communication system, exceptional adverse climatic conditions, lack of proper risk management system, poor decision making process, right of way (ROW) obstructions,

The results obtained indicated that the top major effects of delay include: Cost overrun, overall economic impact in the region, time overrun, negative social impact, and dispute.

To mitigate slippages in the project, top effective recovery strategies have been identified. These include: Properly re-planning the project, replace the existing non-performing project team, realizing adequate control and monitoring system, improving communication (stakeholder management), employing appropriate risk management system and resolving problematic technical issues, increase the budget.

CHAPTER ONE-INTRODUCTION

1.1 Background of the Study

In construction, projects can be distressed directly or indirectly by many factors and these may result in reduced efficiency. Wysocki (2006) disclosed that whenever the performance of a project falls outside nominal values, it is judged to be a project in distress and likely to fail unless some intervention strategy brings it back under control. How it got to that state is certainly a question that needs answering. But more importantly is how it can be returned to a state of normalcy-if at all?

A project got to distressed state for various reasons. Some factors are force majeure (natural consequences) that are beyond the control of human beings but others are management problems. To mention some- earth quacks, adverse climatic conditions, poor/ no requirements documentation, inappropriate sponsorship, complexity of requirements not recognized, unmanageable project scope, unwillingness to make tough decisions, planning and scheduling problems, inconsistent Client Sign-Off, etc.

Trouble can basically occur anywhere at any point in time within a project life cycle. Whatever the situation, the earlier trouble is detected and addressed, the better. When divergence from the defined baseline is too extreme, the project becomes a candidate for cancellation, termination or – even worse – failure. In today's world, change happens so quickly and there is such a large volume of projects of great complexity that challenges arise that we can't anticipate. It's no longer about **whether** trouble will hit, but **when**. Regardless of whether the trouble is sudden or brews gradually, saving a project requires an experienced and agile team willing to react quickly, and leadership prepared to make decisions (Lahmann, & Probst, 2017).

Delay is mostly common in the traditional type of contracts in which the contract is awarded to the lowest bidder. This procurement method is mostly practiced in developing countries. Ensuring that the project is delivered on time is one of the most significant needs of the clients in construction industry (Latham, 1994). Moreover completion of projects within the estimated time is an indicator of how efficient the construction industry is (Nedo, 1988). Quality, time and

Cost are of primary concern to the contractor, but most often construction projects are procured based on only two factors; time and cost (Bennette and Grice, 1990).

Distressed projects do not go from green to red overnight. There are early warning signs According to safari books online (2018), there are characteristics which clearly depicted as symptomatic of a distressed project: When the project has exhibited a performance trend that, if continued, will result in its failure, is one warning sign of distress. Whenever the cumulative history of one or both of those metrics exhibits certain trends, it suggests that the project is out of control, and the reason for the trends needs to be identified and a decision needs to be made as to how to proceed. A growing schedule slippage is one such trend that, if continued, will lead to failure. The other sign is when the project's performance has exceeded one or more metric values and is a high risk for failure: When any one of these metrics exceeds its trigger value, the project is at high risk for failure. That sets off a series of activities designed to identify the source of the anomaly and the corrective action that needs to be taken. A significant schedule slippage due to a bad estimate, a mistake, and serious vendor delays are three such events that may result in project failure.

Besides, if the project has recently experienced some significant change that may result in failure, the stakeholders of the project need to take this into consideration. Oftentimes these changes are related to personnel or other major organizational shifts. Even though the project performance metrics do not indicate any problem, the environmental change may be sufficient to throw the project off course. A change of sponsor and a loss of critical resources are two such changes that may result in a distressed condition and eventual project failure.

If any of the preceding situations happen, it should immediately trigger a project intervention process designed to discover the reasons for the distressed condition, fix the condition, and re-plan the project going forward.

Delays are usually accompanied by cost overruns. When this occur, it will have a debilitating effect on clients, contractors and consultants in terms of growth and adversarial relationship, mistrust, litigation, arbitration, cash flow problems and a general feeling of trepidation towards shareholders (Ahmed 2002).

This study tries to assess and address the influence of implementation delay of road construction projects particularly by addressing causes that put a project into distressed condition, effects of distress, and recovery strategies of a distressed project.

1.2 Statement of the Problem

The construction industry is one of the most booming industries in economic growth of Ethiopia. Many road projects have completed, going on, and many future ones. However, there is significant delay in projects relating the road and bridge projects often faced in the course of executing projects. The delays become more serious. This problem directly affects the lives, social welfare of the people, as well as the other negative social impacts.

There are many large road construction projects suffered delay, suspension or abandonment. There are several factors attributed for this major problem. Projects are prone to delay. Planning of projects is about the future and it is impossible to know the future for certain. Particularly in the road construction industry, it is hardly possible to know the subsurface condition precisely throughout the road corridor. This very reason alone, unforeseen condition, has put many road projects off course.

Starting projects without having detail planning is common in mega projects. Design modification during execution phase is normal in many projects. Awarding contracts to the lowest bidder is the type of contract practiced in national bids. Lack of transparency, prolonged procurement, limited capacity of the contractor, lack of adequate controlling and monitoring system characterized the Ethiopian construction industry. These situations made vivid the existence of delay and put many projects into distressed conditions.

The government spends huge amount of money in this sector in an attempt to carry out economic development. It's a normal trend that the Ethiopian government allocated funds in its yearly budget set aside for the construction of road projects. Delayed of these projects did not only slow down economic growth in the country but it also increased government expenditures. This is mainly due to procurement of materials at a higher price, and also due to change of contractors. The result is wastage of country's resources that could have been used to for other purposes.

Business organizations every year invest a lot of capital in road construction in an attempt to expand their businesses and generate more profits by increasing their sizes of operations and also to meet up with competition. When the problem of delay occurs, the companies turn to loss large amount of money that can sometimes render the company insolvent.

Moreover contractors are constantly loosing contracts due to delay or incompleteness of previous projects. Most often they are obliged to share the cost of the delay which is not necessarily caused by them.

Delay has also led to a lot of disputes amongst stakeholders in the road construction industry. Some of these disputes could not be resolved amicably to the satisfaction of every party. And because of this, some parties preferred litigation and arbitration. All this had gone a long way to increase the cost of the overall project.

Besides, delay in the road construction resulted to negative perception of the country's construction industry. Investors became unwilling to carry out construction projects in the country. In addition, predominance of delay discredited the local construction companies, contractors, consultants and engineers. This resulted to the country's construction industry be less competitive.

Therefore with all these problems faced by the government, business organizations, contractors, consultants, community and the construction industry as whole, it is therefore imperative that a study be conducted to ascertain the causes contributing or resulting to the delay of road projects. With these factors clearly outlined, they can be considered as the critical success factors of the projects. With these already known, preemptive measures can then be taken to reduce, eliminate or mitigate their effects. Moreover a study on distress will help stakeholders to be able to pinpoint exactly where the delay is from or what causes the delay and which of the stakeholder should be held responsible. With this the issue of disputes, litigation and arbitration can be avoided.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study is to assess the causes and effects of distress in road construction projects and to address some recovery strategies for dealing with distressed projects.

1.3.2 Specific Objectives

1. To identify features of a distressed road project
2. To investigate the causes that threw the case project, Laska-Salayish road project, into distressed condition.
3. To investigate the impact experienced by the region and the country as a whole because of such prolonged delay of the project.
4. To identify the relevant ways of mitigating slippage of the case project to return it into a normal state so that benefits of the project can be realized.

1.4 Research Questions

The study addressed the following major research questions:-

1. What are the factors that lead the project into distressed condition?
2. What are the effects of the distressed project?
3. What strategies would employ to mitigate slippages of the project?

1.5 Significance of the Study

The findings from this paper will serve as a guide line to construction project holders, i.e., the government, business organizations, contractors, consultants, and the community at large. They will be aware of the uncertain factors that can result to delay of projects right from the inception phase. This study will also generate a list of delay causative factors that can be used as benchmark to control existing and future projects. In addition, stakeholders will also be aware of the delay related factors and how to avoid them. The study will also generate measures to mitigate or eliminate the effects of road construction projects delay. Finally the study will also serve as a support of what other past researchers have written about factors causing delay in road projects. It will also provide some information for future researchers who wish to further investigate on this particular or related case.

1.6 Scope of the Study

The research paper focuses only on the road construction sector of Ethiopia. It concentrates specifically on the causes, effects and recovery strategies of distress by addressing a particular Design-Build (DB) road project- Laska-Salayish design and construct road upgrading project.

1.7 Limitation of the Study

Lack of accurately recorded data for the study, lack of transparency during interview, unwillingness of respondents to participate in the study, and lack researches done on distressed projects in Ethiopia are some of the limitations encountered in the process of the study.

1.8 Organization of the Study

The study is logically organized in to five chapters. *Chapter one* presents background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study, limitations of the study, and organization of the study. *Chapter two* deals with literature review and quotes the various related works done in this area of study. *Chapter three* describes research methodology followed in this study. Data presentation and Analysis of the study have been dealt with under *Chapter four*. Finally, *Chapter five* provides the summary, conclusions, and recommendations of the study.

CHAPTER TWO-LITERATURE REVIEW

2.1 Introduction

The process of construction can be divided into three distinct and significant phases; the project conception phase, project design phase and the project execution phase. Chan and Kumaraswamy (1997) disclosed that a vast majority of project delay occur during the execution phase where many unforeseen circumstances and factors occur. Completing a construction projects within the estimated time and cost is an indicator of efficiency, but the process of execution is subjected to many unpredictable and changing factors which comes from different sources. These sources include performance of parties, resource availability, environmental conditions, and involvement of other parties and contractual relations. Thus, the completion of the project within the estimated time is rare (Asaf, 2006).

Delays are usually accompanied by cost overruns. When this occur, it will have a debilitating effect on clients, contractors and consultants in terms of growth and adversarial relationship, mistrust, litigation, arbitration, cash flow problems and a general feeling of trepidation towards shareholders (Ahmed 2002). In addition, delay of construction projects cause dissatisfaction to all parties involved and the main role of the project manager are to ensure that projects are completed within the estimated time and cost. Projects stakeholders need to develop the capacity to foresee potential problems likely to affect their current and future projects. Identification of these common problems encountered on past projects in the construction industry is a good option to mitigate the root causes that cause delay and their effects (Long 2004).

2.2 Feature of Distressed Projects.

Wysocki (2006) disclosed that whenever the performance of a project falls outside nominal values, it is judged to be a project in distress and likely to fail unless some intervention strategy brings it back under control. How it got to that state is certainly a question that needs answering. But more importantly is how it can be returned to a state of normalcy-if at all?

Project failure can happen to anybody- and to any project. A Standish CHAOS Chronicles report states that only 52% of completed projects meet their proposed functionality. The same study, based on more than 13,000 projects, reports that successful projects made up ‘just over a third or 34 percent of all projects’-meaning, the other two-third are failing. Another report on 9,236 IT

projects showed that project success rates have settled at a startling 28 percent (The Standish group 2003). Simply put “troubled” means that the project’s variance trends of time, cost, and scope have exceeded acceptable levels and, without immediate intervention, the project will continue on a path to failure. Troubled projects carry a high cost both to your organization and, by association, to you and to key executives (H.LeRoy, (2007).

