



# Contractor's Payment Delay and its Impact on Road Projects Administered under Ethiopian Roads Authority

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This is to certify that the thesis prepared by Gizachew Tadele, entitled; *Contractor's Payment Delay and its Impact on Road Projects Administered under Ethiopian Roads Authority* in partial fulfillment of the requirement for the degree of Master of Science (Construction Technology and Management) complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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## **DECLARATION**

I declare that this thesis entitled "CONTRACTOR'S PAYMENT DELAY AND ITS IMPACT ON ROAD PROJECTS ADMINISTERED UNDER ETHIOPIAN ROADS AUTHORITY" is my original work. This thesis has not been presented for any other university and is not concurrently submitted in candidature of any other degree, and that all sources of material used for the thesis have been duly acknowledged.

Candidate:

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

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## ABSTRACT

Ethiopia has given special attention for development of the road sector. In this regard, the Ethiopian Roads Authority (ERA) has been given the responsibility to procure, regulate, and administer construction works and consultancy services. For ERA, to competently discharge these responsibility, it is essential that those members of ERA responsible for the project management to have a complete understanding of the Technical, Contractual and Financial aspects of the project. As part of these competence and capability, ERA is expected to have effective budget allocation and utilization system. However, ERA has usually faced difficulty in paying due payments on time to the Contractors and Consultants. As a result of this, the Contractor's cash flow status have been affected, and, ultimately it results in delay in construction, quality related problems, late interest payment, increase in construction cost, and other cases of Contractor's claim on a project.

This research work, therefore, focuses on identifying the causes and impacts of delay in Contractor's payment on road projects administered under ERA based on randomly selected six road projects in which late interest payment has been effected and questionnaire based survey with engineers from ERA, Contractor and Consultant and; subsequently, the detailed sources of the delay, potential impacts, and possible remedial measures were identified.

Accordingly, it was found that *ineffective budget allocation and utilization* is the major cause for delay in Contractor's payment and *delay in progress of the physical works, reduced quality in construction works, increase in frequency of workmanship problems, insufficient resource arrangements, inability to comply Environmental, Health, Safety and Social Management requirements, and increase in construction and supervision cost of project* were some of impacts of delay in Contractor's Payment.

To this respect, as a major outcome of the study, it has been arrived that maximizing the efficiency of design, the actual performance of the Contractors, information on past performance of Contractors and resource allocated on the project site and capacity of Professionals working at Planning and Program and Implementation directorate are very critical matters to plan and allocate sufficient fiscal year budget by the client so that occurrence of Contractor's payment Delay.

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**List of Tables**

Table:1 Financial Plan Vs. Disbursement, Cost in millions (Adopted from ERA Road sector Development Program 18 years Performance Assessment 2015)----- 9

Table 2:Summary of Impacts of 18 Years RSDP----- 10

Table 3.1:Scales that represent chances of occurrence----- 37

Table 4.1:Sufficiency of Late Interest Payment Amount to Cover Delayed Payment----- 47

Table 4.2:Project Basic Information----- 48

Table4.3;Average Monthly Budget Plan vs Utilization----- 53

Table 4.4;Other Summarized Effects of Delayed payment of Contractors----- 55

Table4.5:Typeof respondents' organization and the corresponding Questioner Distributed---- 60

Table 4.6: Respondents Position----- 60

Table 4.7 Ranking of Respondents in their Positions----- 61

Table 4.8 Experience of respondents (years)----- 62

Table 4.9 Experience of Respondents using FIDIC and PPPAA----- 62

Table 4.10:Variouscauses of Contractor's Payment Delayed and Its Effect on Contractor----- 67

Table 4.11:Variouscauses of Contractor's Payment Delayed and Its Effect on Consultant----- 70

Table4.12;Variouscauses of Contractor's Payment Delayed and Its Effect on Employer ----- 72

Table 4.13;Options Available to Improve Contractor's Cash Flow----- 75

Table 4.14;Strategic Method to Improve Contractor's Cash Flow----- 77

Table 4.15;Reasons why most of Local Contractors do not request Late Interest payment----- 80

Table 4.16;Summary of correlation test on the ranking of Implications of Delayed Payment Problems and Its Effect on Client----- 84

Table 4.17; Summary of correlation test on the ranking of Implications of Delayed Payment Problems and Its Effect on Consultant----- 84

Table 4.18; Summary of correlation test on the ranking of Implications of Delayed Payment Problems and Its Effect on Contractor----- 85

Table 4.19; Summary of correlation test on the ranking of Effects of Delay in Contractor's Payment on Contractor----- 85

Table 4.20; Summary of correlation test on the ranking of Effects of Delayed Payment of Contractor on Consultant----- 86

Table 4.21;Summary of correlation test on the ranking of Effects of Delayed Payment of Contractor on Employer----- 86

Table 4.22: Summary of correlation test on the ranking of Options Available to Improve Contractor's Cash Flow----- 87

Table 4.23 Summary of correlation test on the ranking of Strategic Method to Improve Contractor's Cash Flow----- 87

## Table of Contents

CHAPTER ONE .....	4
1.1 Introduction .....	4
1.2. Statement of the Problem .....	6
1.3. Objective of the study .....	7
1.4. Significance of the Study .....	7
1.5 Scope of the Study.....	7
CHAPTER TWO .....	8
2. REVIEW OF RELATED LITERATURE .....	8
2.1 Introduction .....	8
2.2The Project Budget.....	11
2.2.1 Project Budget for a Construction.....	14
2.2.2 Forecasting for Activity Cost Control.....	15
2.2.3Measures to Control Construction Cost.....	16
2.3. Cash Flow.....	17
2.3.1 Problems of Poor Cash Flow .....	18
2.3.2 The Importance of Proper Cash Flow Forecasting .....	19
2.3.3 Strategies to Improve Cash Flows .....	21
2.4. Overview of Payment and related Clauses in various Conditions of Contract and Ethiopian Civil Code .....	23
2.4.1 Payment.....	23
2.4.2 Periodic Schedule of payment.....	25
2.5. Causes of Delayed Payment.....	28
2.5.1 Delayed Payment caused by Contractors.....	29
2.5.2Delayed Payment caused by Clients .....	30
2.5.3Delayed Payment caused by Contractual Matters.....	30
2.6. Impacts of Delayed Payment.....	31
2.7. Interest Payment.....	34
2.7.1Overview of Relevant provisions of Late Interest Payment in Conditions of Contract and Legal Provisions.....	36
2.7.2 Best Practices for Dealing with Late Payments.....	39

CHAPTER THREE .....	40
3. RESEARCH METHODOLOGY .....	40
3.1 Introduction .....	40
3.2 Research Approach .....	40
3.3 Research Design and Justification.....	40
3.4 Data Collection.....	41
3.5 Sample Size Distributions .....	41
3.6 Methodology used in this study .....	43
3.7 Data Measurement.....	44
CHAPTER FOUR:.....	46
RESULTS AND DISCUSSION .....	46
4.1 Introduction .....	46
4.2 Results of Desk Study .....	46
4.3 Results of Questionnaire for causes and Impacts of Delay in Contractor’s payment .....	59
4.3.1 Population characteristics .....	59
4.3.1.1 Type of Respondent’s Organization .....	59
4.3.2 Results and Discussions of Factors of Contractor’s Payment Delay and Its Impact in case of Road Projects Administered under Ethiopian Road Authority .....	63
4.3.2.1 Ranking in view of Weighted Average Result.....	63
4.3.2.2 Ranking in view of Consultant, Employer and Contractor .....	67
4.3.3 Tests for Agreements on Contractor’s Payment Delay and Its Impact in case of Road Projects administered under Ethiopian Road Authority among Stakeholders in the Construction Industry ....	83
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS .....	89
5.1 Conclusions .....	89
5.2 Recommendations .....	90
REFERENCE.....	93
APPENDIX A .....	95
APPENDIX B .....	106
APPENDIX C .....	108

## CHAPTER ONE

### 1.1 Introduction

The construction industry is the engine of national economy through which the total of physical development is achieved. The construction industry is a vital element of the economy and has a significant effect on the efficiency and productivity of other industry sectors. One cannot think of widespread investment in manufacturing, agriculture, or service sectors unless the construction results of infrastructure facilities are in place. In some of the developing countries, the growth rate of construction activity outstrips that of population and of GDP (Chitkara, 2004).

Previously conducted study found that delayed payment of the contractor affected the project by causing: loss of productivity and efficiency (71.8%); increase in time-related costs (71.8%); re-scheduling and re-sequencing of works (69.2%); extension of time and acceleration (69.2%); as well as prevention of early completion (53.8%). The study concludes that timely payment of contractors is crucial for ensuring the continuity of works and completion of infrastructural projects within time, budget, and quality specifications. The study recommends the need for appropriate mitigation measures against potential risks, such as delayed disbursement of funds by external financiers, delayed approval of contractors' payment requests, as well as community participation and involvement of civil society to influence accountability in the management of project funds and expedite disbursement of funds for subsequent project phases (Chinese Business Review, July 2015, Vol. 14, No. 7, 325-336)

Road sector construction projects in Ethiopia are way through which development strategies are achieved. Development strategies which are fulfilled through successful road projects to import accessibility of rural areas, lower costs associated with transport maintenance and open more areas for development activities. Road projects, involving large amount of capital, also contribute to the total economy through job creation and in a flow effect to other business activities due to the reason that it involves many professionals in its nature.

In view of the forgoing basis, the country Ethiopia has given special attention for development of the road sector. Ethiopian Roads Authority (ERA) has given responsibility to administer and regulate the overall federal road projects. In this regard, ERA has given responsibility to procure

contractors and consultant and regulate Contractor's works and Consultant's services during construction and design stage. During Construction stage of project, ERA regulates two contracts. The first, between ERA and a contractor who has agreed to perform the services described in the Tender document; and the second, between ERA and a consultant, who undertakes to supervise the construction of the works.

Therefore, it is mainly ERA's task to ensure a project is completed in accordance with its terms of reference or the design and contract specification within the required time period and the available budget. In order to perform these tasks, it is essential that those members of ERA responsible for the project management have a complete understanding of the Technical, Contractual and Financial aspects of the project. In this regard, at each stage of a project: Inception, Design, Construction and Commissioning and even during Maintenance Stage of a project professionals who have been assigned to regulate the project should have competent project management knowledge.

Therefore, every ERA road construction projects get in to commencement after allocating appropriate budget on the Engineering Estimate cost of the project which is carried out during design stage. However, previous studies show that, project completion price could be more than engineering cost estimate due to change in volume of works/scope change, poor estimation and price escalation of materials envisaged during construction. In this regard, in ERA, it is common to find many road projects which have been completed beyond the Engineering cost estimate due to the reason that some features of the road along the route of the project and material prices had been changed and unable to allocate sufficient fiscal year budget. Consequently, due to additional volume of works, price escalation and late interest payment would be necessitated which can be a reason for the two different value of the project: Engineering estimate value and the Actual project price.

As a result of this reason, ERA usually faces project budget constraint and difficulty in paying due payments on time to the Contractor's and Consultant's. As a result of this, the overall activity and cost of the project might be affected. In this regard, in line with the general conditions of the contract provision, the Contracting parties are entitled for interest payment as remedial solution for delay in payment.

The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to General Conditions of the Contract, or to any other term of the Contract, shall be paid by the Employer to the Contractor within agreed period of time after such Interim Payment Certificate has been delivered to the Employer.

In this regard, in the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid.

In connection to this, due to various reasons, Ethiopian Roads Authority is not paying payments for some of the Contractors within agreed period of time stipulated in the contract. As a result of this, some of the Contractors have requested late interest payment as remedial solutions for the delayed payment amount and; hence, ERA has been paying interest payment for same.

## **1.2. Statement of the Problem**

Reviewing foreign construction road projects administered under ERA, it has been noted that payment have not been effecting on the time stipulated in the agreement due to budget constraints. Consequently, besides for measured value of works, ERA has been expending additional amount of money to the projects in the form of Late Interest payment. To this respect, it has been noted that ERA has expended ETB 23,723,191 as late interest payment due to delay in Contractors' payment on randomly selected six road projects. Besides, late interest payment may result in other negative impacts; disruption of works, poor quality works, bad communication between contracting parties, job firing and etc.

In this regard, even though requesting late interest payment and other contractual remedies for contractors' payments which have been delayed by the Employer is legitimate, it is less likely to obtain local Contractors who have been utilizing the opportunity of late interest payment. As a result of this, the cash flow of the Contractor and the progress and quality of the projects may be affected.

### **1.3. Objective of the study**

The principal objective of this research is to investigate the impacts of Contractor's payment delay and its impacts on road projects administered under the Ethiopian Road Authority. The specific objectives are:

- I. To explore if there are late payments by Ethiopian Roads Authority.
- II. To explore causes of late Payments road projects administered under ERA
- III. To explore effects of Late Payment on construction road projects
- IV. To explore if there are commensurate compensation for late payments
- V. To explore ways/ strategies for cash flow related problems due to Late payment and,
- VI. To identify the reason why most of local Contractors working with ERA have not requested late interest payment for delayed payment

### **1.4. Significance of the Study**

This study is relevant because it will assist the government and relevant parties in addressing problems associated with the effects of delayed payments and effectively improve road construction industry. It is of the researcher's anticipation that the Ethiopian Roads Authority and relevant parties would adopt and implement the necessary plan of action in order to reduce occurrence of delay in payment so that friendly and enjoyable working environment for all parties and the payment flows in road projects administered under ERA would be improved. The result of this research may be of significance to policy makers, top management of ERA, respective professionals working in planning and implementation directorate, financiers, consultants and contractors. It will also help in reducing delayed payment related matters and increase contractors' cash flow forecasting. It will also be a source of knowledge.

### **1.5 Scope of the Study**

The study focused on Road Projects administered under Ethiopian Roads Authority wherein delay in contractor's payment and late interest payment have been practiced due to the reason that ERA usually undertake large volumes of works and, hence, engage well experienced contractors and consultants.

## CHAPTER TWO

### 2. REVIEW OF RELATED LITERATURE

#### 2.1 Introduction

In the context of Ethiopia, road is the most important infrastructure that provides access to rural and urban areas in the country. Roads plays crucial role in reducing transportation cost and support economic growth in the country. However, in the late 1990's, the road network coverage was limited to major urban areas and some rural areas. As a result, most areas in the country were isolated from national market and basic social services.

To this respect, the Government of Ethiopia recognized limited road network coverage and poor condition of the existing road network was an impediment to economic recovery and economic growth. Therefore, to address the problems in the road sector; the Government launched the Road Sector Development Program (RSDP) in 1997. The Government has implemented four phases of RSDP over the period of 1997 - 2015 as follows:-

- RSDP I -From July 1997 to June 2002 (5 years plan)
- RSDP II -From July 2002 to June 2007 (5 years plan)
- RSDP III -From July 2007 to June 2010 (3 years plan)
- RSDP IV -From July 2010 to June 2015 (5 years plan)

Over Eighteen years of RSDP, physical works consisting of rehabilitation and upgrading of trunk and link roads, construction of new link roads, rural roads & district roads and maintenance of federal and regional roads have been carried out by Ethiopian Roads Authority (ERA), Regional Roads Authorities (RRAs) and Woreda Road office (WRO) and the community and municipalities. Series of policy and institutional reforms have been implemented in the sector, which have enhanced implementation capacity of road projects and effectiveness of Road Asset Management (Organizational background of ERA, 2007).

RSDP has been financed from domestic sources including GOE, Road Fund Office and community, and foreign sources which include funds rose from bilateral and multilateral loans. The Government of Ethiopia has been major financier of RSDPI-IV and expended ETB

174,151,800,000.00 in the past eighteen years road sector development program followed by the Road Fund Office (Organizational back ground of ERA, 2007).

Development partners such as the World Bank (WB), European Union (EU), African Development Bank (ADB), Nordic Development Fund (NDF), Bank of Arab for Economic Development in Africa (BADEA), OPEC Fund for International Development (OFID) and the Governments of Japan, Germany, U.K, Ireland, the Saudi Fund for Development, the Kuwait Fund and the Government of China have been involving in financing the Programs. The recent donor which joined this effort is Abu Dhabi Fund. Based on budget disbursement, accomplishments of the program over its Eighteen years and the five years performance of RSDP IV, has been summarized herein the table below (Organizational back ground of ERA, 2007).

Table 1: Summary of 18 yrs Performance of RSDP (Adopted from ERA Road Sector Development Program 18 years Performance Assessment 2015)

<i>Program</i>	<i>Financial Plan Vs. Disbursement, in million ETB</i>		
	<i>Budget</i>	<i>Disbursement.</i>	<i>% age</i>
Total RSDP I	9812.9	7284.6	74
Total RSDP II	15985.9	18112.8	113
Total RSDP III	34643.9	34957.9	101
Total RSDP IV	125,409.1	158,333.3	126
<b><i>Total RSDP (18 yrs)</i></b>	<b><i>185,851.8</i></b>	<b><i>218,688.6</i></b>	<b><i>118</i></b>

From the total budget allocated for the road sector over the past 18 years in RSDP; 40.4% of the expenditure was on rehabilitation and upgrading roads, 29.7% was on construction of link roads, 5% on maintenance of federal roads, 8.3% on regional road and 12.8% on Woreda roads and 2.6% was on institutional support projects and other activities at the federal level. Consequently, road network, accessibility, mobility and quality could be improved as summarized herein below the table; (Organizational back ground of ERA, 2007).

Table 2: Summary of Impacts of 18 Years RSDP

<i>Impacts of 18 Years RSDP</i>	<i>Status at beginning of RSDP, 1998</i>	<i>Status at the end of 18 years RSDP, 2015</i>
Road Network(Km)	26,550	110,414
Road density(Km/m <sup>2</sup> )	24.1	100.4
Average distance from the road network (Km)	21	5.0
Rural Access Index (%)	13	55
Mobility;Vehicle kilometer of travel (Million)	3.8	17.3
Quality of road	22% of road was in good condition	good condition road was upgraded to 70 %

As can be noted from the Tale-2 above, performance summary of RSDP regarding financial plan vs. disbursement, one can easily note that the budget allocated for road projects was smaller than what actually paid. This intern would have impact on the overall stakeholders and the progress and quality of the road. In this regard, the works executed beyond the allocated budget may result in delay in payment and other related consequences.

Capital is the major constraints to increasing indigenous economy of a country and finance is the life blood of every organization. In this regard,(Agim,2005) states that having less blood leads to anaemia in human being, similarly shortage of finance leads to decrease in activities of every organization and may even lead to failure of the organization and bankruptcy. In connection to this, study conducted in Ghana shows that, delayed payment for work done, has been verified as one of the main cause of project delay (Fugar, 2010), Similarly, research conducted byOfori-Yaboah, (2001) revealed that the cost of construction has much to do with payment and payment processes.

As noted by Alaghbari et al. (2007) late and inconsistent payment of contractors for completed works is one of the critical factors, causing delays in the completion of infrastructural projects in developing countries. In connection to this, further studies carried out on construction sector

indicates that delay in payment at the higher end of hierarchy is likely to affect the chain of contracts (Construction Industry Working Group on Payment, 2007). More specifically, delay in payment of completed works is likely to constrain contractors' cash flow, which in turn might affect timely payment of sub-contractors, workers, suppliers, and service providers. Regarding human labor, delayed payment of workers is likely to affect motivation, punctuality, productivity, honesty, pace of works, completion and other related effects on construction of road projects.

Memon et al. (2011) have associated prolonged delays in payment with effects of high risk of industrial disputes, destruction of property, and a high turn-over of workers. In connection to this, Raj and Kothai (2014) pointed out that timely payment of workers is necessary for maintaining motivation, willingness, confidence, discipline, and cheerfulness to perform work.