Blise and Schinke (1997) studied the utilization of job performance evaluations and incentive programs for estimators and project managers in the electrical construction industry. Through statistical hypothesis testing, groups of factors that correlate with whether a project is impacted by change orders were identified and used to develop a quantitative definition of impact. The study by Construction Industry Institute (CII 1993), which was completed by the joint effort of researchers from Oklahoma State University and the CII change order impact force team, tried to develop some qualitative measures to define early warning signs for the construction projects.

There are articles in literature that try to quantify the effect of management on project performance at design and (or) construction phases. Kuprenas (2003) analyzed over 270 engineering projects to assess the impact of the use of project management processes on design phase cost performance. A study by Pocock et al. (1997) developed a predictive model to forecast project performance based on the planned level of designer and builder interaction. The model could be used to predict ranges for expected cost growth, schedule growth, number of modifications, design deficiencies, and user satisfaction. O’Connor and Yang (2004) used an industry-wide survey to collect project data from more than 200 capital facility projects on the issue of technology usage and overall project success. Russell et al. (1997) described a process whereby owner, engineer, and construction contractor organizations can use continuous or time-dependent variables (e.g., owner expenditures, construction effort hours expended) to predict project outcomes from start of detailed design through construction completion. Barraza et al. (2004) used stochastic S-curves to determine forecasted project estimates as an alternative to using deterministic S-curves and traditional forecasting tools.

In construction, projects can be distressed directly or indirectly by many factors and these may result in reduced efficiency. Distress can be defined as budgeted hours being exceeded because of unexpected activities in the construction phase (S. Hanna and Gunduz, 2011)

Whenever the performance of a project falls outside nominal values, it is judged to be a project in distress. How it got to that state is a question that needs answering. Most important is knowing how to establish an early warning system and prevent a project from becoming distressed. But understand that even the best efforts will not be 100-percent effective, and a project can still become distressed. The question then becomes: How can it be returned to a state of normalcy—if at all? (Safari Books Online, 2018),

Flynn (2014) disclosed that distressed projects have no industry preference, they are equally opportunity employers. Therefore the practices are applicable to all industry types. In their consulting practice, they generally use the term “distressed” to represent a project or program that is 20%+ off the cost and schedule baseline targets, exhibits missed milestones and has missed key deliverables.

The risks associated with mega projects are well documented. In one influential study, Flyvbjerg, an expert in project management at Oxford’s business school, estimated that nine out of ten go over budget. Real projects, for example, go over budget by an average of 44.7%, and the demand is overestimated by 51.4%. McKinsey has estimated that bridges and tunnels incur an average 35% cost overrun; for roads, it is 20%. Given that many projects are approved with a 20% return on investment expected, this leaves governments to pick up the tab for the rest. Time overruns, too, are a perennial problem. Consider the metro system in Salvador, Brazil. Construction began in 2000, but it took more than dozen years for the first passengers to ride it; most of the work was not finished still 2015. It has taken New York a decade just to begin the \$3.9 billion project to rebuild the 59 years old Tappan Zee Bridge; meanwhile, the cost of maintaining the worn-out bridge keeps increasing.

2.3 Common Manifestations of a Project that is Distressed.

According to safari books online (2018), the following characteristics are clearly depicted as symptomatic of a distressed project:

The project has exhibited a performance trend that, if continued, will result in its failure.

Whenever the cumulative history of one or both of those metrics exhibits certain trends, it suggests that the project is out of control, and the reason for the trends needs to be identified and

a decision needs to be made as to how to proceed. A growing schedule slippage is one such trend that, if continued, will lead to failure.

The project's performance has exceeded one or more metric values and is a high risk for failure: When any one of these metrics exceeds its trigger value, the project is at high risk for failure. That sets off a series of activities designed to identify the source of the anomaly and the corrective action that needs to be taken. A significant schedule slippage due to a bad estimate, a mistake, and serious vendor delays are three such events that may result in project failure.

The project has recently experienced some significant change that may result in failure:

Oftentimes these changes are related to personnel or other major organizational shifts. Even though the project performance metrics do not indicate any problem, the environmental change may be sufficient to throw the project off course. A change of sponsor and a loss of critical resources are two such changes that may result in a distressed condition and eventual project failure.

If any of the preceding situations happen, it should immediately trigger a project intervention process designed to discover the reasons for the distressed condition, fix the condition, and re-plan the project going forward.

Almost similar symptoms have been depicted by McDonagh & Partners (2018). These include:

1. **Performance trends-** has the project been exhibiting poor performance trends and do they look set to continue this way if things don't drastically change right now? If a project is out of control an immediate assessment need to take place to find the cause of the problem.
2. **Slipping Schedule.**-If the schedule of your project keeps slipping further and further down the calendar it's probably because initial estimate and time frames were grossly incorrect. Other factors like bad estimates, project mistakes, and vendor delays can also contribute to schedule problems.
3. **Organizational Change:** Change in personnel, restructuring, environmental changes, and loss of critical resources are all factors that can bring about project chaos and cause a project fall flat

2.4 Factors Causing Projects become Distressed.

Construction project delays can be caused by many factors. (Ahmed, 2003) classified delay factors into two groups;

1. The internal causes which arises from within the project stakeholders (clients, contractors and consultants).
2. External factors which occur as a result of unforeseen factors. These factors arise not from the project participants. These may include the followings; weather conditions, natural disasters, sub-surface conditions, etc.

Moreover construction delay was also classified into three categories by (Bolton, 1990).

These include;

1. Excusable but non compensable. This is caused by circumstances not attributed to the project stakeholders or participants.
2. Compensable delay. This occurs as a result of acts or omissions of client or someone for whose acts the owner is liable to.
3. Inexcusable delays. This results from contractors' own fault or his subcontractors or materials. This may be sometimes due to lack of experience.

According to Nicklas G et al, (2015), there are three main reasons for failure

Over optimism and over complexity: In order to justify a project, sometimes costs and timelines are systematically underestimated and benefits systematically overestimated. Flyvbjerg argues that project managers competing for funding massage the data until they come under the limit of what deemed affordable; stating the real cost, he write, would make a project unpalatable. From the outset, such projects are on a fast track to failure.

A common example of this comes when big projects cross state or national borders and involve a mix of private and government spending. Just one issue can stall the process indefinitely. In one case, for example, it took two countries a decade to work out the diplomatic considerations that allowed them to build a project. All too often, these complicating issues are not deeply considered or priced to the fullest before launching a project.

Poor Execution: Having delivered an unrealistically low project budget, the temptation is to cut corners to maintain cost assumptions and protect the (typically slim) profit margins for the Engineering and Construction firms that have been contracted to deliver the project. The project execution, from design and planning through construction, is riddled with the problems such as incomplete design, lack of clear scope, ill-advised short cuts, and even mathematical errors in scheduling and risk assessment. A McKinsey study of 48 troubled mega projects showed that poor execution was responsible for cost and time overruns in 73% of the cases; for the rest, these were due to politics, such as new governments or laws. In part, execution is poor because many projects are so complex that what might seem routine issues can become major headaches (Garemo, Stefan M., Robert P., July 2015).

Weakness in Organizational Design and Capabilities: many entities involved in building mega projects have an organizational setup in which the project director sits four or five levels down from the top leadership. This is a problem because each layer will have a view on how time and cost can be compressed.

Capabilities, or lack thereof, are another issue. Because each project is unique, the learning curve is steep every time, and the skills needed are scarce.

Distressed projects have another thing in common; they **lack adequate controls**. Specifically, they do not have robust risk-analysis or risk-management protocols and don't provide timely reporting on progress relative to budgets and timelines. The data used to report on project progress are typically outdated (as they generally rely on payments to contractors rather than on actual work performed) and not aligned with the true progress of the project. In addition, baselines get adjusted time and again, and contractors and owners use different metrics to measure progress. It is problematic when there are multiple estimates of the cost and time performance of the project relative to the baseline, which means there is no common understanding of performance. This limits the partners' ability to figure out how to accelerate project delivery and cost overruns. (Nicklas G et al, 2015)

The class material for Contemporary Issues in Project Management prepared by AAUSC, p111-114, depicted the following major reasons of project failure.

Poor, Inadequate, or No Requirements Documentation

Once requirements have been generated ask yourself what your level of confidence is that you have done the best job possible. You should be reasonably certain that you have identified the necessary and sufficient set of requirements and only their detailed decomposition is suspect.

You can employ a number of Agile Project Management (APM) project management life cycle (PMLC) models if requirements documentation is less than satisfactory or if you expect a high rate of change.

Inappropriate or Insufficient Sponsorship

Some sponsors take their job of sponsorship seriously. Others do not. As project manager, you should keep the project very visible to your sponsor. Sending an e-mail once a week is not sufficient. You should try for face-to-face meetings if there is any doubt about your sponsor's attentiveness to the project.

Complexity of Requirements Not Recognized

Don't assume that the project is simple. That thinking leads to a sloppy job of requirements gathering and documentation. You are heading for trouble if you can't get requirements done correctly, realize what you have or don't have, and then choose the best-fit PMLC model.

Your risk management plan must anticipate the unusual and have the appropriate mitigation plans in place. As requirements become more complex or less complete and clearly documented, the risk of the project becoming distressed goes up.

Unwillingness to Make Tough Decisions

How easy it is to get a project approved, and how hard it is to pull the plug on the most distressed of projects. If you want to get the sponsor's attention, recommend terminating their hopelessly distressed project. But be careful that you don't hurt your own reputation in the process. You needn't be defensive just honest.

Some projects have a very powerful sponsor. They may defend the project beyond reason, but few are major culprit here. If you are going to take him or her on, you had better do your homework.

Lag Time between Project Approval and Kick-Off

Getting a project approved is one thing. Getting it started is another. If the time between approval and startup is too long and the completion date is firm, project risk goes up. Any date-dependent tasks are compromised by the delay, so avoid using those in your project schedule if possible.

You are also at some risk of losing team members due to the delay, especially those who have scarce skills that you need but so do others.

No Plan Revision after Significant Cuts in Resources or Time

Budget cuts, staff cuts, and shorter deadlines are not unusual. Under those circumstances, many project plans are not changed. Despite your pleas, senior management says something like this: “You’ll figure out how to do it anyway. You always have.” Most project managers are helpless to do anything here except keep quiet. Many do not have the tools to push back with an intelligent business argument.

Estimates Done with Little Planning or Thought

Far too many project managers don’t take estimation seriously. They throw some numbers at the plan, and if no one objects, the numbers stay. The correct strategy is to get estimates from staff members who have done the tasks before or will be assigned to do the task on this project. Unless they have been a credible source in the past, you will want some validation of the estimates they provide. Getting a second opinion from someone who is not on the project can be a good validation strategy.