Furthermore, Abdul-Rahman et al (2009) linked delayed payment to causal factors, such as clients' poor financial and business management; financial impropriety and political interference; inaccurate evaluation for completed works; as well as insufficient documentation and information for valuation, among other factors. However, the effects of Contractor's payment Delay have not been given as much attention (Sambasivan & Soon, 2007; Aziz, 2013; Owolabi et al., 2014). More specifically, few studies, such as Sambasivan and Soon (2007), Abdul-Rahman et al. (2009), and Memon et al. (2011), have focused on the effects of delayed payment of contractors on the completion of infrastructural projects.

Enhancing efficiency by completing projects with budget, without any additional interest payment and other related effects due to delay in payment on construction road projects, is an area which would require attention in the construction of infrastructural facilities in case of Sub-Saharan African countries, where available resources cannot suffice the need for more infrastructural facilities and where nearly half of the population live on less than US\$ 1.25 a day (World Bank, 2015; Gutman, Sy, & Chattopadhyay, 2015).

## 2.2 The Project Budget

For cost control on a project, the construction plan and the associated cash flow estimates can provide the baseline reference for subsequent project monitoring and control. For schedules,

progress on individual activities and the achievement of milestone completions can be compared with the project schedule to monitor the progress of activities and to take required action as and when required. Contract and job specifications indicate criteria and as to how confirm the requirement met to the standard of the contract. The final or detailed cost estimate provides a baseline for the assessment of financial performance during construction of a project. This indicates that, cost update is required be made for projects. To this respect, if the costs are within the detailed cost estimate, then the project is thought to be under financial control. Moreover, overrun in particular cost categories might give an indication of exactly what problems would be encountered (ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

For control and monitoring purposes, the original detailed cost estimate is typically converted to a *project budget*, and the project budget is used subsequently as a guide for management. Specific items in the detailed cost estimate become job cost elements. Expenses incurred during the course of a project are recorded in specific job cost accounts to be compared with the original cost estimates in each category. Thus, individual job cost accounts generally represent the basic unit for cost control (ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

In addition to cost amounts, information on material quantities and labor inputs within each job account is also typically retained in the project budget for ease of project budget administration. By using such information, actual materials usage and labor employed can be compared to the expected requirements. As a result, cost overruns or savings on particular items can be identified as due to changes in unit prices, labor productivity or in the amount of material consumed and; subsequently, action would be taken as and when required.

In developing or implementing a system of cost accounts, an appropriate numbering or coding system is essential to facilitate communication of information and proper aggregation of cost information. Particular cost accounts are used to indicate the expenditures associated with specific projects and to indicate the expenditures on particular items throughout an organization. In this regard, Separate identifiers of the type of cost account and the specific project must be provided for project cost accounts or for financial transactions. As a result, standard set of cost

codes so called the MASTERFORMAT codes may be adopted to identify cost accounts along with project identifiers and extensions to indicate organization or job specific needs. Similarly the use of databases or, at a minimum, inter-communicating applications programs facilitate access to cost information(ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

In connection with converting a final cost estimate into a project budget, compatible with an organization's cost accounts is not always a straightforward task. As described above, cost estimates are generally disaggregated into appropriate functional or resource based project categories. For example, labor and material quantities might be included for each of several physical components of a project. For cost accounting purposes, labor and material quantities are aggregated by type no matter for which types of works they are concerned. For example, for a certain types of workers or materials might be used on numerous construction activities(ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

One particular problem in forming a project budget in terms of cost accounts is the treatment of contingency amounts/reservation for any changes introduced during construction stage of a project. Contingencies are allowances included in project cost estimates to accommodate unforeseen events and the resulting costs. However, in advance of project completion, the source of contingency expenses is not known(ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

A second problem in forming a project budget is the treatment of inflation. Typically, final cost estimates are formed in terms of real dollars and an item reflecting inflation costs is added on as a percentage or lump sum. To this reason, cost items subjected to inflation shall be identified and inflation allowance would then be allocated to the said individual cost items in relation to the actual expected inflation over the period for which costs will be incurred(ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

### 2.2.1 Project Budget for a Construction

Project budget comprises of direct cost, indirect cost, profit, overhead and contingency. Within direct costs, expenses are divided into material, subcontract, and temporary work and machinery costs. This budget indicates aggregate amounts for the various categories. Cost details associated with particular cost accounts would supplement and support the aggregate budget should be considered. A profit and a contingency amount might be added to the basic budget of for completeness.

**Elements of Cost;** elements of cost have been reviewed from the web page (<http://www.investopedia.com/terms/d/directcost.asp#ixzz4lqIFVozn>) and summarized as shown herein below.

#### **Direct Cost;**

A direct cost is a price that can be completely attributed to the production of specific goods or services. A direct cost can be considered a variable cost if it is inconsistent and changes amounts often. Direct Cost.

#### **Indirect Costs;**

Costs which cannot be accurately attributed to specific cost objects are called indirect costs. These typically benefit multiple cost objects and it is unable to trace into individual products, activities or departments etc.

#### **Overhead Costs;**

Overhead costs, often referred to as overhead or operating expenses, refer to those expenses associated with running a business that can't be linked to creating or producing a product or service. They are the expenses the business incurs to stay in business, regardless of its success level. It is all of the costs on the company's income statement except for those that are directly related to manufacturing or selling a product, or providing a service.

#### **Profit;**

Profit is reflected in reduction in liabilities, increase in assets, and/or increase in owners' equity. It furnishes resources for investing in future operations, and its absence may result in the

extinction of a company. As an indicator of comparative performance, however, it is less valuable than return on investment (ROI). It is also called earnings, gain, or income. (<http://www.businessdictionary.com/definition/profit.html>)

### **Contingency;**

a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the Works or for the supply of goods, materials, Plant or services. It may be used, in whole or in part, or not at all, on the instructions of the Engineer (Fidic forth edition, 1987).

### **Indirect costs.**

Direct costing is not related with indirect costs as it is designed for short-term decisions where indirect costs are not expected to change. Though, all costs change over the long term, which means that a decision that can impact a company over a long period of time should address long-term changes in indirect costs. As a result of this, if a company uses an ongoing series of direct cost analyses to drive its pricing decisions, it may end up with an overall pricing structure that is too low to pay for its overhead costs.

## **2.2.2 Forecasting for Activity Cost Control**

For the purpose of project management and control, it is not sufficient to consider only the past record of costs and revenues incurred in a project after construction activity had been carried out. In this regard, previously conducted research shows that Good managers should focus upon future revenues, future costs and technical problems. For this purpose, traditional financial accounting schemes; evaluating the past record, are not adequate to reflect the dynamic nature of a project. Therefore, controlling and monitoring should typically focus on recording routine costs and past expenditures associated with activities. Generally, past expenditures represent only expenses for already conducted which cannot be altered in the future and may or may not be relevant in the future. For example, after the completion of some activity, it may be discovered that some quality defect renders the work useless. Unfortunately, the resources expended on the defective item of construction will generally be passed and cannot be recovered for re-construction (although it may be possible to change the burden of who pays for these resources by financial withholding or charges. In this regard, owners will have right to claim for changes

due to quality problems due to failure of constructors or designers to comply the contracts entered between them. In connection, previously conducted research shows that financial accounts are historical in nature and; hence, some means of forecasting or projecting the future course of a project is essential for management control (ASCE Manuals and Reports of Engineering Practice No. 65, Rev. Ed., 1985).

Ashworth (1994) mentioned that one of the client's requirements in respect of construction project is assessment of its expected cost. Hence, throughout the life time of the project, conducting proper cost control is important as it is essential to ensure greater cost effectiveness and to take appropriate actions as required without depending solely in the context of initial costs.

### 2.2.3 Measures to Control Construction Cost

Reviewing the researchers conducted previously, it has been noted that there are some measures to know project cost at completion and to overcome the problems of budget deficient. The researchers have their own opinion on how to solve the problems (Kaliba et al. 2009). The measures are presented as below:

- a) **Proper Project Costing and Financing**:-Kaliba et al. (2009) stated that delays of schedule may occur caused of delayed in payments due to complex financial processes in client organizations. Delay in payment would cause financial difficulties to contractors and subsequently delay the schedule to complete the activities on site. As a result of this, Interest could be charged on delayed payments as remedial measures and; hence, it would induce cost overruns in the project.
- b) **Competent Personnel**:-Kaliba et al. (2009) mentioned that contractors, consultants, and clients should ensure that they have the right personnel with appropriate qualifications to manage their projects efficiently. It is better if construction manager have experience and qualifications in project or construction management.
- c) **Appropriate Scope Definition**:-Nega (2008) agreed that only concern on the works required completing the project successfully. Guard against incomplete identification of scope is important to avoid frequent changes. Also, do not incorporate the works out of scope to avoid unnecessary works.
- d) **Risk Management during Project Execution**:-Peeters and Madauss (2008) found out some approach to avoid cost overruns. In any development project, there must be contain

certain amount of risks. In light of this, a risk management function needed to be performed by project manager to determine and reduce the risks of the particular project. The aim of risk management is to minimize any risk that might result failure to meet the project requirements.

- e) **Appropriate Contractual Framework:**-Peeters and Madauss (2008) has supported that once the objective of cost has been estimated, it is followed by choosing an appropriate contract model where there are techniques to make a relationship between the initial estimate and final price.
- f) **Increase Supply of Materials:**-Frimpong et al. (2003) found that there should prepare adequate allowance for any emergency case in order to cover increasing in material cost due to inflation.
- g) **Realistic Cost Estimation:**-The initial cost estimates should be as accurate as possible. Accuracy of cost estimation allows clients to check and determine the required funds for executing the project are made available when required (Kaliba et al., 2009).
- h) **Efficient Management:**- Gould (2002) stated that efficient management is important to produce a productive and cost efficient site. Scope may changes due to inadequate planning and feasibility studies. In order to control the project effectively, the project manager must follow up the schedule to avoid additional costs and ensure the project can be occupied on time as planned.

### 2.3. Cash Flow

According to the Pocket Oxford Dictionary, *Cash means money in coins or notes. Cash includes: coins and notes, money in current accounts and short-term deposits, any unused bank overdraft facility and foreign currency and deposits that can be quickly converted to your currency.*

(Odeyinka, H A and Lowe, J G, 2001) states that Cash flow refers to the movement of cash into or out of a business, a project, or a financial product and it is usually measured during a specified, finite period of time i.e which have beginning and end. For a business to be successful, a healthy cash flow is crucial. Cash flow is the primary indicator of a business' financial health. It indicates weather a business company is in a position to pay its overheads such as rent,

insurance and wages (cost). In view of this, the research has revealed that maintaining effective cash flow requires a key business skill and will help protect the financial security of the business. Therefore, it has been arrived at the conclusion that good cash flow forecasting is a balancing act, juggling your cash inputs and outputs. To this respect, it has been stated that *One of the reasons why many businesses fail is poor cash flow management.*

### 2.3.1 Problems of Poor Cash Flow

As stated by Lip (2003), delay in construction will have multiple effects. A delayed payment by one party may affect the whole supply chain of payment of a construction project. For instance, if an Employer delays in making payment to the Contractor, this in turn will result in contractor's delay in making payment to the sub-contractor. The further consequences of the negative chain effect will create cash flow problems on contract and; subsequently, hampered the construction of the project at large. The effect of cash flow could be seen, both during pre-construction which disqualifies newly coming contractors from meeting guarantee and performance bond requirements and during construction, which leads to cash-flow problems, incomplete work and even liquidation. To this respect, Gading (1998) stated that cash flow is very important to Contractors as such; any delay of the payment will affect their cash flow and cause them difficulty in financing.

The problem is very series for small contractors which have very low financial reserves and use the profit from ongoing projects to finance their next project; hence a loss in one project ultimately leads to a cash flow problem and liquidation (Stretton, 1984). Such problems could be enhanced by the tendency of small contractors in developing countries to take money out of the business for spending on personal items such as cars or a new house (ILO, 1987). Therefore, such type of practice not only affects profitability of those parties but it also have negative effect on cash flow problems particularly to smaller firms (Brand and Uher, 2004). In addition, delays in Contractor payment caused by the lengthy process of making contractor payments in the public sector create financial problems for the contractor. Unless well managed, this delay is very damaging to contractors who are operating in a location remote from the client as the contractor would not be at place near to the client and be able to follow up the process (Edmonds and Miles, 1984).

Ideally, all staff, management, and board members of construction industry should have sufficient "cash flow awareness." Everyone in an organization can help improve cash flow by understanding the relevant issues and taking appropriate action. For example, line staff may often be involved in making purchases for the organization. If a staff member fails to follow proper procurement policies and procedures, it will affect cash flow negatively.

The payment delay and its impact in construction industry cannot be easily explained. All parties including the owners, Consultants, Contractors, Sub-contractors, Suppliers and even public sector/ Employers have an important role and must act in organized form to take ownership of the problems and challenges. To this respect, the stockholders as a whole must collaborate and take their own shares to eliminate as much as possible, poor, inefficient and outdated payment practices and smoothen cash flow supplies down the payment supply chain (Lip, 2006).

In this regard, it has been noted that one of the must meet criteria to evaluate bidders in ERA road projects is involvement of Client in checking whether the bidder has *healthy cash flow* in the past five years and; to this respect, the bidders are requested to bring a line of credit from financial institutions (Evaluation Qualification Criteria set for Ginchi-ketiche Road Project).

### **2.3.2 The Importance of Proper Cash Flow Forecasting**

The Importance of Proper Cash Flow Forecasting requires to: identify and understand an organization's cash flow characteristics, strengths, and weaknesses, creating cash flow forecasts and using other tools for more effective cash flow planning and management, improving cash flow through implementing relevant strategies, and using cash flow information to improve overall operations. Therefore, every staff and board members must understand their roles in effective cash flow management.

Staff and management at every level can become more involved in improving cash flow if cash flow issues are regularly addressed during staff meetings. Creating an ongoing forum for awareness, questions, and feedback can help ensure that everyone is working toward the common goal of cash flow improvement. All staff members in non-profit organizations should have an awareness of basic cash flow issues. Personnel who are more directly involved in

planning and managing cash flow must allocate time specifically for cash flow planning and management(CIOB, 2004).

The industry also provides works for many ranging from professionals such as architects, Engineers and Surveyors to main Contractors, Sub-contractors, Suppliers and ultimately manual labourers who are employed by these Contractors. The construction industry plays an important role in any country's development process; it is both growth-initiating and growth-dependent. The industry establishes buildings and infrastructure works required for social economic development which contribute to the overall economic growth. To this respect, the success of economic development will further lead to an increase in incomes, which intern enhances generating demand for additional construction activities (Fadhlin-Abdullah, 2004). The practice of efficient and timely payment in construction projects is a major factor that can contribute to a project's success; meeting mutual benefits of contracting parties. A smooth cash flow brings an effective delivery, on time and within budget so that projects can be completed within the planned time and with acceptance of quality (CIOB, 2004).

The main risk factors affecting the construction project cash flow were found to be emanated from agreeing interim valuations on site, receiving interim certificates, delays in payments from client, consultant's instructions, provisions for phased handover, delay in agreeing variation, Provision for fluctuation payments, delay in settling claims, Material delay, Retention, Accidents & theft and Estimating error(Ahmad Refaat EL-Behere).

The most essential terms used as depicted under studies conducted previously, (Odeyinka, H A and Lowe, J G, 2001); Cash flow is essentially the movement of money into and out of your business; it's the cycle of cash inflows and cash outflows that determine your business' solvency.

***Cash flow = Receipts – Disbursements***

Cash flow analysis is the study of the cycle of your business' cash inflows and outflows, with the purpose of maintaining an adequate cash flow for your business, and to provide the basis for cash flow management.

Net cash flow is the balance between the cash out flow and the cash inflow.

Net Cash flow = Positive cash flow (receipts) - Negative cash flow (disbursements)

### **2.3.3 Strategies to Improve Cash Flows**

According to the information obtained from the web page <http://www.investopedia.com/articles/professionals/061215/10-ways-improve-cash-flow-on-construction.asp#ixzz4lmMTqkSr>: there are 10 strategies on how a construction or contracting company can improve its cash flow as summarized herein below;

#### ***1. Carrying out Project future cash flow;***

By using advantage of cash flow management software, a construction company still will have an opportunity to gain a general idea about what income and expenses should be expected in the future. Proper planning in anticipation of these events will help prevent payroll and payment problems.

#### ***2. Spread out costs;***

Receiving materials and supplies in step discount helps to control over budget. Unless receiving a steep discount, a construction company purchasing materials and supplies should use financing. This will come with interest, but it will spread out required payments, which will leave more cash in the business for operations.

#### ***3. Shop for the best prices.***

Forming good business relation with supplier. If you let them know you're shopping for the best offer, a supplier is likely to give you the best deal possible, especially if you're not tricking and willing to walk away. Therefore, by reducing costs, you're getting liberty of cash.

#### ***4. Approach payroll correctly.***

In construction, employees are almost always paid on a bi-weekly basis. To this respect, hiring sub-contractors, which often are paid every four weeks, would improve cash flow. This should only be done in special situations, however, as you'll get higher-quality results from permanent, full-time employees and that higher-quality work reduces the odds of accidents and project setbacks and increases the likelihood of repeat business.

#### ***5. Process change orders quickly;***

Change orders are common in construction, and they're brought about due to the reason that a project requiring more time, money and/or resources than originally thought. Extreme weather

also can play a role. The project manager should initiate and process a change order immediately, rather than waiting ahead such change orders would be encountered at the verge of completion of the project. To this respect, the money required for change order needs to be received quickly, which will positively impact cash flow.

***6. Send automated invoices immediately;***

All invoices should be evaluated and sent as soon as possible. Sending invoices ahead of time will give information the respective department and enable them take action on time. By doing this, cash flow potential could be maximized.

***7. Accept electronic payments;***

Receiving money by accepting electronic payments will speed up cash receiving and paying. Hence, using electronic payments increase ease of cash flow and allowing for more capital to be used for day-to-day operations, payables and growth.

***8. Train the project manager on cash flow management;***

In construction, 85% of cash comes from project work in progress, which means cash flow performance depends on the project manager's cash flow management. In addition to training, providing incentive for managers, based on cash flow performance, would increase effectiveness of cash flow management.

***9. Avoid over-billings and under-billings;***

Overbilling unlawfully and increasing current cash flow shall not be appreciated. Some project managers will take pride in over-billing. Since this means the invoice will be higher than the job completed to date, it will increase current cash flow. The negative effect is that it will reduce cash flow when the project is completed. If under-billing, cash flow will take a hit in the near term. Therefore, the best approach is to bill according to how much of the project has been completed.

***10. Set a goal for day sales outstanding;***

Performing every day activities based on previously designed plan increases the chance of success. In this regard, strongly setting a realistic goal helps to reduce time requiring

to produce output and; hence, sending immediate invoices would be possible. Ultimately, cash flow of a company would be improved

## 2.4. Overview of Payment and related Clauses in various Conditions of Contract and Ethiopian Civil Code

### 2.4.1 Payment

Payment is a sum of money paid to someone in return for goods, work done or services rendered. In the construction industry, payment is the sum of money paid to contractors after their work for certain projects has been successfully completed. In a typical engineering and construction contract, it is apparent that the contractor has promised to carry out all the works under the contracts. On the other hand, the employer must keep his side of the promise by giving necessary consideration to payment when due which in most cases comes in monetary form.