Over commitment of Staff Resources

This continues to be a major problem. Projects are often approved without assessing staff availability. You may have the skills needed, but the people with those skills are already committed to other projects and cannot work your project into their schedules. Dealing with this

situation effectively requires a Human Resources Management System (HRMS) with skills inventories and staff scheduling capability.

Inconsistent Client Sign-Off

Some clients will fully participate in acceptance procedures and not be forced to sign off until they are completely satisfied that their requirements have been met and expected business value achieved. If they have been meaningfully involved throughout the project, that's a good sign that they will be meaningful participants in the acceptance procedures, and their signature is testimony that requirements have been met. Not all clients are like this, however. Some might sign off simply to get the project out of the way and get on with their business. Others might not really understand the project and sign off in ignorance rather than risk being exposed.

No Credibility in the Baseline Plan

If the baseline plan has undergone several revisions and changes at management's and the client's request, there may be serious doubt that it can be achieved.

Estimates that are made and then changed to accommodate a tight deadline are sure signs of a weak plan and one that is destined for trouble. What may have been a solid and well-thought-out plan initially has undergone so many changes and patchwork fixes that it is now a jumbled mess and has lost its credibility with the team.

Unmanageable Project Scope

APM projects expect change and are structured to accommodate it, but there must still be vigilance over scope change. Tracking the frequency and cumulative number of additions to the Scope Bank are two metrics you should have in place. Over the cycles of the APM, a healthy project will show convergence. If changes are requested at an increasing rate, that is a sign of a project out of control. TPM projects do not expect scope change requests, so some control over the number and frequency must be in place. Management reserve is an effective tool and should be included in every TPM project plan.

According to Flynn, et al (2014) the following are the common distressed factors.

- In effective and untimely senior management decision

- Ineffective expectations transfer from client to provider(contract terms misunderstood)
- Ineffective stakeholder communication.
- Lack of execution planning
- Lack of scope and design basis freeze prior to final estimation or definitive contract terms
- Project or program is beyond the experience level of project/program manger
- Inadequate project structure and/or resources

PM solutions, (2011) identified the following causes of a troubled projects. The top five causes of troubled projects were:

1. **Requirements:** Unclear, lack of agreement, lack of priority, contradictory, ambiguous, imprecise.
2. **Resources:** Lack of resources, resource conflicts, turnover of key resources, poor planning.
3. **Schedules:** Too tight, unrealistic, overly optimistic.
4. **Planning:** Based on insufficient data, missing items, insufficient details, poor estimates.
5. **Risks:** Unidentified or assumed, not managed.

In small firms, project governance (lacking, ineffective, different priorities, no clear involvement) is one of the top five causes of troubled projects; planning drops off the list. The extent to which firms were challenged by these causes of troubled projects was far greater for firms with no standard project management methodology than those with.

Additional literature review related to studies on causes of delay are summarized in Table 2.1 below.

Table 2.1: Summary of the literature review related to studies on causes of delay

Authors	The key delay factors highlighted
Chan and Kumaraswamy (1997)	• Five principal factors: poor risk management and supervision, unforeseen site conditions, slow decision making, client-initiated variations, and work variations.
Kaming (1997)	• The most important factors causing delays are design changes, poor labor productivity, inadequate planning, and resource shortages.
Assaf and Al-Hejji (2006)	• Only one cause of delay is common between all parties, which is “change orders by owner during construction”. • Many causes are common between two parties, such as delay in progress payments, ineffective planning and scheduling by contractor, poor site management and supervision by contractor, shortage of labors and difficulties in financing by contractor.
Odeyinka and Yusif (1997)	• Client-related delays included variation in orders, slow decision-making and cash flow problems. • Contractor-related delays identified were: financial difficulties, material management problems, planning and scheduling problems, inadequate site inspection, equipment management problems and shortage of manpower. • Extraneous causes of delay identified were: inclement weather, acts of nature, labor disputes and strikes.
Abd El-Razek (2008)	• The most important causes of delay are financing by contractor during construction, delays in contractor’s payment by owner, design changes by owner or his agent during construction, partial payments during construction, and non-utilization of professional construction/contractual management.
Fugar and Agyakwah-Baah (2010)	• The top ten most important factors causing delay in Ghana are: delay in honoring certificates, underestimation of the cost of project, underestimation of complexity of project, difficulty in accessing bank credit, poor supervision, underestimation of time for completion of projects by contractors, shortage of materials, poor professional management, fluctuation of prices/rising cost of materials, poor site management.
Batool & Abbas (2017); Sambasivan & Soon (2007)	Lack of communication

2.5 Effects of Delay

Aibinu and Jagboro (2002) studied the effects of construction delays on project delivery in Nigerian construction industry. They discovered six possible common effects which arising in most countries as a result of delay. These effects were: time overrun, cost overrun, disputes, arbitration, litigation and total abandonment of project.

Time overrun

This is one of the most common issues in the construction industry. It can be defined as the failure to complete a project within the estimate time (Ahmed et al, 2002). It can be used as a tool for qualifying a project as failure.

When the issue of time overrun occurs, the project completion time will be further extended beyond that which was estimated. The tendency is that it will lead to dissatisfaction by the owner or the clients. Sometime the contractor may lose the project as he will be seen as incompetent.

Cost Overrun

This refers to the excess of the actual cost that was planned or budgeted for the project from the conception phase to the construction and finishing phase. It can be referred to sometimes as cost escalation, cost increase or budget overrun (Singh, 2009). It can also be explained as the difference between the actual cost of the project and the initial cost budgeted.

Arbitration and Litigation

Litigation is a court case that occurs amongst project stakeholders or participants in an attempt to settle an existing dispute. On the other hand, Arbitration occurs when in an attempt to settle a dispute amongst project participants, a third party known as an arbitrator is involved without going to the court. According to (Eipstein, 2005) these two phenomenon are inevitable and seem to be part of construction projects.

Project Abandonment

Project abandonment can be referred to as putting a stop or an end to an ongoing project due to many difficulties and constraints or problems faced during the phases of the project life cycle such that it becomes impossible to continue at that time (Alusegun, 2011). Many construction and non-construction projects have been abandoned at various stages of their life cycle thus causing significant amount of losses to the stakeholders. To the owner or client losses in terms of capital and other resources including time. To the contractors and consultants losses in terms of time and wastage of expertise. Usually most projects abandoned as a result of too much prolonged delay. The contractors, consultants or owner can abandon the projects.

2.6 Strategies for Managing Distressed Projects

In general, there are two types of strategies for dealing with distressed projects. Every project that becomes distressed was once not in distress, and there are prevention strategies to minimize the likelihood of projects becoming distressed. Despite due diligence, the prevention strategies might not work due to prevailing conditions beyond our control, and a project will still become distressed. If this happens, there are intervention strategies that we can use. In this section the researcher gives due consideration on intervention strategies to rescue a distressed project.

2.6.1 Intervention Management Strategies

PM solutions (2011) in their research disclosed that their research shows that when organizations take actions to recover troubled projects, they are highly successful. Almost three quarters (74%) of the troubled projects that underwent a recovery intervention in the past three years were recovered. In addition, 18% of these projects have recovery efforts that are still ongoing; the successful completion of these projects should boost the percentage of recovered projects substantially. Although it is usually senior management that makes the decision to actively intervene in a troubled project to recover it, it's the project manager who usually leads the execution of the recovery process. In fact, the project manager is often replaced with a new project manager or consultant, someone more experienced to head the recovery effort. In any case, project recoveries are highly successful once firms decide to focus on addressing the issues that caused the project to become troubled in the first place.

According to PM solution (2011) findings, the top five actions most often taken in a project recovery intervention are:

- **Improving communication-** stakeholder management
- **Redefining the project**—reducing the scope, re-justifying the project financially.
- **Adding and/or removing resources.**
- **Resolving problematic technical issues.**
- **Replacing the project manager or bringing in a consultant to manage recovery**

Firms without a standard project management methodology were far more likely to replace the project manager from outside the organization than those with a methodology (22% vs. 9%).

Requests to “recover” a project that has strayed into the territory called “distressed” usually come complete with a “hairs on fire” urgency to locate and solve issues including emotional

distressed, protectionism, and a myriad of other valid reasons for the current condition. Amidst the chaos and high-emotion, the project must be assessed without prejudgment or bias, and lead to a path of recovery. (Flynn, et al 2014)

For the sake of recovering a project to its original scope expectations, the earlier the project is recognized as “sliding” the better. You may be asking “why only recover the scope expectations?” In many recovery efforts, our involvement begins well beyond the beginning phase of the “slide”. It is foregone conclusion that the schedule and budget will need to be expanded to allow for original scope expectations to be met. In cases where schedule and budget can’t be expanded, scope is decreased to meet these constraints. PM stands for project management ... not project magic!! When a project has slipped into serious distress, recovering scope expectation in a stressful environment without major time and cost overruns is a feat in and of itself (Flynn, et al 2014).

The Basic Life-Cycle Approach

Flynn, et al (2014) has developed a basic and consistent **life-cycle approach**. This approach is free of non-value added deliverables and is aimed at quickly and accurately getting to the heart of the distressed, and implementing the corrective action plan, executing and controlling new deliverable development, and executing formal project closure practices/processes. The basic life-cycle approach consists of the **entering** phase, **execution and control** phase, and **closing** phase.

Entering Phase

The term “entering” remind us that we are not starting with a clean state. To the contrary, we are in the middle of something failing that requires professionalism, patience, insight, tact, and critical thinking in order to make a positive impact. Also we are reminded that entering in the middle means we must exercise diligence to quickly get caught up on the underlying context of the project. This requires much listening and observation.

This phase involves:

- **Scope Development:** Developing the consulting scope to recover a distressed project generally involves achieving clarity around and documenting the initial project expectations (history),

current organizational assessment of the project, expectation of the recovery assignment, scope of authority, internal contacts and key resources, and agreement on the approach (variations) to assignment.

- **Schedule initial interviews and data gathering:** In order to properly assess the project, we must interview a varied group of individuals who are directly and indirectly involved with the project. Generally (hopefully), the individual responsible for our involvement with the project will have identified the organization's key resources. At a minimum, the following resources should be interviewed: Project sponsor, project customer, project manager and staff, key functional managers, key technical SME's and all team leads, schedulers, controls resources, key project team resources (formal & informal leaders).
- **Analysis and assessment phase:** Depending on the point of entry, i.e., the level of current distress this phase can be the most labor intensive of the assignment and not glamorous one either. This is where the picture of the project, last and present comes together for us. One must have a great deal of tact yet possesses plenty of tenacity in order to get the nexus of the distress without alienating everyone at the same time. We will need to maintain very professional relationship during this phase as we will need buy-in and validation for our proposed solution later on.
- **Conduct initial interviews, data gathering, documentation and data review evaluation and probative interviews:** Although distinct, the three processes above share enough communality for us to discuss them together in this format. Many of the initial interviews will give us access to the projects required documentation/data. In some instances, the data may be presented to us prior to the interviews. Once the first round of interviews and documentation data review has been executed, we will conduct probative interviews that will be used to "drill" in to specific areas uncovered earlier. To begin with, we will review the following specific documentation: Project charter, scope statements, project estimates including basis of estimate documentation, project schedules, project design basis documentation and reviews, communication management strategy, scope- change management strategy, risk management strategy, procurement- vendor management strategy, project controls management strategy.

Many times, these documents-artifacts have not been created. Or, they were created in order to gain project approval and have not been kept up to date; both are signs that project execution

planning may not have been robust enough. Bench mark studies confirm that a lack of execution planning is a key case in project distress and failure.

- **Developing Conclusions and Solution approaches:** This area is where experience plays a predominant role. As previously mentioned, projects are unique in their specific characteristics, yet sources of distress usually align with benchmark findings and common empirical results from one distressed project to the next. This certainly is not a rule yet. We do see many of the same “snages” from project to project. Solutions are comprised of specific responses to causal factors and vary project to project based on culture, organization, resource level, management buy-in, etc.
- **Gaining approval and consensus (findings and solutions):** Difficulty of ease in gaining approval, validation, and consensus is usually and directly related to the level at which the causal factors occur.

Execution and Control Phase

Of the phases involved in recovering the distressed project, the execution and control a phase signals a temporary sign of relief. Although much more work will be required, it signals that we have properly assessed the issues with the prior project difficulties and our solution has been validated and approved. This phase involves:

Execution planning: Over the years, we have seen that most distressed projects lack proper execution planning and where there is a lack of execution planning; there is a lack of execution cognizance and the lack of proper resources for execution and closeout. Elements of a sound project execution plan (or project plan) include the following elements/ areas and will be vary from industry to industry: Project management, risk management, communications management, quality management, design management, information management, resource management, and procurement management.

- **Roles and Responsibility Determination:** With a solid execution plan in place and the team resources identified, alignment sessions are utilized to review all deliverables, major roles, support roles, interdependencies, and the required timing for deliverable development.
- **Schedule and Budget Development:** As with execution planning, we would have determined initial schedule and budget implications during the development of our recovery solution. In

this phase, we will be developing the definitive master schedule and associated budget baseline (supported by our definitive execution plan). Scheduling is a professional discipline and project scheduling on large and complex projects borders on being an art form. Developing accurate baseline that can be monitored, trended, and controlled is well worth the additional cost of the scheduling resource and in a recovery effort, we can't afford to miss the target a second time.

- **Project Control Strategies in Place:** Developing sound project control strategies begins with accurate and “controllable” baselines. As mentioned above, a dedicated scheduling resource can make this “control” possible for the project manager. In addition to accurate baseline development, sound project control requires the development of the following elements: Key milestones identified and attributed with deliverables, key deliverables with clear completion metrics, formal execution reviews (performance and risk relation), earned value and burn rate strategies (monitoring and trending analysis), and defined and consistent performance reporting requirements for team members.
- **Deliverable Execution and Validation:** Once control strategies are in place, deliverable execution may begin again. Our control strategies and practices will assist in trending actual performance against our base line and incrementally validating deliverable execution (and reacting to variance).

Closing Phase

In many projects, organizations begin to “strip” resources from projects as they appear to be reaching the finish line. The project manager will want to guard against this by modeling (in the risk assessment) the adverse effects of prematurely diverting key resources to other projects.

In summary, with a detailed and methodical approach to recovering projects, the effort need not to be cathartic yet, it is still a wiser and less stressful approach to commit to the proper planning and diligence initially.

Hamil, (2012) identified and described the following as the top three steps to project recovery are shown below, in order of priority

- **Assessment:** Project recovery begins with an assessment of the situation at hand. The PM (i.e., new leader) must first conduct an assessment using interviews, project plans, status reports and other project artifacts.

- **Planning:** Based on the “response” from the assessment and the “State of the Project” report, the PM will develop a new plan (the “Recovery Plan”) , determine what resources are needed to recover the project, communicate the recovery plan and as applicable, the PM should obtain senior management and customer sign-off on the recovery plan.
- **Execution:** With recovery plan in place, it’s time for the PM to lead the team into action using PM best practices.

CHAPTER THREE-RESEARCH METHODOLOGY

3.1 Research Design

The research was designed to get evidences from client, consultant, contractor, and local people of the road project under studied in regards to the factors causing distress, effects of distress, as well as recovery strategies associated with road construction delays.

The possible causes, effects and recovery strategies were identified from the literature and these factors were tested with the stakeholders of the road project.

16 internal and 4 external, a total of 20 delay factors were identified from the literature and stakeholders of the road project under studied were asked to give their opinion on these causes in the form of ranking. To get additional distressed factors, open ended question has been provided to be filled by respondents.

Also 8 effects of construction projects delay were identified from the literature and questions were designed according to these factors to get the opinion from stakeholders of the project. To know additional effects of distressed, respondents have been asked to list the same in the open ended question..

Similarly, 8 recovery strategies of delayed projects were identified from the literature and stakeholders of the project were asked to give their opinion on these methods in the form of ranking. To get more suggestions from respondents on recovery methods, open ended question has been provided to be filled by respondents.

Besides, to answer the research questions outlined in chapter one the researcher conducted semi structured interviews, focused group discussion, and site visit of the project under studied.

3.2 Research Approach

In this study both quantitative and qualitative research methods have been employed. This enabled the researcher to triangulate his findings. To back up the findings from quantitative approach, the researcher used qualitative approach. Questionnaires (quantitative methods) have been used to gather statistical data and these responses have been backed up and researched in more depth by interviewing selected respondents of questionnaires participants and direct observation of the sampled project by the researcher.

3.3 Target Population

The population was comprised of project participants from client, contractor, consultant, and Woreda Administrative people. The size of the defined target population is 75: 3 from client, 50 from contractor, 10 from consultant, and 12 from Woreda Officials.

3.4 Sampling and Sample Procedure.

Since the target population, N, is known, the study adopted the formula of Kothari (2004) as shown below to determine the sample size, n, of survey respondents.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size

N = the size of target population

e = the margin of error

$$n = 75/(1+75*(0.1^2))$$

$$n = 43 \text{ respondents}$$

Out of 43 respondents only 26 respondents answered the questions successfully. Thus, the sample size of this study is considered to be 26.

$$\text{Sample proportion (\%)} = 26/75*100 = 34.67\%$$

These participants are comprised of 1 respondent from client (the sponsor), 14 respondents from contractor (2 project managers, 3 office and assistant office Engineers/schedulers, 3 functional managers, 6 foremen /operational groups), 4 respondents from consultant(1 Resident Engineer (RE), 3 consultant project teams), and 7 local people from government officials (Woreda Administrators). These respondents have clear information at least on the execution phase of the particular project and most have direct involvement for more than a year in the implementation phase of the project. These backgrounds provided the respondents with enough information on issues relating to causes, effects and some mitigation methods of the distressed project.

3.5 Sampling Technique

In this study, purposeful sampling technique, also known as purposive and selective, has been used. Based on the researcher's own judgment respondents best meet the purposes of the study have been selected and picked.

3.6 Description of the Study Area

Despite several possible areas to assess distressed projects, the researcher purposefully cited Laska-Salayish Design and Construct Road Upgrading Project found in the South-Western part of Ethiopia, in the Southern Nations, Nationalities and Peoples' Regional State. The commencement date of the project was 4th August, 2011 and the original completion date was 5th August, 2014. But the project is not completed yet. The selected project is in my area of interest and I would like to contribute sound ideas based on well organized studies in order to realize the benefits of the projects.

3.7 Data Collection Methods

This is referred to as the gathering or the collection of information from customized target respondents to suitably answer the research questions or the research objectives. In this study, the data was obtained using two different methods.

3.7.1 Primary Data Collection

The primary data refers the first hand information obtained by the researcher himself in his or her study. This information is made available for the first time only by the researcher. The information can be collected through direct personal investigations, through respondents, and survey using questionnaires.

In this study, the primary data was collected in the survey by making use of questionnaires, interviews and direct personal investigations. The questionnaires were emailed to some target respondents who were expected to fill the soft copy of the questionnaires and returned them by emails and for some other respondents hard copy of questionnaires were sent to be filled and returned back.

3.7.1.1 Questionnaire

A questionnaire survey was designed based on the objectives of the study, which are causes of distressed in implementation of road projects, effects of distressed and the method to mitigate these distresses. A questionnaire survey was developed to get evidences from 26 respondents (which included 1 respondent from client, 14 respondents from contractor, 4 respondents from consultant, and 7 local people from government officials) regarding to projects implementation delays problem of the captioned project. These questionnaires are classified into four sections: Section A presented respondent background, Section B included factors that lead the project into distressed condition, Section C comprised effects of the distressed project, and Section D presented strategies to be employed to mitigate slippages of the project

For the factors that lead the project into distressed condition, a total of 20 questions was identified from literature and respondents were invited to rate these questions based on their working experience their own judgment. The questionnaire is mainly design based on the 3 point Likert Scale which measures from 1-3 (Jacoby and S. Matel, 1971) according to the level of contribution.

3= High contributing

2= Medium contributing

1= Low contributing

For the effects of the distressed project, 8 effects were identified from the literature and the respondents were invited to rate these consequences based on their impact. Questionnaires were design using the 3 point Likert scale (Jacoby and S. Matel, 1971) to determine the impacts of these measures.

3= High effect

2= Medium effect

1= Low effect

For strategies to be employed to mitigate slippages of the project, 8 proposed methods were identified from the literature and the respondents were asked to rate these proposals based on effectiveness. Questionnaires were design using the 3 point Likert scale (Jacoby and S. Matel, 1971) to determine the effectiveness of these measures.

- 3= Highly effective
- 2= Medium effective
- 1= Low effective

3.7.1.2 Interview

To reinforce the quantitative data, the researcher conducted probative interviews with 6 respondents which are from the contractor side (2 project managers, 4 Office and Assistant Office engineers) that have been used to drill in to specific areas uncovered earlier. The researcher selected informants who are well equipped with information about the background of the sample project. To make the interview more effective, the researcher semi-structured it based on the requirements of the research questions (outlined in the introduction part) and the related design. The researcher constructed thoughts beforehand and standardized so that all participants were asked the same questions in the same order. The data gathered has been analyzed in line with the questionnaires.

3.7.1.3 Focus Group Discussion

An open discussion was conducted with 2 contractor's project team group (1 Office Engineer and 1 Superintendent) who are in the project for long time. These participants have been invited to reflect freely their views on what is going in the execution phase of the sample project. The researcher conveyed the discussion in the direction of troubled projects that enabled him to catch up the challenges faced the captioned project. The data collected was analyzed against data collected through other methods.

3.7.1.4 Observation

Besides the aforesaid methods, the researcher has visited the aforementioned project. This enabled the researcher to cite and update the information on the project status.

3.7.2 Secondary Data Collection

In this study, secondary data was collected from relevant documents like journals prepared by stakeholders of the project, Contracts, official documents and reports, correspondences (letters), minutes of meetings, company websites of concerned parties.