Payment is considered as the life blood of the construction industry because construction projects often involve very large capital outlay (Ameer-Ali, 2005). It is very obvious that a healthy and consistent disbursement of money is a critical point in determining contractor performance. In order to ensure the flow of the work activities under the contract and its eventual successful realization, construction contracts have to be drafted. Most of these standard forms of contracts contain specially drafted clauses which govern all aspects of the subject of payment under the contract; these clauses have been reduced to the following principal categories:

***Fidic (1987)*** sub-clause 60.1, payment is the value of money that the Contractor submits to the Engineer after the end of each month signed by the Contractor's representative approved by the Engineer in accordance with the relevant provisions of contract in respect of:

- the value of the Permanent Works executed,
- any other items in the Bill of Quantities including those for Contractor's Equipment, Temporary Works, day works and the like,
- the percentage of the invoice value of listed materials, all as stated in the Appendix to Tender, and Plant delivered by the Contractor on the Site for incorporation in the Permanent Works but not incorporated in such Works,
- adjustments as per the contract, and
- any other sum to which the Contractor may be entitled under the Contract or otherwise

Fidic 1999 (Yellow Book), Payment is the statement submitted by the contractor in six copies to the Employer's Representative after the end of each month, in a form approved by the Employer's Representative, showing the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the detailed report on the progress during the month in accordance with the contract. The statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- The estimated contract value of the Construction Documents produced and the Works executed up to the end of the month (including Variations but excluding items described below.
- Any amount to be added and deducted for changes in legislation in accordance with the contract;
- any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Appendix to Tender to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Appendix to Tender;
- any amounts to be added and deducted for the advance payments and repayments in accordance with the contract;
- any amounts to be added and deducted for Plant and Materials in accordance with the contract;
- any other additions or deductions which may have become due in accordance with the Contract and
- the deduction of the amounts certified in all previous Interim Payment Certificates

**PPA (2011)**, unless otherwise specified in the SCC, Payment is monthly statement submitted by the Contractor for interim payment to the Engineer at the end of each period referred to in the contract in a form approved by the Engineer. The monthly statement shall include the following items, as applicable:

- The estimated contract value of the permanent works implemented up to the end of the period in question;
- An amount reflecting any price adjustment pursuant to GCC;
- An amount to be withheld as retention sum under GCC;

- Any credit and/or debit for the period in question in respect of plant and materials on Site intended for, but not yet incorporated in, the permanent works in the amount and under the conditions set out in GCC;
- An amount to be deducted on account of the advance payment repayment under the provisions of GCC; and
- Any other sum to which the Contractor may be entitled under the Contract.

**Civil code:** Art. 2694- 3. *Payment is the remuneration shall be due as soon as the work is read for sale or the publisher shall submit proofs of sale to the author at agreed intervals and*

#### **2.4.2 Periodic Schedule of payment**

During contract period, the most common method used is *interim payments* or the so called *progress payments*. In standard forms, the interim or progress payments are effected by the issuance of 'interim certificates. Interim certificate is actually the periodic certification for the payment due to execution of works by the Contractor. The failure of the certifier/usually Consultant to issue the relevant 'interim' certificates within the time period stipulated under the relevant provisions of the contract can expose his Employer to a possible claim of breach of contract by the Contractor.

The frequency of periodic payment could be varied by the volume of work executed by the Contractor and the threshold limit stipulated in the contract. Threshold limit of Interim Payment Certificate is a minimum amount of money stipulated under special conditions of contract. The Contractor should execute at least the volume of works which are equivalent with the threshold limit to request the Consultant to certify Interim Payment Certificate. For construction projects, such threshold limit commonly is stated under appendix to Bid (Special Conditions of works contract). To this respect, threshold limit of Interim Payment Certificate is included under special conditions of works contract documents of all ERA road projects.

#### **2.4.2.1 Interim or progress payment**

During contract periods, the most common method used is interim payments or the so-called progress payments. In Standard Forms, the interim or progress payments are effected by the issuance of 'interim certificates'. An interim certificate is actually the periodic certification for

the payment due to contractor. The failure of the certifier to issue the relevant 'interim' certificates in line with the stipulation of the contract can expose his employer to a possible claim of breach of contract by the contractor (Singh, 2003). The frequency of periodic payment could be varied from a fortnight to a month. The actual duration is normally the period as agreed to in the contract conditions signed.

#### *2.4.2.2 Stage payment*

The term 'stage' payment is used when the payments are made at specific stages of work. This mode of payment is often used in small lump sum contract without quantities where a proportion of the total sum is agreed to be paid over in a number of stages. These proportions are fixed and do not depend upon any re-measurement of work. Nevertheless, the applications of this mode of payments are also applied in turnkey, design and build contracts as well as contracts involving repetitive works.

#### *2.4.2.3 Advance payment*

This is the sum of money paid to the contractor by the employer well before the work involved is executed. This practice is usually done in public works contracts. The main purpose of implementing this scheme is to assist the contractor to start up and finance the contract without having to resort to unnecessary and costly external borrowings. In this regard, overview of conditions of contract and legal provisions regarding Advance payments have been conducted as presented in the subsequent section.

***PPA(2011), Sub-clause 60.2*** states that the amount of the advance payment shall not exceed 30% of the total contract price. In connection to this, sub-clause 60.5 states that the Contractor shall use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Engineer. Should the Contractor misuse any portion of the advance payment, it shall become due and repayable immediately and no further advance payments will be made to him.

***Fidic 1999; sub-clause 13.2*** states that the Employer will make interest-free advance payments to the Contractor for his mobilization and design. The total of such advance payments, and the

number and timing of installments (if more than one), shall be as stated in the Appendix to Tender, payable in the proportions of currencies in which the Contract Price is payable. The Employer's Representative shall issue an Interim Payment Certificate for the first installment after the Contractor has delivered, to the Employer, the performance security in accordance with the contract and a bank guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payments. Such bank guarantee shall remain effective until the advance payments have been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in Interim Payment Certificates.

*Civil Code; art. 2634* states that the client shall make an advance payment to the other contracting party for the expenses necessary to carry out the work. He shall also grant him, where it is the practice, installments on his remuneration.

In view of the forgoing basis, under contract provisions of ERA road projects, commonly provisions of an advance payment amount of 20% of contract price is included and same to be used by the Contractor for mobilization of equipments upon submission of Guarantee for equivalent amount.

#### **2.4.2.4 Payment after completion**

This is the method of payment to contractor triggered by the achievement of the contract milestone of practical or substantial completion and/or the so-called handing over of the works to the employer. Hence, unless such stage is reached and certified by the contract administrator, the contractor is not entitled to any payment whatsoever. In using this method, the contractor is basically financing the works to a large degree, which costs would eventually build into the contract sum. The employer must also be prepared to shoulder this burden as well as be in a position to source and effect payment ultimately of a sizeable lump sum amount upon the taking over of the works (source: Kho Mei Ye et al.(2010))

In this regard, relevant conditions of contract extracted from PPPAA, FIDIC and Civil code are outlined herein below:

**Fidic 1987;** the Engineer shall, within 28 days of receiving such statement, deliver to the Employer an Interim Payment Certificate stating the amount of payment to the Contractor which the

Engineer considers due and payable in respect of such statement taking into consideration the relevant provisions of a contract. In this regard, the duration of time payment shall be effected by the Employer to the Contractor has not been indicated in the GCC, but, *it is indicated under special conditions of the works contract.*

**Fidic 1999 MDB;** the Interim Payment Certificate must be issued within 28 days of the Engineer's receipt of the Contractor's Statement. In this regard, the condition of contract states that the Employer is obliged to pay to the Contractor the amount shown on any statement submitted by the Contractor within *14 days of its submission*. Any discrepancy can be corrected in the next payment.

**PPA(2011);** Sub-clause 59.3: Payments to the Contractor of the amounts due under each of the interim payment certificates and the final statement of account issued by the Engineer shall be made by the Public Body within *90 days* of such certificate of statement being delivered to the Public Body. The date of payment shall be the date on which the paying institution's account is debited. The payment certificate shall not be admissible if one or more essential requirements are not met.

**Civil Code 2006:**Art. 3270; At the end of each month there shall be drawn up, at the request of the Contractor and in order to serve as a basis for the payment of installments, a provisional calculation of the works performed and expenses made by the contractor. But the period of installment has not been indicated in the contract, *installments shall be paid every three months.*

## 2.5. Causes of Delayed Payment

There are many factors that are said to be causing the delayed payment problems in construction industries (Nazir, 2006). There is a need therefore to identify the contributing factors which lead to a situation of delayed payments. Based on the literature review various factors have been identified as the potential causes of delayed payment. These include:

**Employer's poor financial management:** It is anticipated that employers' poor financial management could cause them to have insufficient operating funds when they are obliged to pay the payees. Payment is considered as the life blood of the construction industry because construction projects often involve very large capital outlay (Ameer-Ali, 2005).

**Employer's withholding payment:** As provided in many standard forms of contract, the employer may withhold payment to the main contractor or subcontractor for a variety of reasons. Such reasons are major defective construction work, disputed work, failure to comply with any material provision of the contract, third party claims filed or reasonable evidence that a claim will be filed, and failure to make timely payments for project resources (Reeves, 2003). These reasons may cause the employer to refuse to make payments which will result in delayed payments.

**Conflict among parties involved:** 'Payment, not unexpectedly, has always been the main subject of disputes' (Adballa and Hussein, 2002). It is anticipated that conflict if unsettled will escalate into disputes which can also cause delayed payment.

**The use of 'pay when paid' clause in sub-contracts:** The 'pay when paid' clause in contracts could cause delayed payment issues especially to the subcontractors (Ameer-Ali, 2005).

**Local culture/attitude:** For example, before the introduction of the Housing Grants, Construction and Regeneration Act 1996 (HGCRA) the construction industry in the UK was prone to a culture of late payment where a delay of 53 days in making payment after the receipt of invoice was not uncommon (Johnston, 1999).

Moreover, delay in certification of payment by consultant after measurement of works have been conducted and disagreement on the valuation of work done and the amount of payment requested for same between the parties have been indicated as also other causes of delayed payment (Johnston, 1999), is presented

A few works published on this issue worldwide have stated that the delayed payment problems could be due to contractors, clients and sometimes the contractual matters in the contract provision used (Reeves, 2003; Adballa and Hussein, 2002; Artidi and Chotibongs, 2005).

### **2.5.1 Delayed Payment caused by Contractors**

Most of the time, contractors would blame clients when they receive late payment; however, contractors also contribute to this situation. Reeves (2003) stated that one of the main reasons for delayed payment is when there are errors in submitting payment certificate, after execution of works. This includes submission of payment certificate without adequate supporting documents,

wrongly calculated figures and those submitted without using the correct procedures stipulated in the contract or otherwise. When this is the case, Contractors need to resubmit the claims after making the necessary corrections. Another factor contributing to delayed payment is when Contractors fail to agree with the valuation of work on site (Adballa and Hussein, 2002). This would then result in conflicts between clients and Contractors which could lead to dispute resolution and hence, delayed payment occurring.

### **2.5.2 Delayed Payment caused by Clients**

According to Reeves (2003), the main factor contributed by clients is when they take longer time than the time stipulated time in provisions of the contract to certify the contractor's payment certificate. This might be because they have become increasingly subject to administering many projects and effecting payments arising out of their design and construction administration services. It has been also indicated that there are also cases where clients are wrongfully withholding the payment without any problem on the other contracting parties to withhold payment. Most of them do this to obtain some kind of 'gift' from contractors once they disburse the payment (Adballa and Hussein, 2002). Hence, it has been suggested that contractors often have to be strong and resist such kind of events from happening.

### **2.5.3 Delayed Payment caused by Contractual Matters**

There are cases where contract agreements do not have clear provisions to both main Contractors and sub-contractors in connection with disagreement arise due to delay payment (Artidi and Chotibongs, 2005). One good example is when for instance, the 'pay-when-paid' clause is often used in contract agreements between main Contractors and sub-contractors (Adballa and Hussein, 2002).

'Pay-when-paid' is also known as 'back to back' method of payment and which never brings faire solution to the second parties who have been entered subcontract agreement (Artidi and Chotibongs, 2005). In this regard, it has been indicated that second parties would get delayed payment or even worse, no payment at all. It may be worthwhile to note that in England, the policy of 'pay-when-paid' to be rejected during the drafting of contracts (Housing Grants, construction and Regeneration Act 1996). Similarly, it has been indicated that the said

provision was also rejected during the drafting of Construction Industry Development Board in 2002 in Malaysia.

## **2.6. Impacts of Delayed Payment**

Lip (2003) concluded that during the years, with the diminished volume of construction work, contractors are reeling under relentless pressure to tender with little or non-existent margins or as most appropriately called '*suicide*' bids just to sustain the flow of work orders. Payment to Contractors or lack of it is a common cause of disputes in the construction industry. Timeliness of payments affects many Contractors, for whom receiving delayed payments from their employers is a cause of friction between the two parties Menget.el.(2005) in his works stated that all problems in construction begin when payment is not received at the exact amount or date. Disagreements then leads to arguments as relationships sour, and the stage becomes an environment for conflict, blame, finger pointing, buck-passing and lawyers. As a result of this, projects exceed initial time and cost estimates and experience extensive delays. But, Contractors are the ones who suffer the most due to delay in effecting payment.

According to the research conducted in Ghana; the cascade system of payment starts from the financial institution to main contractor, main contractor to sub-contractor and so on down the chain (Latham, 1994). The insolvency of one party in the payment chain could cause severe impacts to parties below him. Accordingly, the effects of late payment upon the contractual payment chain are discussed herein below.

### **A, Creates Financial Hardship**

It is anticipated that late payment can create financial hardships on the contractor. For instance, the main contractor is obliged to pay the sub-contractor/supplier for their work done. Therefore, unless the contract expressly required the contractor to self-finance the project or it is a Build Operate and Transfer project, the contractors must not be expected to self-finance the job for their clients. The financial hardship will not only affect the main contractor but other parties as well as indicated in the following sub-section.

### **B, Creates Negative Chain Effect on other Parties**

As stated by Lip (2003), the construction payment blues have domino effects. A delayed payment by one party may affect the whole supply chain of payment of a construction project.

For instance, if an employer delays in making payment to the contractor, this in turn will result in contractor's delay in making payment to the sub-contractor. The further consequences of the negative chain effect will create cash flow problems.

### **C, Create Cash Flow Problems**

It has been indicated that many small contractors also experience difficulties in obtaining money from financial institutions to finance their business due to the high levels of bankruptcy in the industry; hence the initial capital for the business must come from the contractor (Miles, 1979:86). We still find contractors who come and go, not because of work quality or management, but because of the lack of cash on hand to pay their bills. If the contractor's cash flow is severely affected, this could lead to the delay in completion of projects also.

### **D, Results in Delay in Completion of Projects**

As explained previously, delayed payment on the part of the employer would cause cash flow problems for the contractor which could affect the overall progress of works. According to Abdul-Rahman and Berawi (2002), financial problem is confirmed by the top management view in the survey as the main causes of delay in addition to manpower shortage. This effect if not seriously attended, to could result in more devastating effect i.e. contractor's bankruptcy.

### **E, Leads to Bankruptcy or Liquidation**

A failure on the part of the employer to pay the contractor in an efficient and timely manner may affect the contractor's original financial plan. This could affect contractor's cash flow which in turn, might lead to contractor's insolvency due to unplanned cash flow problems. In the UK, during the early nineties, thousands of businesses and companies became insolvent with enormous numbers of job lost (Ameer, 2005). That was one of the reasons that prompted the Department of Environment to produce Latham Report – Constructing the Team which reviewed the procurement and contractual arrangements in the UK construction industry and provided recommendations to improve its performance. Some of the recommendations were adopted which resulted in the drafting of the UK Construction Contracts Act, known as the Housing Grants, Construction and Regeneration Act 1996.

In New Zealand, insolvencies specifically in the construction industry were spread throughout the country and some involved major companies (Ameer, 2005). Again, the introduction of

Construction Contracts act was seen as the remedy to address the insolvency problem that resulted in the drafting of the New Zealand Construction Contracts Act 2002. Contractor's liquidation will severely affect the contractor's performance in completing the work which will result in the abandonment of projects.

Additional effects of late or non-payment specified by respondents include: create accounting problem & tax computation, poor perception of industry players, affect the overall growth of a company, suppliers' require cash purchase/LC/bank guarantees - heavy cash flow for the main contractor to operate, bad image to the government, affect quality of end products and possibility of sabotage by sub-contractor's workers who have not been paid as a result of the chain effect, and results in delay.

#### **F, Results in Delay in Completion of Projects**

Failure of employer to effect payment on agreed time would cause cash flow problems for the contractor which could affect the overall system of the project and ultimately affect the contracting parties. In this regard, Abdul-Rahman and Berawi (2002), indicates that financial problem is confirmed by the top management view in the survey as the main causes of delay in addition to manpower shortage. Moreover, it has been also indicated that this effect if not seriously attended by the client, it would result in more devastating effect to the extent of contractor's bankruptcy.

#### **G, Leads to Bankruptcy or Liquidation**

If the employer has failed to effect payment to the contractor the required amount within agreed time, contractor's original financial plan/work program would be affected. This consequently affects contractor's cash flow which in turn, might lead to contractor's insolvency due to unplanned cash flow problems. In this regard, research conducted in the UK, during the early nineties, reveals that thousands of businesses and companies became bankrupt with enormous numbers of job lost (Ameer, 2005). To this effect, the Department of Environment had decided to produce Latham Report – Constructing the Team which reviewed the procurement and contractual arrangements in the UK construction industry and provided recommendations to improve its performance. Some of the recommendations were adopted which resulted in the

drafting of the UK Construction Contracts Act, known as the Housing Grants, Construction and Regeneration Act 1996.

### 2.7. Interest Payment

Delayed payment affects both main Contractor and Sub-contractor. Its effects sometimes are so harsh and may become a main reason for closing some companies. The other effect of delay in payment would be the interest. Interest is a fact of life in the world of business, and the construction industry of Ethiopia is no exception. Contractors often borrow working capital from banks in order to finance their construction operations and invariably have to pay interest on these borrowings. Contractors are therefore highly dependent upon regular interim payments from employers during the course of construction to help discharge the debt so accrued. *Therefore, when a contractor does not receive interim payments on time or in accordance with the terms agreed or for the proper amount, the interest he or she needs to pay in the form of finance charges to the bank will invariably increase.* But then, the legal presumption is that in the ordinary course of things, a person does not suffer any loss by reason of the late payment of money; a presumption which is clearly fallacious in modern times (Artidi and Chotibongs, 2005). Therefore, this studies indicates that interest payment effected for delayed payment would not nullify contractor's expense incurred due to delay in payment.

The basic common law is that interest is not considered to flow naturally from a breach, and therefore cannot be claimed as general damages where the only breach is late or nonpayment was affirmed in *London v Chatham and Dover Railway Company v South Eastern Railway Company* (Rae, 2002). If this is the case, it does not only burden the contractor physically but mentally as well as he can't do anything about it. Sub-contractors are also affected by late payments. Subcontractors are often paid late by main Contractors because of pay-when-paid and pay-if-paid clauses included in most contract forms. The consequences of the subcontractors being paid late are grave.

In such situations, some sub-contractors tend to increase their quotations, which in turn increases total project cost, which is an undesirable condition for owners. It should be possible to improve sub-contractor payment practice if client pay main contractors on time and in turn main Contractors pay their sub-contractors right after completion of sub-contract work. Not only this,

late payment will also affect the contractor's overall performance. He can lose his workers. He wouldn't have sufficient funds for the construction. The construction process will delay and would result in other effects. In view of this, delay in contractor's payment would have negative influence to the overall construction process. Effective cash flow forecasting can be "profitable" in and of its self. Cash shortages result in increased costs, such as interest charges on loans, late-payment penalties, and loss of vendor discounts for paying bills promptly. Cash flow improvements can eliminate these costs and create the opportunity for more favorable payment terms on some types of purchases. Ultimately, organizations that improve the manner in which they receive and expend cash/has healthy cash inflow and out flow will be more successful. They will also be able to increase their income. In this regard, statistics conducted in South Africa in 2005 shows that from 1995 to 2005, about 5,907 construction companies were formally liquidated Kwame Boateng Amoako (2011).