3.8 Research Instrument

Structured questionnaires were used to ensure that all respondents reply to the same set of questions. Questionnaires were preferred because of the simplicity in administration, scoring of items and analysis (Ary, 1979). In addition, interview guides, focused group discussion, and observation were used to supplement findings from the questionnaires.

3.8.1 Validity of the Instrument

Kothari (2004) defines validity, as the degree to which an instrument measures what it is supposed to measure. The validity of the questionnaire was determined by ensuring that questions or items in it conform to the elements identified in the literature. Validity was undertaken to determine whether the content of the questionnaire or interview guide is apt and relevant to the study purpose. The researcher also used expert judgment which was done by contacting Managers and Resident Engineers to ensure the relevance, wording and clarity of the questions or items in the instrument.

3.9 Data Analysis and Interpretation

In this study, both quantitative and qualitative methods of data analysis have been employed. The quantitative data was analyzed based on Relative Importance Index (RII). The Relative Importance Index (RII) was computed as:

$$RII = \frac{\sum_{i=1}^3 Wi}{N \cdot A} \quad 0 \leq RII \leq 1$$

Where:

RII = Relative Importance Index

i = Response category index = 1, 2, 3

W = The weight assigned to ith response

A = Highest Weight = 3

N = Total number in the sample

The qualitative data was analyzed by using descriptive and explanatory methods of data analysis.

3.10 Ethical Considerations

Ethics are norms or standards of behavior that guide moral choices about our behavior and our relationship with others. In this study the researcher took ethical issues into consideration to ensure that no one is harmed or suffered adverse consequences from the research activities. The

research was designed so that a respondent does not suffer physical harm, discomfort, pain, or loss of privacy. Due consideration has been given to avoid unethical activities that include violating nondisclosure agreements, breaking respondents confidentiality, deceiving people, invoicing irregularities, avoiding legal liabilities.

Informed consent is one the ethical area addressed in this study. Before requesting permission to proceed the survey, the researcher fully disclosed the procedures of the survey to the respondent. This enabled to have informed consent from respondents.

A right to privacy is the other ethical issue that has been taken into consideration. To address these rights, the researcher did the following: informed respondents of their right to refuse to answer any questions or participate in the study, obtained permission to interview respondents, scheduled field and phone interviews, limit the time required for participation. The confidentiality of the survey answers was the other important aspect of the respondents' right to privacy that was properly address by the researcher.

The obligation to be truthful is among the ethical issues included in this study. Once a respondent was willingly agreed to participate in the study, the researcher explained that providing truthful answer through honest cooperation is main obligation of the respondent.

CHAPTER FOUR-DATA PRESENTATION and ANALYSIS

4.1 Introduction

This chapter presents a series of analyses carried out for the factors of each of the sections. These include the causes of distress, effects of distress, and the recovery strategies of distress. The quantitative data was analyzed by using Relative Importance Index (RII) and the qualitative data was analyzed by using descriptive and explanatory methods of data analysis. It also presents the results of the analysis by using tables and descriptive statistics such as the bar charts, pie charts, and the mean.

4.2 General Description of Sample Demographics

The demographic questions were designed to obtain some background information about the respondents of this study.

4.2.1 Participants' Job Positions.

Table 4.1 below depicts job distribution of the participants that took part in the survey.

Table 4.1 **Job distribution of the respondents**

Stakeholder	Job (position)	Frequency	Percentage	Cumulative percentage
Client	Sponsor	1	3.85	3.85
Contractor	Project Manager	2	7.69	11.54
	Office and Assistant Office Engineers(schedulers)	3	11.54	23.08
	Functional Managers	3	11.54	34.62
	Formen (operational groups)),	6	23.08	57.69
Consultant	Resident Engineer (RE)	1	3.85	61.54
	Consultant project teams	3	11.54	73.08
Local People	Government officials (Woreda Administrators)	7	26.92	100
Total		26	100	

Source: Own survey data, 2018

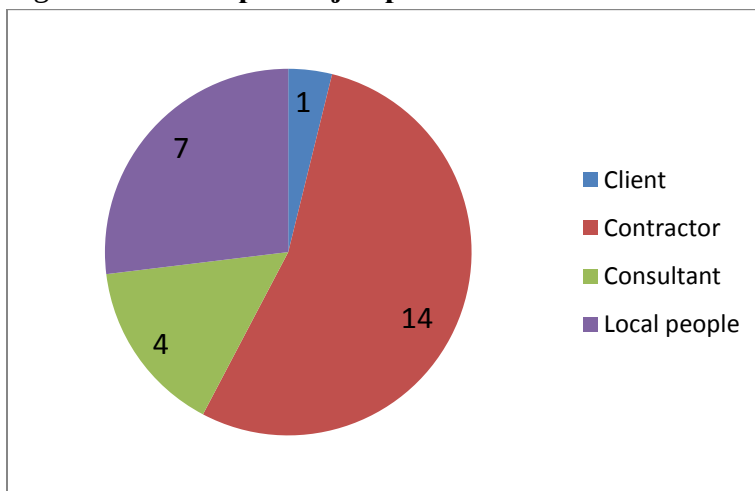
Table 4.2 Summary of Job distribution of the Respondents

Stakeholder	Frequency	Percentage	Cumulative percentage
Client	1	3.85	3.85
Contractor	14	53.85	57.69
Consultant	4	15.38	73.08
Local people	7	26.92	100

Source: Own survey data, 2018

Figure (4.1) shows a pie chart of the participants' job profile

Figure 4.1 Participants' job profile



Source: Own survey data, 2018

The results indicated that 26 questionnaires were successfully completed and returned. Of the 26 questionnaires returned, 1 (3.85%) were answered by Client, 14 (53.85%) were responded by Contractor, 4 (15.38%) were answered by Consultant, and 7 (26.92%) were answered by woreda administrative people.

4.2.2 Participants' Years of Experience in the Project.

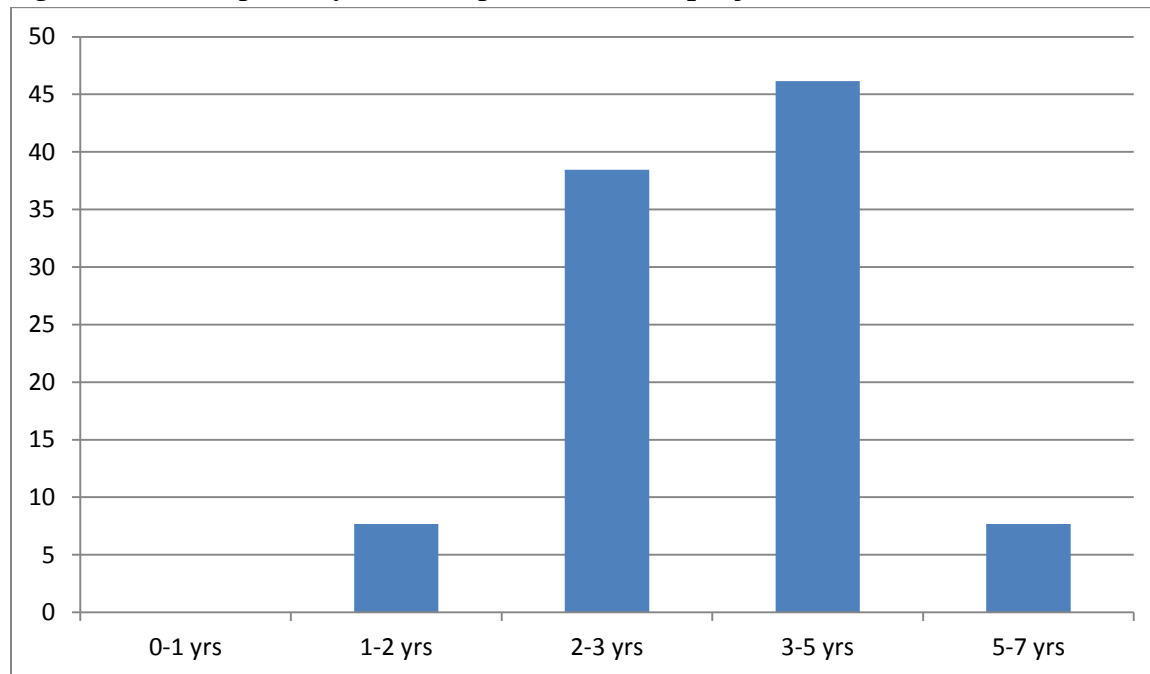
Table 4.3 Participants' years of experience in the project

Year	Frequency	Percentage	Cumulative percentage
< 1	0	0	0
1-2	2	7.69	7.69
2-3	10	38.46	46.15
3-5	12	46.15	92.31
5-7	2	7.69	100
Total	26	100	

Source: Own survey data, 2018

Figure 4.2 shows bar chart of participants' years of experience in the project

Figure 4.2 Participants' years of experience in the project



Source: Own survey data, 2018

The results above clearly showed that 26 respondents returned questionnaires, 2 (7.69%) of the respondents had 1-2 years of working experience in the project, 10 (38.46%) respondents had 2-3 years of working experience in the project, 12 (46.15%) had 3-5 years of working experience in the project and finally 2 (7.69%) had 5-7 years of working experience in the project.

Besides, 6 respondents participated in interview. All the 6 participants were from the contractor (2 project managers, 4 Office and Assistant Office engineers). Focused group discussion was conducted with 2 contractor's project team group (1 Office Engineer and 1 Superintendent).

4.3 Analysis of Findings

The objective of conducting the analysis for this section is to establish the factors under the groups of causes, effects and mitigation methods of distressed projects identified from the literature review and the ranking of these elements according to their significant influence towards cause, effects and recovery strategies of project implementation delays.

A ranking method was used to achieve this objective and the significant of using these methods is it can reveal the most influential factors within each category of the same.

4.3.1 Factors that Lead the Project into Distressed Condition.

To analyze the factors causing distressed, Relative Importance Index (RII) is used to calculate the mean of distribution of each factor. The factors were then ranked based on the frequency of response by the respondents. The factors that scored the highest mean were ranked top factors that cause distressed in the road construction project.

$$RII = \frac{\sum_{i=1}^3 W_i}{N \cdot A} \quad 0 \leq RII \leq 1$$

Of the 20 factors that were analyzed for the causes of distress, it was observed that 16 of the factors were internal factors related to management problems of Client, Contractor, and Consultant and the remaining 4 factors were caused by force majeure related to unforeseeable events which are beyond the control of the parties. These are presented on the following tables.

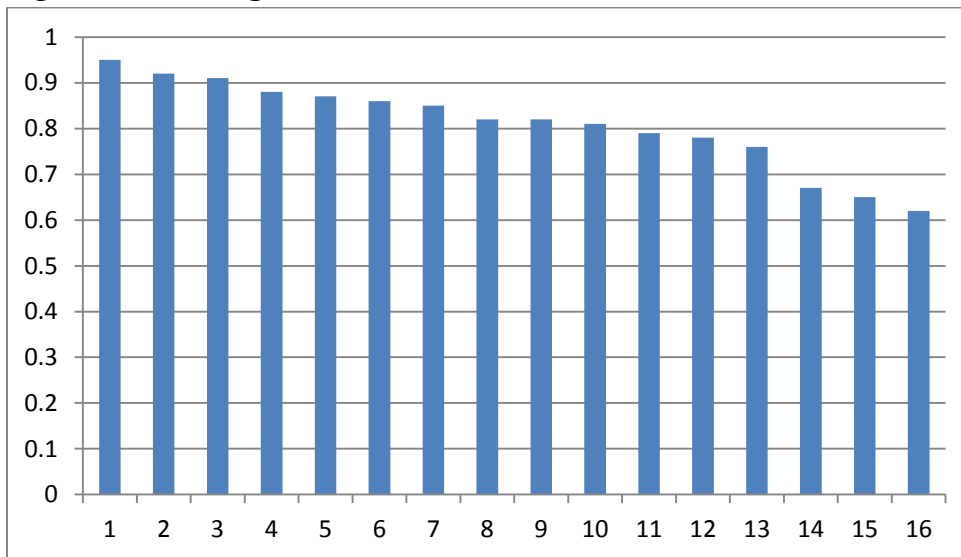
4.3.1.1 Internal Factors

Table 4.4 The RII value and ranking of internal factors of distress

Sn.	Causes of Distress	RII	Rank
1	Lack of accurate execution planning and estimates of resources	0.95	1
2	Lack of adequate control and monitoring systems	0.92	2
3	Lack of resources-late delivery of resources	0.91	3
4	Change orders-Design changes	0.88	4
5	Turnover of personnel	0.87	5
6	Incompetent project team	0.86	6
7	Poor communication-poor reporting system	0.85	7
8	Lack of proper risk management system	0.82	8
9	Poor decision making process	0.82	8
10	Right of way (ROW) obstructions	0.81	10
11	Multiple projects by the contractor	0.79	11
12	Incompatibility of assumptions of efficiency and performance rates with actual ones	0.78	12
13	Exaggerated forecasting of payments (payments done for incomplete work items)	0.76	13
14	Delays in payment to the contractor	0.67	14
15	Rework due to errors	0.65	15
16	Fluctuation of prices	0.62	16

Source: Own survey data, 2018

Figure 4.3 Ranking of internal factors of distress



Source: Own survey data, 2018

Where

1. Lack of accurate execution planning and estimates of resources
2. Lack of adequate control and monitoring systems
3. Lack of resources-late delivery of resources
4. Change orders-Design changes
5. Turnover of personnel
6. Incompetent project team
7. Poor communication-poor reporting system
8. Lack of proper risk management system
9. Poor decision making process
10. Right of way (ROW) obstructions
11. Multiple projects by the contractor
12. Incompatibility of assumptions of efficiency and performance rates with actual ones
13. Exaggerated forecasting of payments (payments done for incomplete work items)
14. Delays in payment to the contractor
15. Rework due to errors
16. Fluctuation of prices

As seen from table 4.4 and figure 4.3 above, lack of accurate execution planning and estimates of resources, poor controlling and monitoring systems, failure to deliver the right resources on the right time, design changes, and turnover of personnel are the five most critical internal causes that lead the project in to distressed condition. Poor execution planning is ranked first and is the most important factor which impeded the smooth execution of the project for the intended purpose.

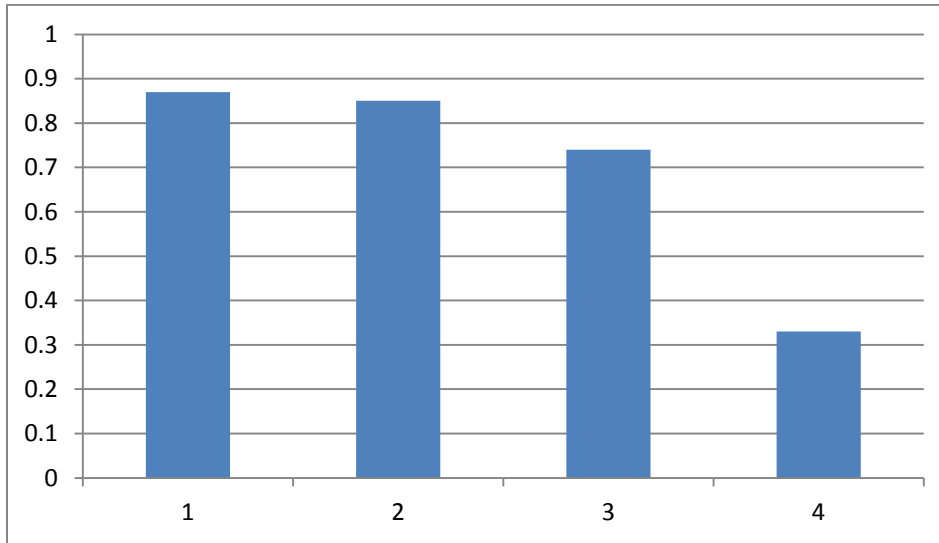
4.3.1.2 External Factors

Table 4.5 The RII value and ranking of external factors of distress

Sn.	Causes of Distress	RII	Rank
1	Landslides	0.87	1
2	Exceptional adverse climatic conditions-Rain	0.85	2
3	Sub-surface conditions	0.74	3
4	Natural disasters like earth quakes	0.33	4

Source: Own survey data, 2018

Figure 4.4 Ranking external factors of distress



Source: Own survey data, 2018

Where

1. Landslides
2. Exceptional adverse climatic conditions-Rain
3. Sub-surface conditions
4. Natural disasters like earth quakes

Table 4.5 and figure 4.4 showed that massive landslides caused by subsurface water, rain and subsurface conditions are the critical external factors of distress ranked as first, second, and third respectively. Natural disasters like earth quakes received the least mean as such events are not problems in the project corridor.

4.3.1.3 Ranking of Factors that Cause Distress

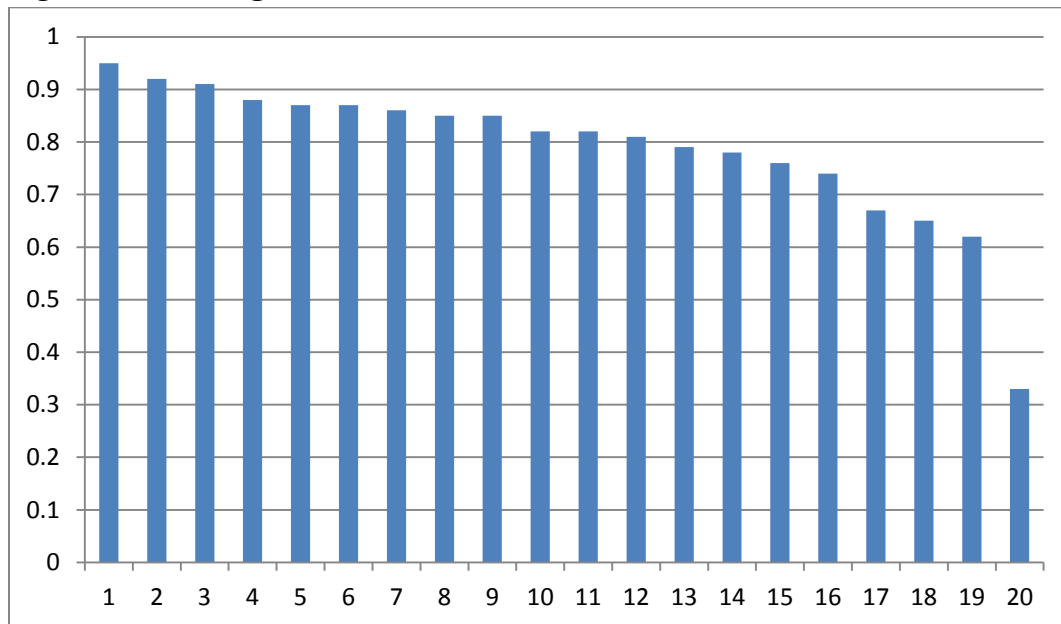
Based on the results of analysis of the factors in each group, as discussed above, the overall ranking of factors that cause distress has been established as shown in Table 4.6.

Table 4.6 **Ranking of Factors that Cause Distress**

Sn.	Causes of Distress	RII	Rank
1	Lack of accurate execution planning and estimates of resources	0.95	1
2	Lack of adequate control and monitoring systems	0.92	2
3	Lack of resources-late delivery of resources	0.91	3
4	Change orders-Design changes	0.88	4
5	Turnover of personnel	0.87	5
6	Landslides	0.87	5
7	Incompetent project team	0.86	7
8	Poor communication-poor reporting system	0.85	8
9	Exceptional adverse climatic conditions-Rain	0.85	8
10	Lack of proper risk management system	0.82	10
11	Poor decision making process	0.82	10
12	Right of way (ROW) obstructions	0.81	12
13	Multiple projects by the contractor	0.79	13
14	Incompatibility of assumptions of efficiency and performance rates with actual ones	0.78	14
15	Exaggerated forecasting of payments (payments done for incomplete work items)	0.76	15
16	Sub-surface conditions	0.74	16
17	Delays in payment to the contractor	0.67	17
18	Rework due to errors	0.65	18
19	Fluctuation of prices	0.62	19
20	Natural disasters like earth quakes	0.33	20

Source: Own survey data, 2018

Figure 4.5 **Ranking factors of distress**



Source: Own survey data, 2018

Where

1. Lack of accurate execution planning and estimates of resources
2. Lack of adequate control and monitoring systems
3. Lack of resources-late delivery of resources
4. Change orders-Design changes
5. Turnover of personnel
6. Land slides
7. Incompetent project team
8. Poor communication-poor reporting system
9. Exceptional adverse climatic conditions-Rain
10. Lack of proper risk management system
11. Poor decision making process
12. Right of way (ROW) obstructions
13. Multiple projects by the contractor
14. Incompatibility of assumptions of efficiency and performance rates with actual ones
15. Exaggerated forecasting of payments (payments done for incomplete work items)
16. Sub-surface conditions

17. Delays in payment to the contractor
18. Rework due to errors
19. Fluctuation of prices
20. Natural disasters like earth quakes

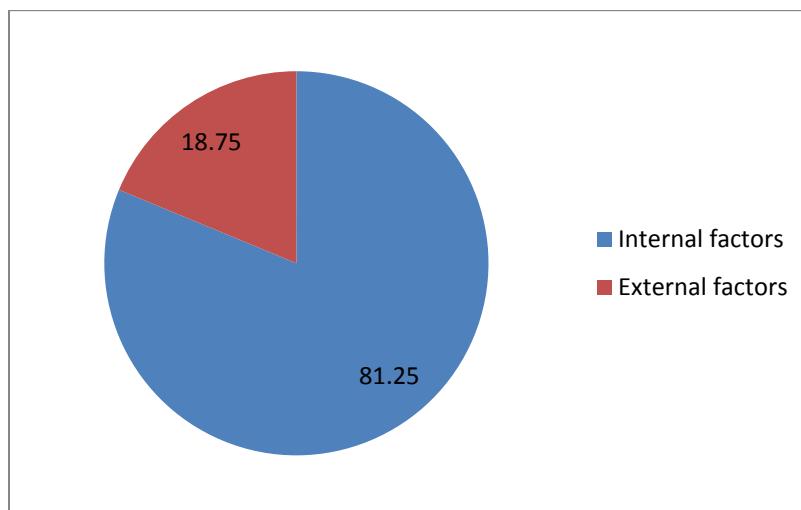
As seen from table 4.6 and figure 4.5, a total of 20 factors that contributed to the causes of distress in implementation of the project were identified, analyzed and ranked accordingly.