The CIDB (2004) states that much more than 90% of the emerging black contractors survived the first five years. The CIDB further highlights that 1,400 construction companies were liquidated over the past three years. Emerging Contractors feel that the banks are reluctant to deal with them unless excessive interest rates and through compulsory business management services. *Complexity, risks involved in the construction industry have led to enormous failures especially in small Contractors and those small emerging contractors harboring the wrong impression that there is quick money to be made are the mostly affected (Ngala, et al., 2005).*

***As most government agencies experience financial problems, there are delays of payments to Contractors – with a consequent adverse effect on the Contractor's cash flow (Ofori, 1991).***

According to Murdoch and Hughes (1996), 'it is not uncommon to find that a Contractor or sub-contractor who has not been paid what his due pressures to suspend work under the contract until payment is made'. It must however be noted that without a clear contractual right to suspend the works, the Contractor is not entitled to do so even though the Employer has failed to pay him within the time stipulated in the contract. In this respect, if the contractor suspends the work the courts may find him guilty of repudiating the contract.

## 2.7.1 Overview of Relevant provisions of Late Interest Payment in Conditions of Contract and Legal Provisions

**Fidic 1999; Sub-clause 13.8** states that if payment of any sum payable is delayed, the Contractor shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay. Unless otherwise stated in Part II, these financing charges shall be calculated at the annual rate three percentage points above the discount rate of the central bank in the country of the currency of payment. The Contractor shall be entitled to such payment without formal notice and prejudice to any other right or remedy.

**Fidic 1987; Sub-clause 60.10** states that in the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest at the rate stated in the Appendix to Tender upon all sums unpaid from the date by which the same should have been paid. The provisions of this Sub-Clause are without prejudice to the Contractor's entitlement under Clause 69 or otherwise.

**PPA(2011), Sub-clause 67.1** states that once the time-limit referred to in the contract has expired, the Contractor – unless the Contractor is a public body which is partly or wholly financed by the Federal Government Budget – shall upon demand, submitted within two months of receiving late payment, be entitled to late-payment interest at the rediscount rate applied by the National bank of Ethiopia on the first day of the month in which the time-limit expired, plus three and a half percentage points. The interest shall be payable for the time elapsed between the expiry of the payment deadline and the date on which the Public Body's account is debited. In connection to this, Sub-clause 67.2 states that any default in payment of more than 120 days from the expiry of the period laid down in GCC Clause 67.1 shall entitle the Contractor either not to perform the Contract or to terminate it.

### **Civil code;**

**Art. 1751** states that the rate of interest rate shall be of nine percent per annum where interest is due and the rate has not been fixed.

*Art. 1804* states that where the debtor fails to make periodical payments which constitute an income for the creditor/Contractor, such as rents, arrears of life or perpetual annuities or interest on capital, *interest for default* shall be due from the day on which proceedings for recovery are instituted where the debtor is one year in arrears.

*Art 1005(2)* states that where a sum of money has been bequeathed, interest thereon at the legal rate shall run from the day when the liquidator has been called upon to effect payment.

*Art 1803* states that where the debtor owes a money debt and he is in default, he shall pay interest for default at the rate fixed by law (Art. 1751) notwithstanding that the contract fixes a lower rate in respect of interest to be paid before the debt is due. If a higher rate of interest is fixed in the contract, such interest shall be due in lieu of interest stated above. Moreover, the said provision states that Interest shall be due notwithstanding that no loss is incurred by the creditor.

#### *UK LATE PAYMENT LEGISLATION*

The UK government has been aware of the systemic late payment problem, and, over the past two decades, has implemented legislation to mitigate the potential for such detrimental financial occurrences. There are five main pieces of relevant legislation and agreements (Source: Dealing with Late Payments –Construction Industry Posted on July 11, 2016 · Posted in Construction, Financial):

- Part II of the Housing Grants, Construction and Regeneration Act 1996 (as amended by the Local Democracy, Economic Development and Construction Act 2009): The acts help clarify payment rules in the construction industry, introduce a more balanced payment regime, and make adjudication more accessible. Specific changes include expanded rights for contractors to suspend performance for non-payment, abolishing conditional payment clauses, and new requirements for submitting payment notices.
- Late Payment of Commercial Debts (Interest) Act 1998: The act establishes that if another business is late paying for goods or a service, the payee business can charge 'statutory interest', which is defined as 8 per cent plus the Bank of England base rate.
- Late Payment of Commercial Debts Regulations 2013: These regulations impose payment period limits of 60 days for businesses and 30 days for public authorities.

- Prompt Payment Code: This code is a voluntary agreement managed by the Chartered Institute of Credit Management. The code of conduct is meant to standardize payment practices and ensure that each business within a supply chain has its invoice settled on time. By signing the code, businesses are expected to follow these three practices:
  - Pay suppliers within 30 days, with a maximum limit of 60 days. Businesses are required to pay 95 per cent of their undisputed invoices within 60 days, unless there are exceptional circumstances.
  - Give clear guidance on payment procedures to suppliers. This should include providing a system for dealing with complaints and disputes.
  - Encourage good payment practices within their industry. In addition, businesses should work to convince non-signatories to follow the code
  
- Construction Supply Chain Payment Charter: This charter is a voluntary agreement managed by the Construction Leadership Council. To apply, businesses must first be a signatory to the Prompt Payment Code. By signing the charter, businesses are expected to follow 11 fair payment commitments. While each of the commitments are beneficial and relevant, the following six are especially important:
  - A business will make the full payment as specified in the contract for all work that is properly carried out or when products are supplied.
  - A business will not deliberately delay or unreasonably withhold payment.
  - A business will ensure that payments are made to its supply chain no more than 45 days from the end of the calendar month in which the work was carried out or that products were supplied. Starting January 2018, businesses will be required to make payments no later than 30 days.
  - A business will issue any 'pay less' notices at the earliest opportunity and no later than seven days prior to the final date for payment.
  - A business will establish processes to ensure that any potential changes to a contract can be agreed upon promptly and fairly.

- A business will adopt a transparent, honest and collaborative approach when resolving differences and disputes.
- As a construction firm or subcontractor, it is important to work with other businesses that adhere to either (or both) the Prompt Payment Code and the Construction Industry Payment Charter. Businesses that have agreed to follow this display a commitment to support a culture of fair, prompt payments.

### 2.7.2 Best Practices for Dealing with Late Payments

As a construction firm or subcontractor, you know that if a payment is late, it has the potential to disrupt your entire business. Therefore, it is important for you to implement the following best practices to ensure that you are paid on time (Source: Dealing with Late Payments Construction Industry Posted on July 11, 2016 · Posted in Construction, Financial)

- Verify that the potential client has signed either (or both) the Prompt Payment Code and the Construction Industry Payment Charter.
- Establish the client's credit worthiness.
- Agree on payment terms of each contract from the very beginning to avoid any future disputes.
- Understand the contract's payment terms.
- Ensure that you price the job accurately.
- Negotiate the terms strictly.
- Remember to include the government's 8 per cent base rate in the contract, and do not hesitate to impose it.
- Take action immediately when payments become overdue.
- Do not be afraid to take late- or non-paying clients to court.
- Review your finances to ensure that you understand when payments should be coming in and when your expenses are due.

These best practices do not represent a complete list of all the possible strategies, but they do represent those that may be the most beneficial.

## CHAPTER THREE

### 3. RESEARCH METHODOLOGY

#### 3.1 Introduction

This study adopted a quantitative approach. The views from Contractors, Consultants and Client, working on road projects under the administration of Ethiopian Roads Authority, were collected via a questionnaire survey and case study on six randomly selected road projects by lottery method. The questionnaire was designed according to the objectives of research by reviewing literature dealing with delayed payments and other relevant topics. It was designed to be brief, concise and straightforward to encourage a high response rate from the potential Stakeholders. The stakeholders just have to express their views and opinions by selecting the appropriate answer or giving short answers to the questions. The sources of literature review included relevant books, case law, journals, magazines, dissertations and seminar proceedings. The review of literature provided useful information on Project Budgeting, the implications/cause of delayed payment, effects of delayed payment, options available and strategic methods to improve cash flow of road contractors in relation to the issues of delayed payment in Road Projects under Ethiopian Roads Authority.

#### 3.2 Research Approach

A quantitative strategy was adopted in this research due to the fact that quantitative research follows a deductive and induction approach in relation to theory and is concerned with the design measurement and sampling (Naoum, 2002). The strategy employs the use of statistical techniques to identify facts and casual relationships. *Quantitative research* is also objective in nature (Naoum, 2002). Hard and reliable data are often collected in quantitative research and, therefore, emphasizes on quantification.

#### 3.3 Research Design and Justification

Researchers collect evidence when they ask for someone's experienced facts. Further attempts are then made to determine the prevailing opinion within a particular group. A survey study was deemed appropriate for this research for three reasons:

- Limitation of resource to include all road projects and Contractors and Consultants working under Ethiopian Roads Authority and take relevant information.
- Survey research involves data collection from stakeholders, generalizing the result of study to predict the attitude of the population of interest.
- The survey questionnaire was structured to draw out information from the population of interest in a systematic and unbiased manner; and
- They permitted statistical analysis of data and generalization to a larger population, which made them suitable to construction management research.

### **3.4 Data Collection**

Respondents' feedback and Archival documents of selected ERA road projects were used as sources of data for the study. The respondents' feedback was collected using questionnaire from client/ERA, Contractors and Consultants working in projects where late interest payment has been experienced. Archival documents of the selected road projects for the study; which includes contract documents, project reports, correspondence letters and payment certificates, were investigated thoroughly.

Accordingly, six road projects administered under ERA, wherein the Client has effected late interest Payment to the Contractor were selected randomly by lottery method and; consequently, cause and effect of delay in Contractor's Payment were analyzed.

### **3.5 Sample Size Distributions**

Wood and Haber (1998) defined the sampling as the process of selecting representative units of a Population for the study in research investigation. A sample is a small proportion of a population selected for observation and analysis.

To determine sample size, it is possible to use statistical formula method or Sample size table from research Advisor that suggests the optimal sample size – given a population size, a specific

margin of error, and a desired confidence interval. This can help researchers avoid the formulas altogether (Source: Sample size table from research Advisor (2006). Posted in Research-Advisor.com.

For this research, sample size table from research advisor which has presented results of one set of these calculations for Confidence Level = 95% and Margin of Error = 5% has been referred to determine sample size of population.

### ***Determining Sample size of Contractors***

In this research, the numbers of foreign contractors who have faced delay in payment and subsequently, requested late interest payment are used to determine sample size of contractors. To this respect, the total numbers of foreign Contractors who have been working with ERA and requesting late interest payment are found to be 12. Hence, the total population size is 12.

Accordingly, by using Sample size table from research Advisor as discussed above, the sample size of Construction Company is found to be 11.

However, to make the research more realistic two questioners have been distributed for each of the selected contractor companies; as such, a total of 22 questionnaires could have been distributed for Contractors working with ERA. To this respect, the total number returned was 16 questionnaires.

### ***Determining Sample size of Consultants***

In connection to Consultant, Consultants who have been giving construction supervision service for the aforementioned selected road contractor's working with ERA have been determined to be the population size of this study. As such, the sample size of Consultants have been referred from the Contractors and found to be 13, since there one joint venture associated consultant.

However, to make the research more realistic randomly two questioners have been distributed for each of the selected consultants; as such, total 26 questionnaires could have been distributed. To this respect, the total number returned was 20 questionnaires.

### *Determining Sample size of Client*

Since the client is Ethiopian Roads Authority, no need of calculation for sample size of the client. However, questioners have been distributed, randomly by lottery method, for 24 Engineers in client side who have been administering road projects in which Contractor's payment delay and late interest payment have been practiced. And 22 (twenty two) questionnaires were returned.

### **3.6 Methodology used in this study**

The methodology used for this study is using questionnaire and Case study on randomly, by lottery method, selected six construction road projects in which late interest payment have been effected. The details of the methodology are summarized herein below;

- ❖ Six construction road projects administered under ERA have been selected randomly by lottery method from road projects in which late interest payment has been practiced and physical and financial data(S-curve and Cash flow)of the selected road projects have been analyzed in line with the objectives of the research.
- ❖ Payment related provisions, from FIDIC and PPPA conditions of contract and Civil Code, contract documents of the selected road projects and literatures upon delay in Contractor payment and its impact, have been reviewed.
- ❖ Information have been collected by using questioner from Engineers who are working at Ethiopian Roads Authority and Contractors and Consultants who are working with Ethiopian Roads Authority as to how delay in Contractor payment has affected the overall scenarios of the project.

In connection to Survey questionnaire, questions having 105 factors, excluding other factors to be specified by the respondents, were carefully designed from literatures conducted in road construction projects and distributed to the respondents.

**3.7 Data Measurement**

The respondents’ feedback was designed to be organized in the form of a Likert scale; the numbers assigned to the agreement or degree of influence (1, 2, 3, 4, 5) have been used, but which does not mean that the interval between scales are equal, nor do they indicate absolute quantities. They are merely numerical labels. As indicated herein below the table3.1:

**Table 3.1; Scales that represent chances of occurrence**

Chances of occurrence	Strongly Agree/ Very important	Agree/ Important	Neutral	Disagree/ Not important	Strongly disagree/Not Very important
Scale	5	4	3	2	1

The procedure used in analyzing the results aimed at establishing the mean score of the various factors responsible for cause and effect of delay in contractor’s payment. The score for each factor is calculated by summing up scores assigned to it by respondents. Therefore, the level of importance as indicated by the Client, Contractors and Consultants were used to measure the mean score of each factor.

The mean score (MS) for each variables of cause and effect of delay in contractor’s payment is computed by using the following formula:

$$MS_i = \frac{\sum (f \times s)}{N} \dots\dots\dots \text{Equation 3.3}$$

Where; S = score given to each cause of delay in Contractor’s payment by the respondents;

F = frequency of responses to each score for each cause of delay in Contractor’s Payment;

N = total number of responses in the respective cause of delay in Contractor’s payment.

Weighted Average is calculated by using the following formula;

$$\text{Weighted Avg} = w_a X_a + w_b X_b + w_c X_c \dots\dots\dots \text{Equation 3.2.2}$$

Where; w= relative weight (%)

$\bar{x}$  = mean score

a, b & c represent Contractor, Consultant and Client respectively.

The Spearman (rho) rank correlation coefficient is used for measuring the differences in ranking between two groups of respondents scoring for various factors (i.e. Clients versus Consultants, Clients versus Contractors, and Consultants versus Contractors).

The Spearman (rho) rank correlation coefficient for any two groups of ranking is given by the following formula.

$$\text{Rho } (\rho_{cal}) = 1 - \frac{6 \times (\sum d_i^2)}{N \times (N^2 - 1)} \dots \dots \dots [\text{Eq. 3.3}]$$

Where:

Rho ( $\rho_{cal}$ ) – Spearman rank correlation coefficient

$d_i$ – The difference in ranking between each pair of factors

N– Number of factors (variables)

Procedure for hypothesis testing:

1. Define the null hypothesis (H0) and the alternative hypothesis (HA)
2. Choose a value for  $\rho$ . (i.e. choose the significance level)
3. Calculate the value of the test statistic, Rho ( $\rho_{cal}$ ).
4. Compare the calculated value with a table of the critical values of the test statistic.
5. If the calculated value of the test statistic is less than the critical value from the table, accept the null hypothesis (H0). If the absolute (calculated) value of the test statistic is greater than or equal to the critical value from the table, reject the null hypothesis (H0) and accept the alternative hypothesis (HA).

## CHAPTER FOUR: RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter describes the results and discussion of desk study and questionnaire survey concerning cause and effects of delay in Contractor's payment in the case of road construction projects administered under Ethiopian Roads Authority. The analysis is based on Contractors', Consultants', and Clients' view points and from case study of the selected six road projects. In view of this, cause and effects of delays in Contractor's payment in road construction projects and their effect on the national economy in general will be investigated. From the selected six road projects, during the desk study, relevant data in line with the objectives set forth in the study has been collected; Original contract price and contract time, Revised contract amount and completion time, late interest payment rate, amount of late interest payment paid, Progress of the project within the time period when the Contractor's payment is delayed, Whether Contractor has requested other contractual right for delayed payments, and Engineer and Employer's determination in this regard are some of the information used to investigate cause and effects delay in Contractor's Payment.

### 4.2 Results of Desk Study

Before identifying the cause and effects of delay in Contractor's Payment, it had to be confirmed whether delay in Contractor's payment is experienced or not in ERA road projects. In this regard, six road projects have been selected randomly and cause and effect of delay in Contractor's payment would be assessed through desk study.

The data was collected via reviewing Contract documents, Project documents, Progress reports, Contractor's Payment Certificates, and Budget allocated by the client for Fiscal Year. On the basis of data gathered from the desk study, the researcher came to confirm that all of the selected road project experienced delay in Contractor's payment, and subsequently, late interest payment has been effected to the Contractor in this regard.

The amount of average monthly late interest payment of the selected six road projects ranges from a minimum of **ETB 36,809** to the maximum of **ETB 307,148**, which is equivalent to **0.3% and 1.3 %** of the budget allocated by the client respectively for the corresponding road project. In

connection to this, as can be seen from the Table 4.2, the client had paid total average monthly late interest payment amount **ETB 1,012,506** for the corresponding delayed Contractor's payments amount of **ETB 111, 622, 347** on the selected six road project. In view of this, it has been concluded that the Client would incur additional 1% cost above the budget allocated for construction of the selected six projects.

To this respect, in order to see the effect of delayed interest payment on the overall ERA ongoing projects, the researcher has reviewed the total budget allocated for the entire ongoing projects in ERA and noted that *ETB16,225,791,000, ETB19,458,841,000 and ETB19,224,497,000 have been budgeted for the year 2005EFY, 2006EFY and 2006EFY, respectively. In another words, it has been noted that a total of ETB54,909,129,000.00 had been budgeted for the implementation of construction road projects in the named three year.*

In view of this, one can suggest that the client might be subjected to additional cost of 1% of **ETB 54,909,129,000.00** due to delay in Contractor's Payment on construction road project, which is equivalent to **ETB 549,091,290**. In connection to this, the researcher would like to note that the said figure could be escalated if Contractors would have been exercised such rights for delayed payments in strict accordance with the conditions of the contract and use the interest rate consideration.

During the desk study; relevant information have been collected and rate of interest payment calculation of the selected roads have been reviewed and arrived at the summarized information as shown in Table 4.1 and 4.2.

**Table 4.1: Sufficiency of Late Interest Payment Amount to Cover Delayed Payment**

<i>Selected Road Projects</i>	<i>Interest Rate used for Calculation (r)</i>	<i>Late Interest Payment Amount Certified (ETB)= <math>X(r+1)^t</math></i>	<i>Average Lending Rate of CBE (r)</i>	<i>Late Interest payment amount effected using CBE's lending rate</i>	<i>Difference in amount using CBE lending interest rate</i>
A	11.8%	993,856	11.8%	993,856	0

<i>Selected Road Projects</i>	<i>Interest Rate used for Calculation (r)</i>	<i>Late Interest Payment Amount Certified (ETB)= <math>X(r+1)^t</math></i>	<i>Average Lending Rate of CBE (r)</i>	<i>Late Interest payment amount effected using CBE's lending rate</i>	<i>Difference in amount using CBE lending interest rate</i>
B	4%	5,221,510	11.8%	7,210,291.09	1,988,771.12
C	11.8%	6,163,868.83	11.8%	6,163,868.83	0
D	11.8%	3,535,244	11.8%	3,535,244	0
E	11.8%	5,986,060	11.8%	5,986,060	0
F	3%	2,816,508.21	11.8%	6,468,758.84	3,652,250.63

Note: Designation of projects:

Zagora Gassay=A,

Hawsewa-Abala-Irebt= B,

Gashena-Bilbala=C,

Sanja-Keraker=D,

Turmi,-Omoratea=E, and

Hana Mender=F

Where:

X = delayed payment amount,

t=number of years the payment delayed, and

r=rate of interest

**Table 4.2;Project Basic Information**

<i>It No.</i>	<i>Name of Project</i>	<i>Basic Contract Data</i>
<i>1</i>	<i>Gashena-Bilbala</i>	<ul style="list-style-type: none"> <li>• <i>Contractor: Chaina Railway No.3 Engineering Group Co.Ltd</i></li> <li>• <i>Consultant: Metaferia Consulting Engineers Plc in association with SPICE Consulting Engineers plc</i></li> <li>• <i>Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</i></li> <li>• <i>Length of Project:90Km</i></li> <li>• <i>Original Contract Price(Including 15%VAT):ETB</i></li> </ul>

It No.	Name of Project	Basic Contract Data
		<p>1,442,916,047.83</p> <ul style="list-style-type: none"> <li>• Revised Contract price: ETB 1,635,517,829.32</li> <li>• Original Project Completion Period:1278 Calendar Days + One year DLP</li> <li>• Revised Project completion period:1460 Calendar Days + One year DLP</li> <li>• Minimum Amount of Interim Payment Certificate: ETB 5,000,000.00</li> <li>• Is the work Program reviewed and Approved by the Consultant/Client: Yes</li> <li>• Is the project has a revised Work Program/Cash flow: Yes</li> <li>• has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: Yes</li> <li>• Conditions of Contract=FIDIC 1987</li> </ul>
2	<b>Hana-Mender</b>	<ul style="list-style-type: none"> <li>• Contractor: Sinohydro Corporation Limited</li> <li>• Transnational Engineers</li> <li>• Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</li> <li>• Length of Project:72.87Km</li> <li>• Original Contract Price(Including 15%VAT):ETB1,664,681,178</li> <li>• Revised Contract price:1,664,681,178</li> <li>• Original Project Completion Period:730 Calendar Days+one year DLP</li> <li>• Revised Project completion period:</li> <li>• Minimum Amount of Interim Payment Certificate:ETB2,000,000.00</li> <li>• Is the work Program reviewed and Approved by the Consultant/Client: Yes</li> <li>• Is the project has a revised Work Program/Cash flow: Yes</li> <li>• has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: No</li> <li>• Conditions of Contract=FIDIC 1987</li> </ul>
3	<b>Hawsewa-Abala-Irebt</b>	<ul style="list-style-type: none"> <li>• Contractor: Jiangxi Zhongmei Engineering Construction Co.,Ltd(JXZM), China</li> <li>• Consultant: Intercontinental Consultants and Technocrats Pvt. Ltd in Jv with Omega Consulting Engineers Plc and International Consultants and Technocrats Ethiopia Ltd</li> <li>• Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</li> <li>• Length of Project:94.192Km</li> <li>• Original Contract Price(Including 15%VAT):ETB</li> </ul>

It No.	Name of Project	Basic Contract Data
		<p>813,519,770.15</p> <ul style="list-style-type: none"> <li>• Revised Contract price: ETB 1,102,203,396.14</li> <li>• Original Project Completion Period:1260 Calendar Days + One year DLP</li> <li>• Revised Project completion period:2316 Calendar Days + One year DLP</li> <li>• Minimum Amount of Interim Payment Certificate: ETB 4,000,000.00</li> <li>• Is the work Program reviewed and Approved by the Consultant/Client: Yes</li> <li>• Is the project has a revised Work Program/Cash flow: Yes</li> <li>• has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: Yes</li> <li>• Conditions of Contract=FIDIC 1987</li> </ul>
4	<b>Sanja-Keraker</b>	<ul style="list-style-type: none"> <li>• Contractor: China Railway No.3 Engineering Group Co.,Ltd</li> <li>• Consultant: Highway Engineers and Consultants/HEC/Plc</li> <li>• Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</li> <li>• Length of Project:47.95Km</li> <li>• Original Contract Price(Including 15%VAT):ETB 786,796,548.12</li> <li>• Revised Contract price: ETB 786,796,548.12</li> <li>• Original Project Completion Period:913 Calendar Days + One year DLP</li> <li>• Revised Project completion period:1057 Calendar Days + One year DLP</li> <li>• Minimum Amount of Interim Payment Certificate: ETB 5,000,000.00</li> <li>• Is the work Program reviewed and Approved by the Consultant/Client: Yes</li> <li>• Is the project has a revised Work Program/Cash flow: Yes</li> <li>• has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: Yes</li> <li>• Conditions of Contract=FIDIC 1987</li> </ul>
5	<b>Wito-Turmi-Omorate-Namraputh</b>	<ul style="list-style-type: none"> <li>• Contractor: CGC overseas Construction</li> <li>• Consultant: Gondwana Engineering plc</li> <li>• Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</li> <li>• Length of Project:91Km</li> <li>• Original Contract Price(Including 15%VAT):ETB 794,855.085.55</li> <li>• Revised Contract price: ETB 794,855.085.55</li> </ul>

It No.	Name of Project	Basic Contract Data
		<ul style="list-style-type: none"> <li>• <i>Original Project Completion Period:1095 Calendar Days + One year DLP</i></li> <li>• <i>Revised Project completion period:1288 Calendar Days + One year DLP</i></li> <li>• <i>Minimum Amount of Interim Payment Certificate: ETB 1,500,000.00</i></li> <li>• <i>Is the work Program reviewed and Approved by the Consultant/Client: Yes</i></li> <li>• <i>Is the project has a revised Work Program/Cash flow: Yes</i></li> <li>• <i>has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: Yes</i></li> <li>• <i>Conditions of Contract=FIDIC 1987</i></li> </ul>
6	Zagora-Gassay	<ul style="list-style-type: none"> <li>• <i>Contractor: China Railway Seventh Group Co,Ltd</i></li> <li>• <i>Yerer Engineer Plc in Jv with Weeknight Construction Management Construction Plc</i></li> <li>• <i>Financer: Government of the Federal Democratic Republic of Ethiopia(FDRE)</i></li> <li>• <i>Length of Project:44.5Km</i></li> <li>• <i>Original Contract Price(Including 15%VAT):ETB 485,177,003.42</i></li> <li>• <i>Revised Contract price: ETB 492,026,476.27</i></li> <li>• <i>Original Project Completion Period: 730 Calendar Days+one year DLP</i></li> <li>• <i>Revised Project completion period: 986 Calendar Days+one year DLP</i></li> <li>• <i>Minimum Amount of Interim Payment Certificate:ETB4,000,000.00</i></li> <li>• <i>Is the work Program reviewed and Approved by the Consultant/Client: Yes</i></li> <li>• <i>Is the project has a revised Work Program/Cash flow: Yes</i></li> <li>• <i>has the Contractor claimed contractual rights other than late Interest Payment for his delayed payments: yes</i></li> <li>• <i>Conditions of Contract=FIDIC 1987</i></li> </ul>

As can be noted from Table 4.1, there are contracts which has based on lending rate of the National Bank of Ethiopia and Commercial Bank of Ethiopia for late interest payment calculation for the delayed Payment of Contractors due to the failure of the Employer to effect Contractor's payment certified by the Consultant and/or failure of the Consultant to certify Contractor's payment and request the Employer's approval. In this regard, relevant provision of

the contract documents of the selected road projects for the case study have been reviewed and noted that lending rate of National Bank of Ethiopia is to be used for calculating late interest payment. However, late interest payment has been computed using the lending rate of the Commercial Bank of Ethiopia as the National Bank of Ethiopia has not issued lending rate. Therefore, in this regard, the researcher has identified limitation in drafting the tender document.

In connection to sufficiency of late interest payment to commensurate the cost that the Contractor has lost due to delayed payments, without considering other financing charges, it has been assumed that the contractors could borrow from bank with lending interest rate issued by commercial bank of Ethiopia so that cash flow shortage occurred due to delay in payment could be overcome.

Accordingly, the value of late interest payment have been evaluated using the rate used for evaluation by the Engineer and lending rate of the commercial bank of Ethiopia in order to confirm whether the contractors have been obtained the minimum lending rate of financial institution to cover delay in their payment. Consequently, it has been noted that the Contractor working at Hawesew-Abala road project had lost *ETB 1,988,771.12* and Contractor working at Hana-Mender road project had lost *ETB 3,652,250.63* due Employer's failure to pay for the Contractor on time and unable to get a reasonable lending rate from National Bank of Ethiopia to calculate late interest payment calculation to offset the impact of delayed payment.

### **Average Monthly Budget Plan vs Utilization**

As can be noted from Table 4.3, the average monthly budget utilization for all of the selected road projects shows that the budget allocated by the client for project is lower than the contractor's cash flow plan and/or actually executed amount by the Contractor. Conducting the research, it has been noted that, for every ERA road project, budget is allocated at the beginning of the fiscal year by the Planning and Program Management Directorate. In view of this, for this research purpose, Budget allocated by the client for the selected road projects have been collected from the Planning and Program Management Directorate and average monthly budgets of the said selected road projects have been calculated and arrived at the value indicated under column 'b' of Table 4.2.

Accordingly, the total average monthly planned budget allocated for the selected six road project is found to be ETB 87,465,210 whereas what has been actually executed/certified and planned by the Contractor is ETB 111,622,347 and ETB 136,749,110 respectively. This shows that there is insufficient fiscal year budget which has not considered the contractors' actual performance.

As a result, delay in Contractors payments has encountered and; subsequently late interest payment amount of ETB 1,012,506 has been effected to the Contractor, though the rate of late interest payment used for calculating late interest payment is too small and unrealistic. Notwithstanding the above, the Employer has expended additional cost ETB 1,012,506 due to delay in Contractor's payment amount of ETB 136,749,110 under the selected six road project, i.e. 0.74 % of the certified payment amount is found to be late interest payment.

In view of the forgoing basis, it has been concluded that the Employer has allocated unrealistic budget which has not based on the actual performance and site conditions such it would result in additional and unplanned cost, and ultimately increase the project cost. Hence, effective and efficient budget allocation, taking into consideration Contractor's performance and actual site condition, should be the Employer's role to prevent occurrence of delay in Contractor's payment during construction stage.

**Table 4.3 Average Monthly Budget Plan vs Utilization**

It. No	Selected Road Projects	Contractor's cash flow (ETB)	Budget Allocated by the Client	Payment Amount Certified (ETB)	Late Interest Payment (ETB)	Budget Utilized (ETB)	Late Interest Payment / Budget (%)	Excess/Shortage of Budget
		a	b	c	d	e=c+d	f=d/b	g=b-e
1	A	13,948,039	8,775,358	9,318,446	36,809	9,355,256	0.4	-579,898
2	B	7,614,752	22,573,235	29,536,808	307,148	29,843,956	1.3	-7,270,721
3	C	31,576,885	16,089,241	19,655,795	212,547	35,745,036	1.3	-19,655,795

MSc Thesis: Contractor's Payment Delay and its Impact on Road Projects Administered under ERA

It. No	Selected Road Projects	Contractor's cash flow (ETB)	Budget Allocated by the Client	Payment Amount Certified (ETB)	Late Interest Payment (ETB)	Budget Utilized (ETB)	Late Interest Payment /Budget (%)	Excess/Shortage of Budget
		a	b	c	d	e=c+d	f=d/b	g=b-e
4	D	17,486,116	8,988,778	8,975,869	78,560	9,054,430	0.9	-65,652
5	E	13,913,276	11,720,417	12,000,236	249,419	12,249,654	2.1	-529,238
6	F	52,210,042	19,318,181	32,135,193	128,023	32,263,22	0.66	-12,945,034
<b>Total Average Monthly Budget Utilization(ETB)</b>		<b>136,749,110</b>	<b>87,465,210</b>	<b>111,622,347</b>	<b>1,012,506</b>	<b>96,248,332</b>	<b>1.15</b>	<b>-41,046,338</b>

As can be noted from the Table 4.4 below, the following has been summarized as effects of delay in Contractor's payment, even though other contractual implications could be derived if there was well recorded data.

- Demobilization of Equipments, particularly Rental Equipments,
- There was turnover of labors, particularly unskilled labors,
- Delay in delivery of Laboratory Equipments,
- Delay in installing crusher,
- Limited number of resources mobilized to the site,
- Rate of rework due to poor workmanship has increased,
- Slow progress in construction works,
- Unable to comply Engineers Instruction,
- Problem in association with sub-contract administration,

- Rate of poor workmanship has increased, and
- Frequency of rework has been increased as such affecting the progress of the project.

Moreover, regarding exercising contractual rights other than late interest payment for the delayed payments, it has been noted from the selected six foreign contractors for this research purpose, four of them have reserved to exercise their rights other than late interest payment. In this regard, even though two of the selected road contractors have requested other contractual rights other than late interest payment, their request have been denied by the Consultant and the Employer due to the reason that the request has not been substantiated to the satisfaction of the consultant/employer. To this respect, it has been noted that there is no any inviting condition for the contractors to submit reconsideration. Hence, the contractors are discouraged for their claims and no one of the said contractors' could submit reconsideration for other contractual rights other than late interest payment regarding delayed payment.

In light of this, one can suggest that that Contractors working on ERA road projects are not being fairly treated by the Consultant/Employer for any of delayed payments, due to the failure of the Employer to effect Payment within the time period stipulated in the contract.

**Table 4.4 Other Summarized Effects of Delayed payment of Contractors**

<i>Selected Road Projects</i>	<i>Major Effects of Delayed Contractor's payment</i>			
	<i>Availability of Resources on the Project site</i>	<i>Turnover of Human resources</i>	<i>Other Contractual Matters</i>	<i>Exercising contractual right, other than delayed payment</i>
A	Demobilization of Equipments, Particularly Rental Equipments	There was turnover of labors, particularly unskilled labors	-Unnecessary communications; the Contractor resists Engineer's advise and instruction -Delay in progress of the project has been noted	Though the Contractor has claimed for other rights, stipulated under Sub-clause 69.1 of the GCC, he has not been accepted by the Engineer and the Employer

<i>Selected Road Projects</i>	<i>Major Effects of Delayed Contractor's payment</i>			
	<i>Availability of Resources on the Project site</i>	<i>Turnover of Human resources</i>	<i>Other Contractual Matters</i>	<i>Exercising contractual right, other than delayed payment</i>
			-Quality related problems have been noted.	
B	Demobilization of Equipments	There was turnover of labors	-Equipments actual fleet on the project site is lower in number than indicated under the work program	
C	Demobilization of Equipments		-Equipments actually fleet on the project site is lower in number than indicated under the work program. -Frequency of poor workmanship has increased and there was rework and hence, progress of the project had been	-It has been noted that the Contractor has neither claimed nor obtained. -determination/approval for his contractual right other than late Interest payment for his delayed payment

<i>Selected Road Projects</i>	<i>Major Effects of Delayed Contractor's payment</i>			
	<i>Availability of Resources on the Project site</i>	<i>Turnover of Human resources</i>	<i>Other Contractual Matters</i>	<i>Exercising contractual right, other than delayed payment</i>
			<p>affected ultimately.</p> <p>-Progress and quality related letters have been issued by the Engineer and Employer</p>	
D	<p>Even though effects of progress of the project is slow down, idle Equipments have not been defined well in connection to delay in payment</p>	<p>There is no well recorded data in this regard. But, Contractor's staff, particularly laborers has left their job due to delay in Contractor's payment and subsequently delay in effectuating their salary.</p>	<p>-Frequency of poor workmanship has increased</p> <p>-Poor planning and ineffective resources arrangements</p> <p>-Environment and Social problems</p> <p>-Unable to comply Engineers Instruction</p> <p>-Problem in association with sub-contract administration</p>	<p>It has been noted that the Contractor has neither claimed nor obtained determination/approval for his contractual right other than late Interest payment for his delayed payment.</p>

<i>Selected Road Projects</i>	<i>Major Effects of Delayed Contractor's payment</i>			
	<i>Availability of Resources on the Project site</i>	<i>Turnover of Human resources</i>	<i>Other Contractual Matters</i>	<i>Exercising contractual right, other than delayed payment</i>
E	Demobilization of Equipments	-Limited No. of Manpower mobilized to the site -Frequent Turnover of Contractor's Staff -Three Resident Engineer , two Assistant Resident Engineer and Material Engineer have been displaced in the	-Frequency of poor workmanship has increased	-It has been noted that the Contractor has neither claimed nor obtained. - determination/approval for his contractual right other than late Interest payment for his delayed payment.
F	-Delay in delivery of Laboratory Equipments, Delay in installing crusher -Limited No.	-Limited No. of Manpower mobilized to the site	-Dissatisfaction letters have been issued by the Engineer and Employer upon slow progress of the Contractor -EOT has been	It has been noted that, though the Contractor has requested contractual right other than late Interest payment, the Engineer has rejected cost/time related claim of the

<i>Selected Road Projects</i>	<i>Major Effects of Delayed Contractor's payment</i>			
	<i>Availability of Resources on the Project site</i>	<i>Turnover of Human resources</i>	<i>Other Contractual Matters</i>	<i>Exercising contractual right, other than delayed payment</i>
	of resources mobilized to the site		requested -Notice to reduce work rate has been issued by the Contractor	Contractor due to delay in Contractor's Payment

### 4.3 Results of Questionnaire for causes and Impacts of Delay in Contractor's payment

The causes and effects of delay in contractor's payment from the questionnaire survey are identified based on respondents' response on each variable related to cause and effect of delay in Contractor's payment. In this regard, causes and effect of delay in contractor's payment by the different researchers, might not be directly applicable to road projects administered under Ethiopian Roads Authority due to the reason that some of the factor's which have been considered as the critical cause and effects of delay payment could be related with the procurement rule, experience of practicing provisions of the contract and the development stage of construction sector are quite different from other countries' experience. Hence, it is important to ask the respondents for their agreement on each particular variable of cause and effect of delay in contractors' payment. To clearly identify the most common causes and effects of delay in Contractor's Payment, it is important first to identify the case under road project under Ethiopian Roads Authority and then identify their rate of occurrence.

#### 4.3.1 Population characteristics

This part mainly presents the general information about the respondents in terms of the name of organization, company type, position and experience of the respondents.

##### 4.3.1.1 Type of Respondent's Organization

In this study, as can be observed from Table 4.5, 72 questionnaires have been distributed to Engineers of which 66 % (22) are Contractors, 39.4 % (26) are Consultant, and 33.3 % (24) are

Client/Employers. Subsequently, 58 questionnaires, i.e., 80.5% of the questionnaires had been fully responded; where 47.4% (20) were from Consultants' Engineers, 42.2% (16) were from Contractors' Engineers, and 37.9% (22) were from Client's Engineers. In light of this, it has been noted that the rate of respondents of Client, Consultant and Contractor would become 91.7%, 76.9% and 72.7% respectively. In view of this, it has been noted that 84 % of the respondents have replied their response/feedback. Hence, the response obtained from the respondents could represent the non-responsive questioners distributed to each contracting party as such the next course of action could have been continued.