The top five most important factors that contributed to the causes of distress in implementation of the project are lack of accurate execution planning and estimates of resources, poor controlling and monitoring systems, failure to deliver the right resources on the right time, design changes, turnover of personnel and landslides.

Besides, poor communication (poor reporting system), exceptional adverse climatic conditions (rain), lack of proper risk management system, and poor decision making process are among the top ten ranked factors with sequence.

Of the top sixteen critical factors that lead the project into distressed condition, the thirteen factors are internal factors related with management problem of client, contractor and consultant. The three factors are external causes of distress which are unforeseeable and beyond the control of the parties. This means management problems covered 81.25% and force majeure covered 18.75% of root causes that lead the project in to distressed condition.

Figure 4.6 Internal verse external factors of distress



Source: Own survey data, 2018

4.3.2 Effects of Distressed Project

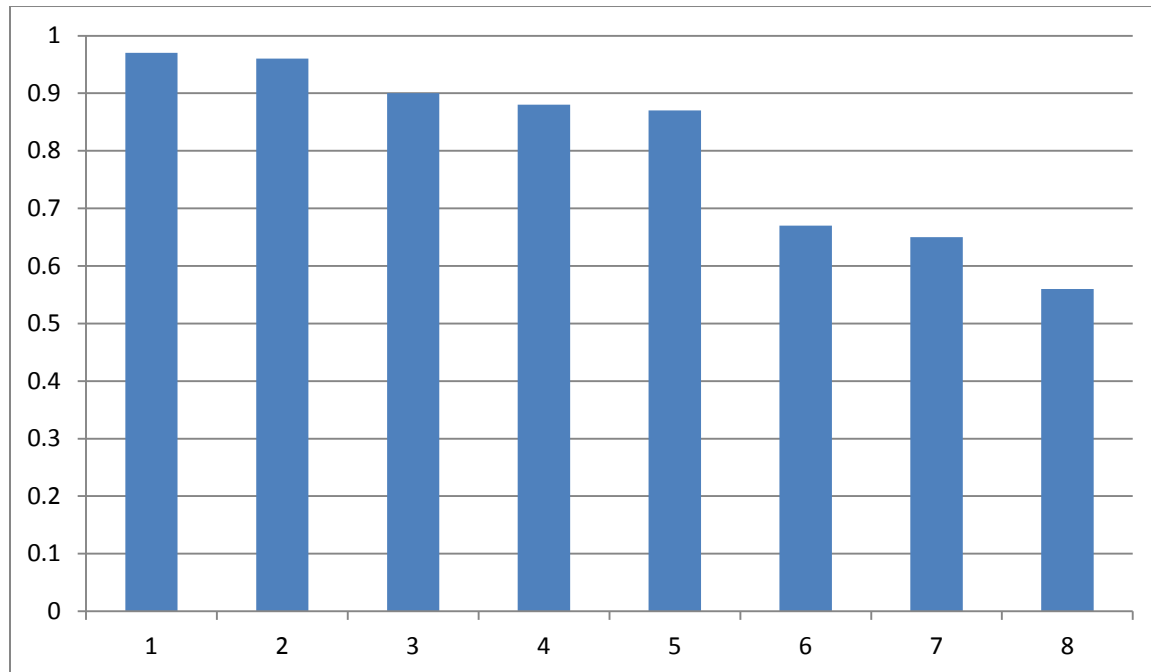
The questionnaires surveyed on the effects of distressed project were also analyzed by using RII to calculate the mean score of each factor. The mean score of the factors were ranked in descending order according to the scale chosen by the respondents. The factors with the highest mean score were considered to be the most severe effects caused by construction distresses. This was represented on a Table 4.7.

Table 4.7 **Ranking of effects of distressed project**

Sn.	Effects of Distress	RII	Rank
1	Cost overrun	0.97	1
2	Overall economic impact in the region	0.96	2
3	Time overrun	0.90	3
4	Negative social impact	0.88	4
5	Dispute (hated discussions among stakeholders)	0.87	5
6	Arbitration	0.67	5
7	Total abandonment	0.65	7
8	Litigation	0.56	8

Source: Own survey data, 2018

Figure 4.7 **Effects of distressed project**



Source: Own survey data, 2018

Where

1. Cost overrun
2. Overall economic impact in the region
3. Time overrun
4. Negative social impact
5. Dispute (hated discussions among stakeholders)
6. Arbitration
7. Total abandonment
8. Litigation

Referring to Table 4.7 and Figure 4.7, show cost overrun, overall economic impact in the region, and time overrun are the three most common effects of distressed in the project from the view point of respondents of this study.

The client and contractor have exposed to additional costs because of extended delay of the project. There was an increase in price of construction materials as well as price of labor. Besides, there is huge amount of cost overruns related to time overruns. Salaries, insurance costs, consultancy fees, etc are additional costs encountered the parties.

The project's delay put an adverse impact on the overall economic growth of the region. The project was targeted to link the Gamo Gofa and Bench Maji Zones & connect these regions to the main road network, to facilitate transportation service of the region , to increase the productivity of the area, to increase the income of local people, and finally to furnish better life to the community. But because of delay, these benefits are not fully realized yet.

Because of time overrun, the client failed to meet up with his objectives on time and subjected to cost overruns. The contractor also suffered from cost overruns and resources are locked up there.

Negative social impact is ranked fourth. Because of the distressed condition of the project and acute financial shortage, there are negative effects on the employees of the project and social structure such as riots, strikes and boycott. Besides, the image of contractor, client, and consultant is highly disfigured.

4.3.3 Recovery Strategies of Distressed Project

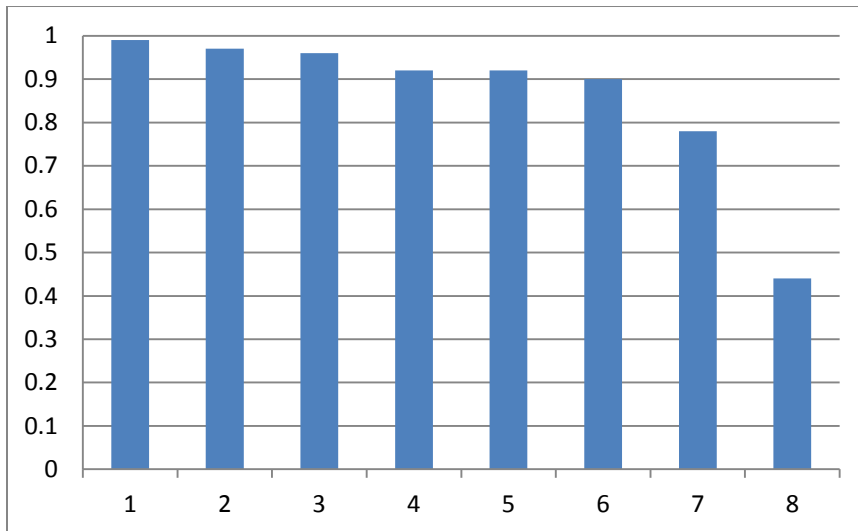
Table 4.8 shows the results of recovery strategies of distressed project from the viewpoint of respondents from project owner, Contractor, Consultant, and local administrative people. The data obtained from respondents were analyzed using RII by computing the mean score for each factor according to the respondent's responses. The mean scores were ranked from the highest to the lowest and represented on a statistical table. The distress mitigating factor that scored the highest mean was considered to be a very highly effective means of recovery strategy of distressed projects in road construction industry.

Table 4.8 **Ranking of recovery strategies of distressed project**

Sn.	Recovery strategy	RII	Rank
1	Properly re-planning the project	0.99	1
2	Replace the existing non-performing project team	0.97	2
3	Realizing adequate control and monitoring system	0.96	3
4	Improving communication-stakeholder management	0.92	4
5	Employing appropriate risk management system and resolving problematic technical issues	0.92	4
6	Increase the budget	0.90	6
7	Add and/or remove resources (add owned equipments and minimize rental equipments)	0.78	7
8	Redefining the project	0.44	8

Source: Own survey data, 2018

Figure 4.8 **Recovery strategies of distressed project**



Source: Own survey data, 2018

Where

1. Properly re-planning the project
2. Replace the existing non-performing project team
3. Realizing adequate control and monitoring system
4. Improving communication-stakeholder management
5. Employing appropriate risk management system and resolving problematic technical issues
6. Increase the budget
7. Add and/or remove resources (add owned equipment's and minimize rental equipment's)
8. Redefining the project

Table 4.8 and figure 4.8 showed that properly re-planning the project, replace the existing non-performing project team, realizing adequate control and monitoring system, improving communication-stakeholder management, employing appropriate risk management system and resolving problematic technical issues, and increase the budget are the top six effective recovery strategies received RII value of ≥ 0.9 from respondents of the study.

The remaining work item of the project is so challenging. It is time taking and needs utmost effort to achieve. The usual assumptions of performance may not be practical. Detail re-planning of the remaining work item was ranked first and categorized as the most effective method to achieve goals.

Replacing the non-performing project team got the second rank by respondents to mitigate slippages of the project. The study revealed that there is no overall motivation on the project team for rescue. As one can surmise, the characteristics and composition of the project team in an implementation crisis is drastically quite different than the team whose project is rocking along successfully. The heightened urgency and gravity of the crisis situation at hand requires strong leadership and team members who likely will be called on to: work together for the first time, work outside of normal schedules, think outside of the box to solve problems quickly and effectively, be flexible, be open and adaptable to change as the situation will evolve and may grow worse before it gets better.

Employing adequate controls is the third most effective method to rescue the project. This involves the process of controlling and monitoring of the realization of the other recovery strategies. The remaining portion of the work is so demanding of close supervision and adequate controls.

The fourth decisive factor to mitigate slippage of the project is to employee appropriate communication system. This involves realizing factual, purposeful, timely and customer oriented reports, use these reports as a feedback to mitigate slippages, and improving top management involvement and stakeholder communication system.

Employing appropriate risk management system and resolving problematic technical issues is ranked fifth by participants of the thesis. There are many pending issues that need decisions of the management body of the project. Landslides and time and financial claims are at the top of the list. The recovery process of the project is even more crucial. Leadership involvement is highly expected to rescue the project. Issues and problems need to be resolved immediately so that recovery process will be successful.

The six recovery method that draws the attention of participants of the study is to increase the budget. There is acute financial shortage (cost overrun) at the project. To mitigate this effect, there must ways to inject money that enables to finish the remaining work without further delay.