**Table 4.5: Type of respondents' organization and the corresponding Questioner Distributed**

<i>Respondents</i>	<i>Questioner Distributed (No.)</i>	<i>Questioner Distributed (%)</i>	<i>Questioner Returned (No)</i>	<i>Questioner Returned (%)</i>	<i>Rate of Questioner Returned by each company (%)</i>
Client	24	33.3	22	30.55	91.6667
Contractor	22	30.556	16	22.22	72.7273
Consultant	26	36.11	20	27.77	76.9231
Sum	72	100	58	80.5	

**Table 4.6 Respondents Position and No. of Questioner Distributed**

<i>Respondents Position</i>	<i>Contractor</i>	<i>Consultant</i>	<i>Client</i>
Resident Engineer		7	
Project Manager	6		
Construction Engineer	4		
Quantity Surveyor	2	3	
Assistant Resident Engineer		4	
Highway Engineer		3	
Team Leader; who have better experience/skill to lead junior, senior and lead engineers.			3

<i>Respondents Position</i>	<i>Contractor</i>	<i>Consultant</i>	<i>Client</i>
Lead Engineer; an engineer who have at least six years experience.			2
Senior Engineer; an engineer who have at least four years experience.			7
Project Engineer			10
Material Engineer		3	
Office Engineer	4		
Total	16	20	22

As can be noted from **Table 4.6 above**, 16 questioners have been collected from Engineer's working in Contractor's firm and of which **25% are Project Managers, 25% are Construction Engineers**, 12.5% are Quantity Surveyor, and **37.5% are office Engineers**. Similarly, 20 questioners have been collected from Engineer's working in consulting firms and of which **35% are Resident Engineer's**, 15% are Quantity Surveyor, **20% are Assistant Resident Engineer**, 15% are Highway Engineers, and 15% are Material Engineers. Moreover, regarding Engineers working in Client/Ethiopian Roads Authority side, 22 questioners have been collected and of which **13.66% are Team Leaders**, 9.09% are Lead Engineers, **31.8% are Senior Engineers**, and **45.45% are Project Engineer levels**.

Evaluating the response given by the respondents of each category of the contracting parties in view of their experience and position, the percentage of respondents has been sorted out and summarized the first two respondents having the highest rank as shown herein below.

**Table 4.7 Ranking of Respondents in their Positions**

<i>Rank</i>	<i>Contractor's staff</i>	<i>Consultant's Staff</i>	<i>Client's Staff</i>
1	Project manager	Resident Engineer	Project Engineer
2	Office Engineer	Assistant Resident Engineer	Senior Engineer

In view of the table 4.7, it has been noted that the respondents are experienced engineers as such the feedback collected could be more realistic.

**Table 4.8 Experience of respondents (years)**

<i>Experience of Respondents (Years)</i>	<i>Contractor</i>	<i>Consultant</i>	<i>Client</i>	<i>Total</i>
0-5	-	-	6	<b>6</b>
5-10	8	9	14	<b>31</b>
>10	8	11	2	<b>21</b>
<b>Total Respondents</b>	<b>16</b>	<b>20</b>	<b>22</b>	<b>58</b>

As can be noted from Table 4.8, 50% of the respondents working in the participated Contractor firm have experience of 5-10 years and the remaining 50% respondents have been found to have more than 10 years' experience. Regarding respondents working in consulting firms, it has been noted that 45% of the respondents have experience of 5-10 years and 55% of them have more than 10 years' experience. Similarly, evaluating the experience of respondents working in the client, it has been noted that 27.27% have experience 0-5 years, 63.63% have experience of 5-10 years and 9% have experience have more than 10 years.

In light of the facts observed under Table 4.9, it has been noted that most of the respondents have experience 5-10 years and more than 10 years as such the feedback collected from the respondents would possibly indicate the actual scenario in the sector.

**Table 4.9 Experience of Respondents using FIDIC and PPPAA**

<i>Experience</i>	<i>Contractor</i>	<i>Consultant</i>	<i>Client</i>	<i>Total</i>
Using FIDIC 1987/1992	16	20	22	<b>58</b>
Using PPPAA	2	4	3	<b>9</b>

As can be noted the Table 4.9, only 15.5% (9) of the total respondents have experience of using PPPAA. This is due to the reason that the general conditions of works contract which has been used for the construction works of road projects in ERA is FIDIC. Whereas some of the respondents have experience in using PPPAA, as they might have worked in building projects.

#### 4.3.2 Results and Discussions of Factors of Contractor's Payment Delay and Its Impact in case of Road Projects Administered under Ethiopian Road Authority

This section consists of results and discussion of study factors which include: *Various Implications of Delayed Payment Problems and Its Effect on Contractor's, Consultant, Client and other Stakeholders; Causes and Effects of Delay in Contractor's payment; Options and Strategic Methods to counteract Contractor's cash flow problems; and Reasons why local Contractors do not request late Interest Payment for delayed payment and other factors and effects, if there is any, indicated by the respondents.*

Accordingly, feedbacks have been collected from the respondents and; subsequently, the corresponding feedbacks of each questions replied by the respective respondents have been evaluated. Consequently, *weighted average and the corresponding party (Contractor, Consultant and Client) view rank value* of factors which deemed to be related with causes and effects of delay in Contractor's payment have been determined.

To this respect, the researcher has reviewed and analyzed the respondents' feedback in view of the *weighted average result* and *the corresponding party (consultant, Employer and Contractor)* as presented herein below under section 4.3.2.1 and 4.3.2.2 respectively.

##### 4.3.2.1 Ranking in view of Weighted Average Result

Feedbacks collected from respondents have been categorized based on the organizations in which the respondents are working (Consulting firm, Employer and Contractor). Accordingly, the *weighted average result* of the respondents feedback for all questions indicated under the questioner has been analyzed and; subsequently, ranking and analysis has been made; as indicated under the following sections.

##### Causes of Contractor's Delayed Payment on Contractor In view of Weighted Average Result

Regarding Various Causes of Delayed Payment and its Effect on Contractor, respondents feedback have been analyzed and the weighted average result indicates that *Proper Project Costing and Financing* is found at the first rank and *Delay in completion of contract by the contractor, Budget Allocation at the Planning stage, Amount of Payment of Interest on*

*delayed payment and Knowing how to overcome the problems of budget deficient* have been found at the second rank order among other factors. This indicates that, before commencing the construction activity, quality of design and sufficiency of budget shall be given attention by the client; otherwise, the Employer will face budget shortage and fail to effect Contractor's payment on time. In connection to this, it has been noted that delay in Contractor payment would extend completion of the project as such the Contractor would suffer from budget deficit due to increase in time related costs. Besides to this, it has been noted that amount of interest to be paid to the Contractor for the delayed payment would not reasonable and cover the cost that the Contractor loses due to delay in his payment.

#### **Implications of Contractor's Delayed Payment on Consultants In view of Weighted Average Result**

As can be noted from Table 4.10, feedback of respondents to know effects of delay in Contractor's Payment on Consultant have been analyzed and; subsequently, it has been noted that *Quality of Consultancy service rendered* have been found at the first rank order. This shows that, the Consultant would fail to insist the Contractor to comply the requirements of the contract as such quality and progress of the project would be affected ultimately. In connection to this, *Delay in certification and increase in Cost of Consultancy Services* have found at the second and the third rank order respectively, among other factors of Contractor's Delayed Payment Problems and Its Effect.

In view of this, one of the other major reasons for delay in Contractor's payment is delay in submission of certified payment by the Engineer and; subsequently, the progress of project would be affected and completion date of project would be extended. Accordingly, the consultancy service time will be extended and the corresponding service cost will be increased.

#### **Implications of Contractor's Delayed Payment on Employer In view of Weighted Average Result**

Regarding effects of delayed payment of Contractor's payment on Contractor, respondents feedback upon the aforementioned questions, indicated under Table 4.10, have been analyzed

and subsequently, it has been noted that ***Extension of Intended completion date and Increase in construction cost have been found to be stood at the first rank order.*** In view of this, it has been noted that the project completion date would be extended so that the project would not be used for the intended purpose within the contract time. Further, the project completion cost would be increased due to increase in price of materials and other related construction cost. The other factors which have found at the ***second and third rank order in Implications of Delayed Payment Problems and Its Effect on Employer*** are ***increase in the construction cost of the project and (Affecting Contractor's cash flow forecast and Scheduling of works or program distracted)*** respectively. In light of this, the researcher has noted that delay in Contractor's payment has increased not only the construction cost of a project but also destructs the Contractor's cash flow as such the future development plan of the Contractor would be affected as the Contractor's every activity is related with the cash flow status.

#### **Options Available to Improve Contractor's Cash Flow In view of Weighted Average Result**

**Regarding Options Available to Improve Contractor's Cash Flow**, respondents' feedbacks have been analyzed and the weighted average results indicate that ***Defined time frame for payment is ranked at 1<sup>st</sup> place.*** In view of this, the researcher has noted that effecting payment in defined time frame and Consultant and Employer's commitment to certify and effect payment within the stipulated time frame is the best option to improve Contractor's cash flow problem so that related problems could be overcome. In connection to this, following defined time frame, ***establishing the client's credit worthiness, Regular periodic payment and Reliable work Program/Healthy cash flow*** have been ranked as the 2<sup>nd</sup> and the 3<sup>rd</sup> options respectively to improve Contractor's cash flow. In light of this, the researcher has noted that the Client should have effective and efficient budget disbursement schedule and stable financial ground which enables him effect payment to the Contractor during construction stage. Similarly, the Contractor; should provide realistic work program which helps the client to allocate budget and regulate the overall cash inflow and outflow.

### **Strategic Methods to Improve Contractor's Cash Flow In view of Weighted Average Result**

As far as concerning Strategic Method to Improve Contractor's Cash Flow, feedbacks of the respondents have been analyzed based on the weighted average result and noted that ***Support from Financing Institutions is placed at the 1<sup>st</sup> rank place among other factors of*** Strategic Method to Improve Contractor's Cash Flow. In view of this, the researcher came to know that the Contractor should work on good relationship with financial institutions and strive to fulfill his obligation in this regard. Because, if there is any delay in Contractor's payment, the Contractor could use financing institutions as one means of mitigating shortage in cash flow.

In connection to this, ***Negotiating the terms strictly, Ensuring pricing the job accurately and Entering into partnership agreement*** are ranked at the 2<sup>nd</sup> place among other factors to improve Contractor's Cash Flow. This has indicated that the tender documents shall be drafted in a well manner, free from ambiguity, so that bidders would have full information about the project they tender. To this respect, the bidders shall review the project site along with the information stipulated in the tender documents, before submitting their offer. Hence, the Contractor should understand all the terms and conditions of the contract and price all jobs accurately. Besides to this, forming partnership with other Contractors is also helps the Contractor to overcome cash flow shortage, if any.

### **Reasons why most of Local Contractors do not request Late Interest payment In view of Weighted Average Result**

As can be noted from the Table 4.10, ***Afraid of the negative impact on communication between the Contactor and Client, Unable to know and exercise the right vested under the contract and Assumption to claim the loss in other heads of claim*** are ranked at the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> respectively. This shows that, local Contractors working under ERA road projects are not working in strict accordance with the provisions of the contract as such contractual obligations and rights and obligations vested in the contract or otherwise is not exercised by the contracting parties. Besides to this, the output of the analysis indicates that local contractors do not have experience of reading all the provisions of the contract before and after entering into the contract agreement.

In view of this, it has been noted that local Contractors neither entertain their contractual rights nor fulfill their contractual obligations in strict accordance of contract. Moreover, in the expense of the contractual rights of requesting late interest payment from the client, local contractors strive to claim the losses in other heads of claim. Similarly, according to the research, the client is not enforcing local Contractors to fulfill their obligation in strict accordance with the contract.

#### 4.3.2.2 Ranking in view of Consultant, Employer and Contractor

Feedbacks collected from respondents have been categorized based on the organizations in which the respondents are working (Consulting firm, Employer and Contractor). Accordingly, the respondents feedback for all questions indicated under the questioner has been analyzed and; subsequently, ranking and analysis has been made; as indicated under the following sections.

**Table 4.10 Various Causes of Contractor's Payment Delayed and Its Effect**

<i>It. No.</i>	<b>Causes of Contractor's Payment Delay and Its Effect on Client</b>	<i>Contractor</i>		<i>Consultant</i>		<i>Client</i>		<i>Weighted Average</i>	
		<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>
1	Realistic Cost Estimation	4	9	4	8	3	7	3.7	6
2	<i>Budget Allocation at the Planning stage</i>	4	4	4	5	4	1	4.0	2
3	<i>Amount of Payment of Interest on delayed payment</i>	5	1	3	13	4	3	4.0	2
4	<i>Knowing how to overcome the problems of budget deficient</i>	4	4	4	10	4	4	4.0	2
5	<i>Proper Project Costing and</i>	5	1	4	1	4	2	4.3	1

<i>It. No.</i>	<b>Causes of Contractor's Payment Delay and Its Effect on Client</b>	<i>Contractor</i>		<i>Consultant</i>		<i>Client</i>		<i>Weighted Average</i>	
		<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>
	<b><i>Financing</i></b>								
6	Personnel who are more directly involved in planning and managing	4	9	4	3	3	7	3.7	6
7	Local culture/attitude	3	11	3	11	3	13	3.0	14
8	<b><i>Delay in completion of contract by the contractor</i></b>	5	3	4	2	3	5	4.0	2
9	Delay in having the expected benefit of property	4	8	4	7	3	7	3.7	6
10	Delays order by the project manager to start or suspend or termination works	4	13	4	9	3	10	3.7	6
11	Strong political influence	4	4	4	12	3	12	3.7	6
12	Conflict among parties involved	4	7	4	6	3	9	3.7	6
13	wrongfully withholding the payment	4	9	4	3	3	6	3.7	6
14	Stakeholders are not	4	12	4	11	3	11	3.7	6

It. No.	Causes of Contractor's Payment Delay and Its Effect on Client	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
	satisfied								

**Consultant's View on causes of Contractor's Payment Delayed on Client**

As can be noted from the Table 4.10, information obtained from the respondents working under Consulting firm working with ERA road projects have been analyzed and; subsequently, it has been noted that *Proper Project Costing* is found at the first rank order implications of delayed payments on the contractor. To this respect, Consultants feedback shows that effective and efficient project design is very important to determine Implications of Contractor's Delayed Payment on client. In connection this, Delay in completion of contract by the Contractor is found at the second rank order implications of delayed payments based on the Consultants response. Hence, most of the respondents working with Consultant has agreed that delay in Contractor's payment would result in delay in completion of the project. The factor which has ranked the third order analyzing the respondents' feedback up on Implications of Delayed Payment Problems and Its Effect on Client are *wrongfully withholding the payment and Personnel who are more directly involved in planning and managing*. In view of this, it has been noted that personnel who have been involved at the planning and implementation stage would affect the time of payment.

**Employer's View on Implications of Contractor's Payment Delayed on Client**

Information obtained from the respondents who are working in ERA have been analyzed, and; subsequently, it has been noted that *Budget Allocation at the Planning stage* is found at the first rank order implications of delayed payments on the contractor, *Proper Project Costing and Financing* at the second rank order and *Amount of Payment of Interest on delayed payment* have been ranked at the third rank order affecting the *Implications of Delayed Payment Problems and Its Effect on Employer*. In view of this, it has been concluded that efficient budget planning and cost estimation is the major factors the Employer shall take into consideration when

a road project is decided to get into construction in order to alleviate delayed payment problems and its effect on Employer.

### **Contractor's View on Implications of Contractor's Payment Delayed on Client**

As can be noted from the Table 4.10, to know effects delay in Contractor's Payment on Consultancy Service, feedback of respondents working in Contraction company have been analyzed and; subsequently, it has been noted that *Unhealthy communication with Contractor* is the first in rank order implication of delayed payments on the consultant. This shows that, the Consultant would fail to insist the Contractor to comply the requirements of the contract as such quality and progress of the project would be affected ultimately. In this regard, increase in *Cost of Consultancy Services has been noted at the second rank order due to effects of* delay in Contractor's Payment. Therefore, delay in Contractor's payment could escalate not only the budget allocated for works contract price but also supervision cost due to extension of contract period. To this respect, *Turnover of Consultants Staff has been also noted at the third rank order position among other* effects of delay in Contractor's Payment. This shows that the progress and quality of the permanent works of a road project could be hampered due to high turnover of consultant's staff.

**Table 4.11 Various Causes of Contractor's Payment Delayed and Its Effect on Consultant**

It. No.	Causes of Contractor's Payment Delayed and Its Effect on Consultant	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
1	<i>Slow down of the works</i>	3.4	4.0	3.5	6.0	1.7	7.0	2.9	4.0
2	<i>Activities of Consultants reduced drastically</i>	3.2	9.0	3.5	6.0	1.7	2.0	2.8	6.0
3	Consultants spend longer time than	3.4	7.0	3.7	5.0	1.4	4.0	2.8	5.0

It. No.	Causes of Contractor's Payment Delayed and Its Effect on Consultant	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
	planned								
4	<i>Morally insisting on contractual requirement weaken</i>	3.4	5.0	4.0	3.0	0.8	1.0	2.7	8.0
5	<i>Cost of Consultancy Services increased</i>	3.8	2.0	3.9	4.0	1.0	7.0	2.9	3.0
6	Quality of Consultancy service rendered	3.4	5.0	3.4	9.0	2.6	7.0	3.1	1.0
7	<i>Delay in certification</i>	3.3	8.0	3.5	8.0	2.3	2.0	3.0	2.0
8	<i>Turnover of Consultants Staff</i>	3.5	3.0	4.1	2.0	0.5	4.0	2.7	9.0
9	<i>Unhealthy communication with Contractor</i>	3.9	1.0	4.1	1.0	0.2	4.0	2.7	7.0

**Consultant's View on Effects of Contractor's Payment Delayed on Consultants**

As can be observed from table 4.11, feedbacks of Engineers working in Consulting firms have been analyzed and noted that *Unhealthy communication with Contractor, Turnover of Consultants Staff and weakening of morally insisting contractual requirement are found* to be the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> rank order respectively among other factors of effects of delay in Contractor's Payment. In view of this reason, other contractual complication would be occurred as presented above, under analysis of Contractor's view.

**Employer's View on Effects of Contractor's Payment Delay on Consultants**

In connection with effects of delay in Contractor's Payment, feedbacks of Engineers working in Consulting firms have been analyzed and noted that *Morally insisting on contractual requirement weaken, Activities of Consultants reduced drastically and Delay in certification* are found to be the first and the second rank ordered effects of delayed payments on the consultant, respectively among others. *In view of this, it has been noted that contract requirements are less likely complied by the contracting parties, Client, Consultant and Contractor as such the overall quality and progress of the project would be hampered due to delay in contractor's payment.*

**Contractor's View on Effects of Contractor's Payment Delayed on Consultants**

Regarding effects of delayed payment of Contractor's payment on Contractor, as can be seen from table 4.11 above, feedback of respondents working in Construction company have been analyzed and subsequently, it has been noted that *Unhealthy communication with Contractor, Increase in Cost of Consultancy Services and Turnover of Consultants Staff* have been found at the first and the second and third ranked order respectively. This indicates that, delay in contractors' payment would also have negative impact on consultancy supervision agreement entered between client and consultants.

**Table 4.12 Various Effects of Contractor's Payment Delayed and Its Effect on Contractor**

It. No.	Implications of Delayed Payment Problems and Its Effect on Contractor	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
1	<i>Contractor's cash flow forecast affected</i>	4.1	2.0	4.6	1.0	3.7	4.0	4.1	3
2	<i>Increase in construction cost</i>	4.3	1.0	4.4	4.0	4.0	1.0	4.2	1
3	Payment of Liquidated Damages	3.9	6.0	3.5	10.0	2.8	12.0	3.4	10
4	<i>Payment of interest</i>	4.1	2.0	4.1	6.0	3.3	11.0	3.8	6

<i>It. No.</i>	<b>Implications of Delayed Payment Problems and Its Effect on Contractor</b>	<i>Contractor</i>		<i>Consultant</i>		<i>Client</i>		<i>Weighted Average</i>	
		<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>
	<i>on delayed payment does not off-set the cost that the contractor has spent due to delayed payment</i>								
5	Non adherence to site instruction and advice	3.4	10.0	3.6	9.0	3.5	8.0	3.5	9
6	<i>Scheduling of works or program distracted</i>	3.8	7.0	4.5	3.0	4.0	2.0	4.1	3
7	<i>Extension of Intended completion date</i>	4.1	5.0	4.6	2.0	3.8	3.0	4.2	1
8	Termination of contract by Contractor	3.4	11.0	3.4	10.0	3.5	7.0	3.4	10
9	<i>Leads to bankruptcy or liquidation</i>	4.1	2.0	4.0	8.0	3.6	6.0	3.9	5
10	Resignation of experienced professionals	3.6	8.0	4.4	5.0	3.5	8.0	3.8	6
11	Decline of Reputation of Contractor in the sector	3.4	11.0	3.4	10.0	3.4	10.0	3.4	10

It. No.	Implications of Delayed Payment Problems and Its Effect on Contractor	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
12	The use of 'pay when paid' clause in sub-contracts	3.6	8.0	4.1	6.0	3.6	5.0	3.8	6

#### **Consultant's View on Effects of Contractor's Payment Delay on Contractor**

As can be noted from the Table 4.12, *Affecting Contractor's cash flow forecast, Extension of Intended completion date and Scheduling of works or program distracted* have been noted that the first, the second and the third rank ordered effects of Delayed Payment Problems and Its Effect on Contractor in accordance with the respondents feedback collected from Engineers working in Consulting firms. In view of this, it is noted that delay in contractor's payment affects Contractor's cash flow forecast as such the Contractor is affected to deploy the required resources in accordance with the work program. As a result, the output of the Contractor would be affected and the project could not be completed within the contract period.

#### **Employer's View on Effects of Contractor's Payment Delay on Contractor**

As can be noted from Table 4.3.2.1.3, *Increase in construction cost, Scheduling of works or program distracted and Extension of Intended completion date have been found at the first, second and third rank order among other effects* of Delayed Payment Problems and Its Effect on Contractor based on respondents feedback collected from Engineers who are working in Ethiopian Roads Authority. In view of the feedback gathered from the respondents working with the Consulting and construction firm, it has been noted that delay in contractor's payment would result in increase in construction cost/additional cost for interest payment and consultancy service cost/. Moreover, the analysis obtained from the respondents indicates that the construction period of the project would be extended due to the reason that delay in payment has affected recourse allocation by the contractor.

**Contractor's View on Effects of Contractor's Payment Delay on Contractor**

As can be noted from Table 4.12, *Increase in construction cost is obtained the first rank place, Leads to bankruptcy or liquidation, Contractor's cash flow forecast affected and Payment of interest on delayed payment does not off-set the cost that the contractor has spent due to delayed payment* have been obtained at the second rank order place. In view of this, it has been noted that delay in contractor's payment would result in increase in construction cost/additional cost for interest payment and consultancy service cost/. Moreover, the analysis obtained from the respondents indicates that the Contractor might be bankrupt/liquidate and consequently the project would be terminated and the Contractor would be discouraged to participate at other projects in the future.

**Table 4.13 Options Available to Improve Contractor's Cash Flow**

<i>It. No.</i>	<i>Options Available to Improve Contractor's Cash Flow</i>	<i>Contractor</i>		<i>Consultant</i>		<i>Client</i>		<i>Weighted Average</i>	
		<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>	<i>MSi</i>	<i>Rank</i>
1	<i>Regular periodic payment</i>	4.4	3.0	4.4	3.0	4.0	2.0	4.3	2
2	Payment of interest on delayed payment	3.4	8.0	4.0	5.0	3.4	5.0	3.6	5
3	<i>Defined time frame for payment</i>	4.6	1.0	4.7	1.0	4.1	1.0	4.5	1
4	<i>Employer work within stipulated budget</i>	4.1	5.0	4.2	4.0	3.9	3.0	4.1	4
5	Suspension of work	2.6	11.0	2.8	10.0	2.6	10.0	2.7	9
6	Debt finance	3.4	8.0	3.4	7.0	3.3	8.0	3.4	8
7	Government or consortium to supply contractor with	4.2	4.0	3.4	9.0	2.9	9.0	3.5	7

It. No.	Options Available to Improve Contractor's Cash Flow	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
	chippings, iron rods, bitumen and cement on credit								
8	Increase in the percentage of Advance Payment	3.0	10.0	2.6	11.0	2.5	11.0	2.7	10
9	<b>Reliable work Program/Healthy cash flow</b>	<b>4.6</b>	<b>1.0</b>	<b>4.6</b>	<b>2.0</b>	<b>3.5</b>	<b>4.0</b>	<b>4.2</b>	<b>3</b>
10	Replacing Retention Money with Guarantee	3.8	7.0	3.6	8.0	3.4	7.0	3.6	5
11	<b>Establish the client's credit worthiness</b>	<b>3.9</b>	<b>6.0</b>	<b>4.0</b>	<b>5.0</b>	<b>3.5</b>	<b>6.0</b>	<b>4.3</b>	<b>2</b>

### **Consultant's View on Options Available to Improve Contractor's Cash Flow**

Respondents working in Consulting firms have replied the same response as respondents working in Contractor's firm; as such, **Defined time frame for payment, Reliable work Program/Healthy cash flow and Regular periodic payment** have been found at the first, second and third rank order respectively. Therefore, the analysis made herein above for Contractor's view will work for consultant's view as well.

### **Employer's View on Options Available to Improve Contractor's Cash Flow**

Regarding feedback collected from the Engineers working in ERA, **Defined time frame for payment, Regular periodic payment and Employer work within stipulated budget** have been

found at the first, second and third rank ordered options among others provided to the respondents to determine the best Options Available to Improve Contractor's Cash Flow. In view of this, the analysis made for Contractor's view and Consultant's view above in order to determine options available to improve contractor's cash flow problem will be same for Employer's view due to the reason that options selected by the respondents have same implications.

### **Contractor's View on Options Available to Improve Contractor's Cash Flow**

As can be seen from Table 4.12, respondents feedback collected from Engineer's working in construction firm have been analyzed to determine *Options Available to Improve Contractor's Cash Flow* and; subsequently, it has been noted that *Reliable work Program/Healthy cash flow and Defined time frame for payment and Regular periodic payment has been noted at the first and second ranked place respectively as compared with other options provided to the respondents. In view of this, effecting Contractor's payment on time by the Employer is the main option to improve cash flow problems. Similarly, the Contractor should get regular periodic payment at every stage of construction, but not to collect payment after completion of the works, in order to improve Contractor's cash flow status.*

**Table 4.14 Strategic Method to Improve Contractor's Cash Flow**

It. No.	Strategic Method to Improve Contractor's Cash Flow	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
1	<i>Employer to Issue a Promissory Note</i>	4.0	1.0	3.3	9.0	3.3	9.0	3.5	5
2	Turn-key contract	3.6	8.0	3.3	10.0	3.2	10.0	3.4	7
3	Employer seeking a loan to pay off debt	3.5	10.0	3.6	6.0	3.4	7.0	3.5	5
4	Discounting facility	3.6	7.0	3.4	8.0	3.0	11.0	3.3	10
5	<i>Support from Financing</i>	<b>4.0</b>	<b>1.0</b>	<b>4.1</b>	<b>5.0</b>	<b>4.0</b>	<b>1.0</b>	<b>4.0</b>	<b>1</b>

It. No.	Strategic Method to Improve Contractor's Cash Flow	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
	<i>Institutions</i>								
6	<i>Entering into partnership agreement</i>	3.9	3.0	4.1	3.0	3.7	3.0	3.9	2
7	Funds from the Contractor's other businesses	3.7	6.0	3.0	11.0	3.4	6.0	3.4	7
8	Leasing of equipment	3.4	11.0	3.4	7.0	3.4	7.0	3.4	7
9	<i>Negotiate the terms strictly</i>	3.8	4.0	4.2	2.0	3.6	5.0	3.9	2
10	<i>Ensure that you price the job accurately</i>	3.6	8.0	4.3	1.0	3.9	2.0	3.9	2
11	Exercising the right vested under the provisions of contract, or otherwise.	3.7	5.0	3.3	9.0	3.7	4.0	3.5	5

Regarding Strategic Method to Improve Contractor's Cash Flow feedback collected from respondents working in Contractor's firm, Consulting firm and Client have been analyzed and; subsequently, their response have been ranked and analyzed as summarized herein below.

**Consultant's View on Strategic Methods to Improve Contractor's Cash Flow**

*Ensuring that you price the job accurately, Negotiating the terms strictly and Entering into partnership agreement* have been found at the first, second and third rank place among other

strategic method proposed to the respondents who are working in consulting firms. In light of this, it is noted that quality of design to price the cost of a project accurately is a means to allocate sufficient budget so that payment would be effected to the Contractor within the time period stipulated in the contract. Similarly, the feedback indicates that the Contractor should also go through the terms and conditions of the contract before signing the contract in order to able to have effective work program and cash flow and take in to consideration mitigation measures, if there is any delay in contractor's payment. The other strategic method proposed to improve Contractor's cash flow, indicates that the Contractor should get in to partnership with other firms so that the cash flow shortage could be managed as any cash flow shortage could be shared between the partners and source of fund could be maximized.

#### **Employer's View on Strategic Methods to Improve Contractor's Cash Flow**

*Support from Financing Institutions, Ensure that you price the job accurately and Entering into partnership agreement* have been found at the first, second and third rank place among other strategic method proposed to the respondents who are working in ERA. To this respect, the feedback obtained from the respondents have been reviewed in line with the feedback obtained from the respondents working in Contractor and consulting firms and noted that best strategic method to improve contractor cash flow is same. Hence, the analysis presented for Contractor and Consultant's view above could be taken.

#### **Contractor's View on Strategic Methods to Improve Contractor's Cash Flow**

As can be seen from the Table 4.13 below, respondent's response has indicated that *Employer to Issue a Promissory Note, Support from Financing Institutions and Entering into partnership agreement* have been ranked at the first, second and third order respectively among other strategic methods provided to the respondents.

In view of this, it has been suggested by the respondents that the Employer's financial status confirmation condition is very decisive strategy method to improve Contractor's cash flow. Besides to this, the Contractor's business back ground, relationship with financing institutions such as banks and Insurance is another strategic method recommended by the respondents. From the third ranked strategic method, it is noted that entering a partnership agreement with other

firms which has similar business objectives is another strategic option shall be considered by the Construction firm to improve cash flow.

**Table 4.15 Reasons why most of Local Contractors do not request Late Interest payment**

It. No.	Reasons why most of Local Contractors do not request Late Interest payment	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
1	Reliable work Program/Healthy cash flow	3.00	4.00	2.1	7.0	1.9	8.0	2.3	6
2	Payment of interest on delayed payment is not included in the contract provisions, or otherwise	2.43	6.00	2.7	6.0	2.2	6.0	2.4	5
3	There is no defined time frame for payment, in the contract	1.57	8.00	3.0	4.0	2.0	7.0	2.2	8
4	<b>Employer is working within stipulated budget</b>	<b>2.43</b>	<b>6.00</b>	<b>2.9</b>	<b>5.0</b>	<b>2.3</b>	<b>4.0</b>	<b>2.5</b>	<b>4</b>
5	Local Contractors are not facing cash flow problem to run the project	1.57	8.00	1.3	9.0	1.7	9.0	1.5	9
6	<b>Unable to know and exercise the right vested under the contract.</b>	<b>3.38</b>	<b>3.00</b>	<b>3.6</b>	<b>2.0</b>	<b>3.5</b>	<b>2.0</b>	<b>3.5</b>	<b>2</b>
7	Government is	2.71	5.00	1.8	8.0	2.3	5.0	2.3	6

It. No.	Reasons why most of Local Contractors do not request Late Interest payment	Contractor		Consultant		Client		Weighted Average	
		MSi	Rank	MSi	Rank	MSi	Rank	MSi	Rank
	supplying local Contractors with chippings, iron rods, bitumen and cement on credit								
8	<i>Afraid of the negative impact on communication between the Contactor and Client</i>	4.11	1.00	4.4	1.0	3.9	1.0	4.1	1
9	<i>Assumption to claim the loss in other heads of claim</i>	3.43	2.00	3.4	3.0	2.9	3.0	3.2	3

**Consultant's View on Reasons why most of Local Contractors do not request Late Interest payment**

*Afraid of the negative impact on communication between the Contactor and Client, Unable to know and exercise the right vested under the contract and Assumption to claim the loss in other heads of claim* have been ranked at the first, second and third place respectively among other reasons indicated under the questioner and replied by the respondents working in Consulting firms. In this regard, the first three top reasons ranked under consultant's view is similar with contractor's view; as such the analysis presented above, for contractor's view, for this particular case under discussion will be applicable for consultant's view as well.

**Employer's View on Reasons why most of Local Contractors do not request Late Interest payment**

*Afraid of the negative impact on communication between the Contactor and Client, Unable to know and exercise the right vested under the contract and Assumption to claim the loss in other heads of claim* have been ranked at the first, second and third place respectively among other reasons indicated under the questioner and replied by the respondents working in ERA. Hence, the analysis presented for consultant's view will work against client's view for the first top three reasons selected by the respondents to determine why local contractors have not requested late interest payment for delayed payment.

### **Contractor's View on Reasons why most of Local Contractors do not request Late Interest payment**

As can be noted from the feedback collected from the professionals working in Contraction firms, as presented under the Table 4.14, to obtain the feedback on Reasons why most of Local Contractors do not request Late Interest payment, *Afraid of the negative impact on communication between the Contactor and Client, Assumption to claim the loss in other heads of claim and Unable to know and exercise the right vested under the contract* have been found at the first, second and third rank place among other reasons indicated under the questioner distributed to the respondents.

In light of the first three top reasons forwarded by the respondents, it has been noted that requesting late interest payment by the local Contractors may initiate other counterclaims from the Client side. Besides to this, the research indicates that local Contractors have no practice of exercising the right vested under the contract since they believe that requesting late interest payment may hamper the relationship between the Employer and; subsequently, future opportunity to get other ERA projects would be affected.

Therefore, it can be concluded that the provisions stipulated under the contract agreement entered between local contractors and ERA are not being properly entertained and actions have not been taken in strict accordance with the contract, if there is any failure to fulfill contractual obligation from the contracting parties.

### 4.3.3 Tests for Agreements on Contractor's Payment Delay and Its Impact in case of Road Projects administered under Ethiopian Road Authority among Stakeholders in the Construction Industry

The purpose of this thesis is to investigate whether there is agreement or not on the attitudes of stakeholders towards *Contractor's Payment Delay and Its Impact in case of Road Projects administered under Ethiopian Road Authority*. Hence, in this section, respondents' response will be tested for correlation using *Spearman rank correlation coefficients*, to see if there is difference in ranking between two groups of respondents; these are Clients versus Contractors; Contractors versus Consultants; and Clients versus Consultants, on the various variables and their rate of occurrence. The purpose of a hypothesis test is to avoid being deceived by chance occurrences. The tests also helped to evaluate whether consensus of opinions exist among respondents.

**4.3.3.1 The Null Hypothesis ( $H_0$ )** is: -There is no agreement in the ranking of causes of Contractor's Payment Delay and its Impact between two groups of respondents

**4.3.3.2 The Alternative Hypothesis ( $H_A$ )** is: -There is agreement in the ranking of various factors between two groups of respondents. The spearman correlation coefficient ( $\rho$ ) is calculated using Equation 3.3 and tabulated as shown below in Table 4.8, In order to decide whether to accept or reject the null hypothesis, the level of significance 95% ( $P = 0.05$ ) is used. This allows to state whether or not there is "agreement" between respondents response. If the calculated value of  $\rho$  is greater than the critical value,  $H_0$  is rejected, i.e. there is evidence of a statistically significant agreement between the groups. If the calculated value of  $\rho$  is less than the critical value,  $H_0$  is accepted, i.e. there is no evidence of a statistically significant agreement between the two groups.

In a similar way, correlation test is done for responses collected from the respondents as summarized herein the table below:

**Table 4.16: Summary of correlation test on the ranking of Causes of Contractor's Payment Delay Problems and Its Effect on Client**

<i>Respondents</i>	<i>Rho (ρcal) = 1 - 6 x (Σdi<sup>2</sup>) N x (N2- 1)</i>	<i>Critical value of ρ (Appendix B )</i>	<i>Significance for P &lt; 0.05</i>
Client Vs Contractor	0.381	0.4637	Significant, not correlated
Contractor Vs Consultant	-0.004	0.4637	Significant, not correlated
Client Vs Consultant	0.558	0.4637	Not significant, correlated

In this case, with a significance level of 95% (P = 0.05), the calculated value of ρ for two of the groups; Client Vs Contractor and Contractor Vs Consultant cases are lower than the critical values of ρ, so the hypothesis that there is no significant agreement between the respondents is not rejected, i.e., the null hypothesis is accepted. However, regarding the group, Client Vs Consultant, it can be concluded that there is strong correlation between the attitudes of the respondents; and hence, the null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception of variables of Implications of Delayed Payment Problems and Its Effect on Client.

**Table 4.17: Summary of correlation test on the ranking of Causes of Contractor's Payment Delay Problems and Its Effect on Consultant**

<i>Respondents</i>	<i>Rho (ρcal) = 1 - 6 x (Σdi<sup>2</sup>) N x (N2- 1)</i>	<i>Critical value of ρ (Appendix B )</i>	<i>Significance for P &lt; 0.05</i>
Client Vs Contractor	-1.596	0.7143	Significant, not correlated
Contractor Vs Consultant	-0.246	0.7143	Significant, not correlated
Client Vs Consultant	0.281	0.7143	Significant, not correlated

In this case, with a significance level of 95% (P = 0.05), the calculated value of ρ for three of the groups are lower than the critical values of ρ, so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. Hence, it can be concluded that there is no strong correlation between the attitudes of the respondents; and hence, the null hypothesis should not be rejected and the alternative hypothesis shall not be accepted. This means that most of the respondents do not have same perception of variables of Implications of Delayed Payment Problems and Its Effect on Consultant.

**Table 4.18: Summary of correlation test on the ranking of Causes of Contractor's Payment Delay Problems and Its Effect on Contractor**

<i>Respondents</i>	<i>Rho (ρcal) = 1 - 6 x (Σdi<sup>2</sup>) N x (N2- 1)</i>	<i>Critical value of ρ (Appendix B )</i>	<i>Significance for P &lt; 0.05</i>
Client Vs Contractor	0.319	0.5035	Significant, not correlated
Contractor Vs Consultant	0.587	0.5035	Not significant, correlated
Client Vs Consultant	0.746	0.5035	Not significant, correlated

In this case, with a significance level of 95% (P = 0.05), the calculated value of ρ for Client Vs Contractor group is lower than the critical values of ρ, so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. However, regarding the group Contractor Vs Consultant and Client Vs Consultant, it can be concluded that there is strong correlation between the attitudes of the respondents; and hence, the null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception of variables of Implications of Delayed Payment Problems and Its Effect on Contractor.

**Table 4.19: Summary of correlation test on the ranking of Effects of Contractor's Payment Delay Problems and Its effect on Contractor**

<i>Respondents</i>	<i>Rho (ρcal) = 1 - 6 x (Σdi<sup>2</sup>) N x (N2- 1)</i>	<i>Critical value of ρ (Appendix B )</i>	<i>Significance for P &lt; 0.05</i>
Client Vs Contractor	0.378	0.3912	Significant, not correlated
Contractor Vs Consultant	0.488	0.3912	Not significant, correlated
Client Vs Consultant	0.659	0.3912	Not significant, correlated

In this case, with a significance level of 95% (P = 0.05), the calculated value of ρ for Client Vs Contractor group is lower than the critical values of ρ, so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. However, regarding the group Contractor Vs Consultant and Client Vs Consultant, it can be concluded that there is strong correlation between the attitudes of the respondents; and hence, the null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means

that most of the respondents have the same perception of variables of Effects of Delay in Contractor's Payment on Contractor.