CHAPTER FIVE-SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

Being distress is a common phenomenon that challenges the construction industry along the globe that seeks assessment of causes, effects, and recovery strategies of the same. Following this, this study was conducted to assess these elements by concentrating on a typical distressed project, Laska- Salayish road project, which experienced significant slippage.

The study found out that a total of 20 distress factors have been identified from literature, and analyzed and ranked based on data gathered from respondents' opinion. The factors have been ranked for their contribution of leading the project into distressed condition. The factors based on their order of contribution (from high to low contributing) include: Lack of accurate execution planning and estimates of resources, lack of adequate controlling and monitoring systems, lack of resources-late delivery of resources, change orders-design changes, turnover of personnel, landslides, incompetent project team, poor communication-poor reporting system, exceptional adverse climatic conditions-rain, lack of proper risk management system, poor decision making process, right of way (ROW) obstructions, multiple projects by the contractor, incompatibility of assumptions of efficiency and performance rates with actual ones, exaggerated forecasting of payments (payments done for incomplete work items), sub-surface conditions, delays in payment to the contractor, rework due to errors, fluctuation of prices, and natural disasters like earthquakes.

The study findings went on to reveal effects of distress. Accordingly, eight consequences of distress have been identified, analyzed, and ranked for their impact. These include: Cost overrun, overall economic impact in the region, time overrun, negative social impact, dispute (hated discussions among stakeholders), arbitration, total abandonment, and litigation.

The study further revealed the recovery strategies to be employed to rescue the project from state of distress. The most effective methods identified to mitigate the slippage of the project include: Properly re-planning the project, replace the existing non-performing project team, realizing adequate control and monitoring system, improving communication-stakeholder management, employing appropriate risk management system and resolving problematic technical issues, increase the budget, and add and/or remove resources (add owned equipments and minimize rental equipments).

5.2 Conclusion

The consequences of distressed road construction projects are always negative thus delay should be avoided at all cost. To avoid construction delays, it is imperative for project participants to first of all identify the possible factors that can cause delay and label them as critical success factors. Once these factors have been identified, suitable preemptive measures can also be put in place to counter the negative effects that may arise as a result of their occurrence. The already identified delay factors can then be traced to their possible causes that are due to either internal (contractor, consultants, clients) or external (force majeure) factors.

Findings of the study disclosed that of the top sixteen critical factors that lead the project into distressed condition, the thirteen factors are internal factors related with management problem of client, contractor and consultant. The three factors are external causes of distress which are unforeseeable and beyond the control of the parties. This means management problems covered 81.25% and force majeure covered 18.75% of causes that lead the project in to distressed condition. This guided the researcher to conclude that the project delayed for such extended time mainly because of human factors. The study concluded that the concerned parties (client, contractor and consultant) didn't play their role properly during the execution phase of the project.

The study went on to conclude that such prolonged delay brought adverse consequences on stakeholders of the project. This problem directly affected the lives and social welfare of the local people, slow down economic growth in the region and country as a whole, increased government expenditures, the contractor is constantly loosing contracts, also led to a lot of disputes amongst stake holders, resulted to negative perception of the country's construction industry, resulted to the country's construction industry be less competitive.

Finally, the researcher concluded that the preemptive measures identified in this paper are jointly important to counter the negative effects outlined in the study and needs to be practiced accordingly to recover the project from state of distress.

5.2 Recommendation

Several internal and external factors threw the project off course. The project is not a totally failed project. But if continued in the current way, it will fail and lead to total abandonment. Besides, the project is strategically important to the region and the country. Taking all the above mentioned points into consideration and in order to mitigate these delay factors, the researcher therefore recommended the following measures to be implemented in the project.

1. Lack of accurate execution planning and estimates of resources is the top factor that leads the project into distressed condition. To mitigate this problem proper re-planning of the remaining work items of the project is gravely important. The remaining work item of the project is so challenging. It is time taking and needs utmost effort to achieve. The usual assumptions of performance may not be practical. Thus, detail re-planning of the remaining work item is highly recommended to realize the objectives of the project.
2. Lack of adequate controlling and monitoring systems is the second significant cause of distress. The project has suffered a lot from lack of adequate controls. Collecting payments for undone works, poor reporting system, and the like are the direct consequences of lack of adequate control system. The remaining portion of the work is so demanding of close supervision and adequate controls. Thus, realizing adequate controlling and monitoring systems is highly recommendable.
3. Lack of resources (late delivery of resources) is among the top factors that contributed for distressed. Some work items of the project delayed because of shortage of machineries and equipments. Besides, there is acute financial shortage in the project. Such problems should be properly managed to recovery the project. To offset this, the contractor need to add owned equipments and minimize rental equipments. The client and contractor need to have ways to inject money that enable to finish the remaining work without further delay.
4. Incompetent project team is one of the root causes that put the project off course. Findings of the study revealed that there is no overall motivation on the current project team for rescue. The researcher recommends replacing the existing non-performing project team. As one can surmise, the characteristics and composition of the project team in an implementation crisis is drastically quite different than the team whose project is

rocking along successfully. The heightened urgency and gravity of the crisis situation at hand requires strong leadership and team members who likely will be called on to: work together for the first time, work outside of normal schedules, think outside of the box to solve problems quickly and effectively, be flexible, be open and adaptable to change as the situation will evolve and may grow worse before it gets better.

Once the team is build, team retention mechanism should be in place as frequent personnel turnover was one of the top causes that lead the project into distressed condition.

1. During construction period, massive landslides on back slopes and beyond back slopes of the road have occurred mainly due to the presence of sub-surface water at the project area. And this is the first top external cause of distress. In relation to this, there are unresolved issues among parties. The contractor raised time and financial claims though the client didn't approve yet. How to manage these slides is a pending issue yet. Therefore concerned parties need to revisit this problem and reach consensus on such pending issues as the earliest possible.
2. Poor communication (poor reporting system) is the other human factor of distress. During the execution phase of the project there was lack of factual, purposeful, timely and customer oriented reports. None of the parties used reports as a feedback to mitigate slippages. Thus, improving top management involvement and communication system through purposeful, timely and value oriented reports are critically important and should be implemented accordingly to rescue the project.
3. Lack of proper risk management system and poor decision making process are among management problems that contributed for the project being distressed. There are many pending issues that need decisions of the management body of the project. Landslides and time and financial claims are at the top of the list. The recovery process of the project is even more crucial. Leadership involvement is highly expected to rescue the project. Therefore, issues and problems need to be resolved immediately and risk management systems must be in place so that recovery process will be successful.
4. The researcher also strongly recommended future researchers to extend the findings of this paper. Moreover the sample size of this study was small so future researchers could take a bigger sample size in order to produce a more valid results in the road construction industry of Ethiopia.

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APPENDIX A

QUESTIONNAIRES AND INTERVIEW QUESTIONS

Questionnaires

Causes, effects and recovery strategies of distressed road projects (the case of Laska-Salayish Design and Construct Road upgrading Project)

This questionnaire consists of 4 sections

SECTION A: Respondent Background

SECTION B: Factors that lead the project into distressed condition

SECTION C: Effects of the distressed project

SECTION D: Strategies to be employed to mitigate slippages of the project

SECTION A: Respondent Background

Please choose and fill your answers in the blanks given below

Q1. Name (optional)_____

Q2. Gender (male, female) (Optional)

Q3. Age (Below 25, 25-35, 36-50, above 50)

Q4. Educational background (Certificate, Diploma, Degree, masters, other).

Q5. How many years have you been in the project? _____ years (< 1 yr, 1-2yrs, 2-3yrs, 3-5 yrs, 5-7 yrs)

Q5. What was/is your position in the project? If you are from government officials, please mention your position in the government sector. My position was/is_____

SECTION B: Factors that lead the project into distressed condition:

Objective: To identify and rate the causes that lead the project into distressed condition.

Please tick and fill your answers in the blanks given below

Each scale represents the following rating:

3= High contributing

2= Medium contributing

1= Low contributing

Internal Factors:

Please rate the contribution of the following internal (management problems) distressed factors as per the given scale.

Category-	No.	Causes of distress	1	2	3
Internal factors- management problems	1	Lack of accurate execution planning and estimates of resources			
	2	Change orders-Design changes			
	3	Lack of adequate control and monitoring systems			
	4	Lack of resources-late delivery of resources			
	5	Turnover of personnel			
	6	Poor communication-poor reporting system			
	7	Right of way (ROW) obstructions			
	8	Lack of proper risk management system			
	9	Poor decision making process			
	10	Exaggerated forecasting of payments (payments done for incomplete work items)			
	11	Delays in payment to the contractor			
	12	Incompatibility of assumptions of efficiency and performance rates with actual ones			
	13	Multiple projects by the contractor			
	14	Incompetent project team			
	15	Fluctuation of prices			
	16	Rework due to errors			

If any other management problems which do you suggest, Please write down._____

External Factors

Please rate the contribution of the following external (Force majeure) distressed factors as per the given scale.

Category- External factors- Force majeure	No.	Causes of distress	1	2	3
	1	Exceptional adverse climatic conditions-rain			
	2	Sub-surface conditions			
	3	Landslides			
	4	Natural disasters like earth quakes			

If any other external factors which do you suggest, Please write down. _____

SECTION C: Effects of the distressed project

Objective: To identify and rate the effects of the distressed project

Please tick and fill your answers in the blanks given below

Each scale represents the following rating:

3= High effect

2= Medium effect

1= Low effect

No.	Effects	1	2	3
1	Time overrun			
2	Cost overrun			
3	Overall economic impact in the region			
4	Negative social impact			
5	Disputes (hated discussions among stakeholders)			
6	Arbitration			
7	Total abandonment			
8	Litigation			

If any other effects which do you suggest, Please write down. _____

SECTION D: Strategies to be employed to mitigate slippages of the project

Objective: To identify and rate recovery strategies of the project

Please tick and fill your answers in the blanks given below

Each scale represents the following rating:

3= Highly effective

2= Medium effective

1= Low effective

No.	Proposed Strategy	1	2	3
1	Properly re-planning the project			
2	Redefining the project			
3	Realizing adequate control and monitoring system			
4	Replace the existing non-performing project team			
5	Improving communication-stakeholder management			
6	Employing appropriate risk management system and resolving problematic technical issues			
7	Add and/or remove resources (add owned equipments and minimize rental equipments)			
8	Increase the budget			

If any other recovery strategies which do you suggest, Please write down. _____

I truly appreciate your willingness to complete this questionnaire, and assist in this research project.

Semi-structured interview questions

1. How do you rate the project? (Progressing, distressed, failed)
2. May you mention some of key personnel resigned and replaced in the project life time please?
Project Managers _____number
Resident Engineers _____Number
Office Engineers _____Number
Sponsors from client side _____Number
Planning managers from contractor side _____number
Other key personnel _____number
3. Are the local people willing and simple to remove their properties which are within the road corridor? Or are they reluctant to do so?
4. Is labor force (skilled, semi-skilled, unskilled) availability in the area of the project? Are they committed to work? Describe it briefly.

I truly appreciate your willingness to participate in interview and assist in this research project.