**Table 4.20: Summary of correlation test on the ranking of Effects of Contractor's Payment Delay Problem on Consultant**

<i>Respondents</i>	<i>Rho (pcal) = <math>1 - \frac{6 \times (\sum di^2)}{N \times (N^2 - 1)}</math></i>	<i>Critical value of <math>\rho</math> (Appendix B )</i>	<i>Significance for <math>P &lt; 0.05</math></i>
Client Vs Contractor	0.027	0.5636	Significant, not correlated
Contractor Vs Consultant	0.165	0.5636	Significant, not correlated
Client Vs Consultant	0.213	0.5636	Significant, not correlated

In this case, with a significance level of 95% ( $P = 0.05$ ), the calculated value of  $\rho$  for three of the groups are lower than the critical values of  $\rho$ , so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. Hence, it can be concluded that there is no strong correlation between the attitudes of the respondents; and hence, the null hypothesis should not be rejected and the alternative hypothesis shall not be accepted. This means that most of the respondents do not have same perception of variables of Effects of Delayed Payment of Contractor on Consultant.

**Table 4.21: Summary of correlation test on the ranking of Effects of Delayed Payment of Contractor on Employer**

<i>Respondents</i>	<i>Rho (pcal) = <math>1 - \frac{6 \times (\sum di^2)}{N \times (N^2 - 1)}</math></i>	<i>Critical value of <math>\rho</math> (Appendix B )</i>	<i>Significance for <math>P &lt; 0.05</math></i>
Client Vs Contractor	0.497	0.4637	Not significant, correlated
Contractor Vs Consultant	0.331	0.4637	Significant, no correlation
Client Vs Consultant	0.856	0.4637	Not significant, correlated

In this case, with a significance level of 95% ( $P = 0.05$ ), the calculated value of  $\rho$  for Contractor Vs Consultant group is lower than the critical values of  $\rho$ , so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. However, regarding the group Contractor Vs Client and Client Vs Consultant, it can be concluded that there is strong correlation between the attitudes of the respondents; and hence, the

null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception of variables of Effects of Delay in Contractor's Payment on Employer.

**Table 4.22: Summary of correlation test on the ranking of Options Available to Improve Contractor's Cash Flow**

<i>Respondents</i>	<i>Rho (<math>\rho_{cal}</math>) =</i> <i><math>1 - 6 x (\sum di^2)</math></i> <i><math>N x (N2 - 1)</math></i>	<i>Critical value of</i> <i><math>\rho</math></i> <i>(Appendix B )</i>	<i>Significance</i> <i>for <math>P &lt; 0.05</math></i>
Client Vs Contractor	0.774	0.5364	Not significant, correlated
Contractor Vs Consultant	0.815	0.5364	Not significant ,correlated
Client Vs Consultant	0.959	0.5364	Not significant, correlated

In this case, with a significance level of 95% ( $P = 0.05$ ), the calculated value of  $\rho$  for all three group is lower than the critical values of  $\rho$ , so the hypothesis that there is no significant agreement between the respondents is rejected i.e. the null hypothesis is not accepted. Hence, it can be concluded that there is strong correlation between the attitudes of the respondents; and hence, the null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception of variables of Options Available to Improve Contractor's Cash Flow.

**Table 4.23: Summary of correlation test on the ranking of Strategic Method to Improve Contractor's Cash Flow**

<i>Respondents</i>	<i>Rho (<math>\rho_{cal}</math>) =</i> <i><math>1 - 6 x (\sum di^2)</math></i> <i><math>N x (N2 - 1)</math></i>	<i>Critical value of <math>\rho</math></i> <i>(Appendix B )</i>	<i>Significance</i> <i>for <math>P &lt; 0.05</math></i>
Client Vs Contractor	0.337	0.5364	Significant, not correlated
Contractor Vs Consultant	0.048	0.5364	Significant, not correlated
Client Vs Consultant	0.612	0.5364	Not significant, correlated

In this case, with a significance level of 95% ( $P = 0.05$ ), the calculated value of  $\rho$  for two of the groups; Client Vs Contractor and Contractor Vs Consultant, is lower than the critical values of  $\rho$ , so the hypothesis that there is no significant agreement between the respondents is not rejected i.e. the null hypothesis is accepted. However, regarding the group Consultant Vs Client, it can be

concluded that there is strong correlation between the attitudes of the respondents; and hence, the null hypothesis should be rejected and the alternative hypothesis shall be accepted. This means that most of the respondents have the same perception of variables of strategic method to improve Contractor's cash flow.

## CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

This chapter includes the conclusions and recommendations that would help in solving the cause and effects of delay in Contractor's payment in the case of road construction projects administered under Ethiopian Roads Authority.

### 5.1 Conclusions

1. The major effects of contractor's payment delay on road projects administered under ERA are; Turnover of personnel both from supervision and construction, delay in progress of the physical works, bad communication with the project staff, compromising quality in construction works, increase in frequency of workmanship problems, insufficient resource arrangements, unable to comply Environmental, Health, Safety and Social Management requirements, problem in connection with sub-contract administration, and increase in construction and supervision cost of project are major effects of contractor's payment delay .
2. The major causes of budget constraints for road projects under Ethiopian Roads are;
  - Budget allocated by the client is lower than the actual performance of the Contractor. In this regard, the research confirms that the average monthly amount of works actually executed at the selected road projects is *ETB 111,622,347.00*, but average monthly budget allocated for these projects was *ETB 87,465,210.00*.
  - Professionals working at Planning and Program and Implementation directorate have not properly planned and allocated fiscal year budget, and lacked proper information about the performance of Contractors and resource allocated on the project site.
3. The effective options available and strategic methods to be developed by Contractors to improve their cash flow forecasting are;
  - Following defined time frame for payment,
  - Establishing the client's credit worthiness,
  - Regular periodic payment, and Reliable work Program/Healthy cash flow
  - Support from Financing Institutions,

- Negotiating the terms strictly,
  - Ensuring pricing the job accurately, and
  - Entering into partnership agreement.
4. The major reason why most of local Contractors working with ERA have no experience of requesting late interest payment for delayed payment are;
- fearof the negative impact on communication between the Contactor and Client,
  - Inability to know and exercise the right vested under the contract, and
  - Contractors' considerationto claim the lossdue to delay in paymentin other heads of claims.
5. Late interest payment amount collected by contractors' do not commensurate the loss the Contractor incurs due to delay in their payment.

## 5.2 Recommendations

Some recommendations are presented for decision makers in the construction sector to support the results of this study:

- The planning and program team shall have sufficient information to determine fiscal year budget for projects.
- Budget utilization status of every project shall be checked by the planning and program management directorate in collaboration with the implementation management directorates so that budget adjustmentamong road projects shall be made as required.
- Allocating budget, contractor's past performance and features of project shall be taken into consideration.
- The client should work on maximizing the efficiency of quality of design and accurate project pricing so that unplanned additional works would be controlled.
- The client should pay progress payment to the contractor on time due to the fact that delay in payment hampers the contractor's ability to finance the work.

- For DBB type contracts, the design review of the road projects shall be carried out very earlier, at least during mobilization period in order to enable the client to revise the bid documents such as technical specifications, drawings, bill of quantities and some other design of the project.
- Contractors are recommended to have stable business background and good relation with the financial institution to have stable cash flow before beginning in any project
- Contractors are better to work with other firms and outsource some of the activities so that effects of delay in Contractor's payment could be minimized.
- Consultants should review and approve design documents, shop drawings, and the payments schedule of contractor to avoid any delay or cost overruns at the project.
- Late interest payment provisions of contract shall be drafted by the client taking the country's banking sectors (private and government financial sectors) lending rate into account.
- As a large government institution, ERA needs to establish a system to facilitate means of obtaining loans from financial institutions, in case there is shortage of budget.
- Contractors shall have sufficient information about the project site and thoroughly understand the provisions of tender documents and design documents before tendering in order to enable him offer reasonable price for a job.
- For any delayed payments as a result of failure of Employer, the contractor; after strictly comply the contract, shall exercise rights vested in a contract, other than late interest payment
- Local Contractors shall exercise late interest payment and other related rights for delayed payments in accordance with the contract.
- Employer/ERA shall not compromise the compliance of the contract provisions on the expense of other provisions.
- Contractor shall review his cash inflow and out flow status taking into account features of the project into account, as every project is specific in its nature.
- Contractor who has shortage of cash inflow is better to make partnership with other firms to strength the cash inflow.

- The Contractor should give special attention to equip his human resources with experienced personnel at every sections/departments.
- The contractor, taking the complexity of the project/activities and resources to be deployed, shall prepare realistic work program.

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## APPENDIX A

Dear Respondents,

As part of my M.Sc. study in Construction Technology and Management at Addis Ababa University, I am undertaking a research on the title "**Contractor's Payment Delay and Its Impact on Road Projects Administered under Ethiopian Road Authority**".

The main objectives of the study are:

- ☞ To establish the implications of delayed payment problems and its effect on road construction Contractor under the Ethiopian Road Authority;
- ☞ To identify the major causes of budget constraints for road projects under Ethiopian Roads Authority
- ☞ To identify effective options available and strategic methods developed by Contractors to improve their cash flow forecasting; and
- ☞ To identify the reason why most of local Contractors working with ERA have not requested late interest payment for delayed payment
- ☞ To confirm whether late interest payment is equivalent to the time value of money that the Contractors actually miss due to delayed payment.
- ☞ To confirm as to how delay in Contractor's payment result inadequate equipment holding, late completion of projects, poor quality works, unemployment, increase of total project cost, disputes, liquidation of construction firms and loss of productivity.

I have developed this questionnaire to collect views of professionals working for employer, contractors and consultants for completeness of my research. It is my belief that the research, in addition to its academic significance, will have a practical significance for the development of the road sector in Ethiopia and initiates further research on the topic.

Your response, in this regard, is highly valuable and contributory to the outcome of the research. All feedback will be kept strictly confidential, and utilized for this academic research only.

Best Regards,

GizachewTadele

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Addis Ababa, Ethiopia

**SECTION- A**

**General Background Information**

*The questions below are related to your organisation and yourself. Please indicate your response by ticking (X or √) the appropriate box (es) or by filling the blank spaces provided, as appropriate.*

- 1.1 Name of organization (Optional): \_\_\_\_\_
- 1.2 To which one of the parties is your organization categorized:  
Employer  Contractor  Consultant
- 1.3 Origin of your company:  
Local  Foreign
- 1.4 Years since establishment:  
More than 10 years  5-10 years  Less than 5 years
- 1.5 The organization's experience in road construction projects in Federal road projects  
More than 10 years  5-10 years  Less than 5 years
- 1.6 Your experience on road projects:  
More than 10 years  5-10 years  Less than 5 years
- 1.7 Do you have experience in projects using FIDIC 1987/1992 (Red book) as the Conditions of the Contract?  
Yes  No
- 1.8 Do you have experience in projects using PPA 2006 as conditions of Contract?  
Yes  No
- 1.9 Your Name, Title and Contact address:
- ☞ Name (optional): \_\_\_\_\_
  - ☞ Job Title: \_\_\_\_\_
  - ☞ Tel (optional): \_\_\_\_\_
  - ☞ E-mail address: \_\_\_\_\_

**SECTION-B**

**Establish the Various Implications of Delayed Payment Problems and Its Effect on Contractor's, Consultant, Client and other Stakeholders**

**Objective of the Questions:** To establish the various implications of delayed payment problems and its effects on Contractors working with Ethiopian Roads Authority and other stakeholders Please, tick and fill in the blanks if you select other.

Each scale represents the following rating: (5) = Very Strongly Implication, (4) = Strong Implication, (3) = Small Implication, (2) = Very Small Implication, (1) = No Implication

**Question:** State the level at which you agree with the following issues and how it affects delayed payment.

Category	Causes	Rating Scale				
		1	2	3	4	5
<b>1.Employer</b>	Realistic Cost Estimation					
	Budget Allocation at the Planning stage					
	Amount of Payment of Interest on delayed payment					
	Knowing how to overcome the problems of budget deficient					
	Proper Project Costing and Financing					
	Personnel who are more directly involved in planning and managing					
	Local culture/attitude					
	Delay in completion of contract by the contractor					
	Delay in having the expected benefit of property					
	Delays order by the project manager/Engineer to start or suspend or termination works					
	Strong political influence					
	Conflict among parties involved					
	wrongfully withholding the payment					

MSc Thesis: Contractor's Payment Delay and its Impact on Road Projects Administered under  
ERA

	Stakeholders are not satisfied						
	Other causes, please specify:						
	a.						
	b.						
	c.						
<b>2.Consultant</b>	Slow down of the works						
	Activities of Consultants reduced drastically						
	Consultants spend longer time than planned						
	Morally insisting on contractual requirement weaken						
	Cost of consultancy services increased						
	Quality of Consultancy service rendered						
	Delay in certification						
	Turnover of Consultants Staff						
	Unhealthy communication with Contractor						
	Other implications, please specify:						
	a.						
	b.						
	c.						
<b>3.Contractor</b>	Contractor's cash flow forecast affected						
	Increase in construction cost						
	Payment of Liquidated Damages						
	Payment of interest on delayed payment does not off-set the cost that the contractor has spent due to delayed payment						

	Non adherence to site instruction and advice					
	Scheduling of works or program distracted					
	Extension of Intended completion date					
	Termination of contract by Contractor					
	Leads to bankruptcy or liquidation					
	Resignation of experienced professionals					
	Decline of Reputation of Contractor in the sector					
	The use of 'pay when paid' clause in sub-contracts					
	Other implications, please specify:					
	a.					
	b.					
	c.					

## SECTION C

### Effects of Delayed Payment of Contractor's

**Objective of the Questions:** To establish the various causes/implications of delayed payment problems of Contractors working with Ethiopian Roads Authority and other stakeholders please, tick and fill in the blanks if you select others.

Each scale represents the following rating: (5) = Strongly Agree, (4) = Agree, (3) = Neutral, (2) = Disagree, (1) = Strongly Disagree

**Question:** What are effects of delayed payment on road Contractors/other stakeholders?

Category	Effects	Rating Scale				
		1	2	3	4	5
1. Contractor	Create cash flow problems					
	Force to borrow from financial institutions					

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	Cost overrun of project						
	Leads to suspension of works						
	Leads to leaving of projects						
	Interruption of program of works						
	Difficult to procure material and services						
	Difficult to maintain equipment						
	Idleness of equipment						
	Late or non-payment of salaries						
	Image of contractor tarnished						
	May result in disputes e.g. litigation/ arbitration						
	Difficult to tender for new projects						
	Working Environment will be affected						
	Improper communication with Consultant						
	Unable to maintain its experienced professionals						
	bad image to the government						
	affect quality of end products						
	possibility of sabotage by sub-contractor's workers						
	Other effects, please specify:						
	a.						
	b.						
	c.						

<b>2.Consultant</b>	Idleness of Consulting Staff					
	Unable to render the intended consultancy service, affect quality of consultancy services					
	Improper communication with Contractor					
	Conflict among the contracting parties					
	Project Administration will be hampered					
	Decline in interest of Consultant's staff to supervise the project works at full scale					
	Decrease in income of Consulting Staff					
	Difficult to tender for new projects					
	Working Environment will be affected					
	Absence of Consulting staff on the project site					
	Other effects, please specify:					
	a.					
	b.					
	c.					
<b>3.Employer</b>	Unplanned Government money is paid to the Contractor					
	Working Environment will be affected					
	Conflict among the contracting parties					
	Possibility of disrupt Contractors					
	Means of overcoming budget deficit					
	Idleness of personnel who are responsible					

	for the project					
	Cause of improper communication with the contracting parties					
	Affects quality of project regulation system					
	Bad image of the client					

## SECTION D

### Options Available and Strategic Methods to Improve Cash Flow Forecasting

**Objective of the questions:** To identify effective options available and strategic methods developed by Contractors to improve their cash flow forecasting. Each scale represents the following rating: (5) = Very important, (4) = Important, (3) = Neutral, (2) = Not important, (1) = Not very important

**Questions:** What are the options available and strategic methods to improve cash flow forecasting?

Category	Improving Cash Flow	Rating Scale				
		1	2	3	4	5
1.Options available	Regular periodic payment					
	Payment of interest on delayed payment					
	Defined time frame for payment					
	Employer work within stipulated budget					
	Suspension of work					
	Debt finance					
	Government or consortium to supply contractor with chippings, iron rods, bitumen and cement on credit					
	Increase in the percentage of Advance Payment					
	Reliable work Program/Healthy cash flow					
	Replacing Retention Money with Guarantee					

	Establish the client's credit worthiness					
	Other effects, please specify:					
	a.					
	b.					
	c.					
<b>2.Strategic Methods</b>	Employer to Issue a Promissory Note					
	Turn-key contract					
	Employer seeking a loan to pay off debt					
	Discounting facility					
	Support from Financing Institutions					
	Entering into partnership agreement					
	Funds from the Contractor's other businesses					
	Leasing of equipment					
	Negotiate the terms strictly					
	Ensure that you price the job accurately					
	Exercising the right vested under the provisions of contract, or otherwise.					
	Other effects, please specify:					
	a.					
	b.					
	c.					

## SECTION E

### Reasons why most of local Contractors have not requested late interest Payment?

**Objective of the Question:** To identify the reasons why local contractors have not requested late interest payment for the delayed payment. Each scale represents the following rating: (5) = Strongly Agree, (4) = Agree, (3) = Neutral, (2) = Disagree, (1) = Strongly Disagree

**Questions:** the reasons why local contractors have not requested late interest payment for the delayed payment?

Category	Reasons why most of local Contractors do not request late interest payment	Rating Scale				
		1	2	3	4	5
Client/Contractor/Consultant	Reliable work Program/Healthy cash flow					
	Payment of interest on delayed payment is not included in the contract provisions, or					

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	otherwise						
	There is no defined time frame for payment, in the contract						
	Employer is working within stipulated budget						
	Local Contractors are not facing cash flow problem to run the project						
	Unable to know and exercise the right vested under the contract.						
	Government is supplying local Contractors with chippings, iron rods, bitumen and cement on credit						
	Afraid of the negative impact on communication between the Contactor and Client						
	Assumption to claim the loss in other heads of claim						
	Other effects, please specify:						
	a.						
	b.						
	c.						

1.1. Other comments you may forward with regard to the subject matter

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----- *The End* -----

*Please kindly check that no points are left unanswered and Thank You For Your Time!!!*

## **APPENDIX B**

***Spearman's Rank Table***

<b><i>Sample size (n)</i></b>	<b><i>p = 0.05</i></b>	<b><i>p = 0.025</i></b>	<b><i>p = 0.01</i></b>
4	1	-	-
5	0.9	1	1
6	0.286	0.8857	0.9429
7	0.7143	0.7857	0.8929
8	0.6429	0.7381	0.8333
9	0.6	0.7	0.7833
10	0.5636	0.6485	0.7455
11	0.5364	0.6182	0.7091
12	0.5035	0.5874	0.6783
13	0.4825	0.5604	0.6484
14	0.4637	0.5385	0.6264
15	0.4464	0.5214	0.6036
16	0.4294	0.5029	0.5824
17	0.4142	0.4877	0.5662
18	0.4014	0.4716	0.5501
19	0.3912	0.4596	0.5351
20	0.3805	0.4466	0.5218
21	0.3701	0.4364	0.5091
22	0.3608	0.4252	0.4975
23	0.3528	0.416	0.4862
24	0.3443	0.407	0.4757
25	0.3369	0.3977	0.4662
26	0.3306	0.3901	0.4571
27	0.3242	0.3828	0.4487
28	0.318	0.3755	0.4401
29	0.3118	0.3685	0.4325
30	0.3063	0.3624	0.4251
40	0.264	0.3128	0.3681
50	0.2353	0.2791	0.3293
60	0.2144	0.2545	0.3005
70	0.1982	0.2354	0.2782
80	0.1852	0.2201	0.2602
90	0.1745	0.2074	0.2453
100	0.1654	0.1967	0.232

## APPENDIX C

***Research Advisor Sample size table***

**Required Sample Size<sup>†</sup>**

Population Size	Confidence = 95%				Confidence = 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

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