ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

School of Civil and Environmental Engineering
M.Sc. Program in Civil Engineering
(Construction Technology and Management)

Financial Performance Evaluation and Distress Prediction model of Selected Grade One Building Contractors

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A Thesis Submitted to School of Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Science in Civil Engineering (Construction Technology and Management Engineering)

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Declaration

I certify that this research work titled "*Financial Performance Evaluation and Distress Prediction model of Selected Grade One Building Contractors*" is my own work. The work has not been presented elsewhere for assessment. Where material has been used from other sources, it has been properly acknowledged/referred.

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DATE :

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By

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ABSTRACT

Title: *Financial Performance Evaluation and Distress Prediction model of Selected Grade One Building Contractors.*

One of the main problem for evaluation of financial performance of Ethiopian construction industry participants are accepting high working capital and revenue for the lowest bid. But it does not guarantee for the performance of a construction company. This is reason why the study sets main objective to compare and examine the performance and distress of selected grade one building contractors in Ethiopia. As part of the approach to achieve this objective, the study first developed industry average through desk study to evaluate the selected Grade-1 building contractor's financial performance. It identified by liquidity, profitability, operational efficiency and solvency ratios. Then the study used the concept associated with these basic pillars, both to notify the analysis and serve as a reference against which the selected grade one contractor's financial ratios are compared.

The study adopted case study research methodology whereby five Grade 1 building contractors that are registered under the Ministry of Urban Development, Housing and Construction are taken as case in point. Moreover, the researcher requires that the financial statements submitted by private companies comply with Generally Accepted Accounting Principles (GAAP). And the accessibility of accounting statements has taken as a criterion. It employed data collected from documents and through interviews. Based on this, a detailed analysis has been conducted to indicate construction firm's performance using Return on Asset (ROA) and Return on Equity (ROE) as a dependent variable and Altman Z Score, Gross Profit Margin Ration (GPMR), and Total Debt to Equity Ratio are as independent variables.

The study found out that Altman Z-Score distress prediction model was found to have the highest accuracy in predicting the distresses of the studied construction firms among the others prediction models (Springate and Zmijewski models).

As a result, the outcomes of the correlation coefficient analysis, and ANOVA F-test in multiple regression analysis, the following conclusions were made:
1) The correlation analysis indicates that Altman Z score and GPMR have a positive relationship with both of ROA and ROE, while the Debt to Equity ratio has a negative relationship with ROA and a positive relationship with ROE; 2) The regression results show that, financial distress has a significant impact to the firm's financial performance; 3) Financial performance prediction model results show that Altman-Z Score is robust in explaining both ROE and ROA. While, the majority of the firm's profit has been generated by debt, ROE will no longer used as an indicator of financial performance.

Therefore, a crucial implication of the findings is the trend of application of liquidity, profitability, operational efficiency, solvency ratios and Altman-Z Score as a financial performance indicator is often underestimated. Related to this, incorporation with its counterparts in developed and developing countries, the environment under which selected grade one construction companies are obtained financial performance evaluation and distress prediction is quite considered.

Keywords: Building Contractors Financial Performance, Financial distress

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ABBREVIATIONS

AAAP	Average Age of Accounts Payable.
APRR	Accounts Payable to Revenue Ratio.
ARR	Assets to Revenues Ratio.
ATPM	After Tax Profit Margins.
CATA	Current Assets to Total Assets Ratio.
CC	Completed Contract
CCC	Cash Conversion Cycle.
CLNW	Current Liabilities to Net Worth Ratio.
CP	Collection Period.
CR	Current Ratio.
DF	Degree of Freedom
DER	Debt to Equity Ratio.
DFAN	Degree of Fixed Assets Newness.
ER	Earned Value
FANW	Fixed Assets to Net Worth Ratio.
GAAP	Generally Accepted Accounting Principles.
GDP	Gross Domestic Product.
GOR	General Overhead Ratio.
GPM	Gross Profit Margins.
IAS	International Accounting Standard
MDA	Multiple Discriminant Analysis
NCB	National Competitive Biddings
OP	Owner Payment
POC	Percentage of Completion Methods
PPA	Public Procurement Agency.
QR	Quick Ratio.
ROA	Return On Asset.
ROE	Return On Equity.
ROS	Return On Sale.
SBD	Standard Bidding Document
SMCES	Small and Medium Sized Contracting Enterprises
TVET	Technical, Vocational Education and Training.
UAR	unbilled Account payable.
VIF	Variance Inflation Factor.
WCT	Working Capital Turns.

1. INTRODUCTION

1.1 Research Background

Construction industry makes significant contributions to the socio-economic development process of a country. Its importance emanates largely from the direct and indirect impact it has on all economic activities. It contributes to the national output and stimulates the growth of other sectors through a complex system of linkages. About one-tenth of the global economy is dedicated to constructing and operating private and public buildings [1].

The construction industry also plays an important role in the success of major national policies and strategies [2]. The construction industry is vital for the development of any nation. These goals and expectation include technical, financial, educational, social, and professional issues .But, the image of the construction industry in the world has long been criticized by failure associated with abandoned construction projects [2].

Studies have demonstrated across a range of perspectives that the problem of failure in the construction industry is a global problem [5]. According to [6,7], the failure of construction firms are more prominent than the failure of business firms in other industries. For example, The percentage of firms failing in the United States are about 14%, which is higher when compared to business firms in other industries that have less than 12% [8].

According to [9], construction companies business failure mostly appears in a critical situation as a consequence of a complex process and is rarely dependent on a single factor. This study also indicates over 80% of the failures were caused by five factors, namely insufficient profits (27%), industry weakness (23%), heavy operating expenses (18%), insufficient capital (8%) and burdensome institutional debt (6%). All these factors, except for industry weakness, are budgetary issues and should therefore be handled by companies that are knowing of the effects of these factors on their survivability [9]. In addition, studies in North America [46], in London [28], in Saudi Arabia [5], in Malaysia [14], in Jordan [6], and in Kenya [38], described how difficult construction firms persist in the industry.

This situation has given a bad impression about the performance of the construction firms. Russell [7], One of the most important tasks successful business owners undertake is

monitoring their financial performance on a regular basis. Management who understands where the business currently stands from a performance standpoint as well as where it's heading hold a huge advantage over those who choose not to.

The Ethiopian construction industry is experiencing a similar phenomenon. According to Hilemesikel [58], The construction industry in Ethiopia is the major sector where public and private sectors are investing huge amount of fund. The percentage share of the construction sector has increased from 4.3 % in 1999/2000 to 5.8% in 2011/12 and 9.5 % in 2016/17 share from Ethiopia's total Gross Domestic Product (GDP). However, most domestic construction companies are characterized by lack of appropriate financial management system [20].

A construction industry GDP contribution to the country will propagate as projects grow in scale and expansion of economic infrastructure (railways, roads, telecom, power, irrigation)[58]. However, complexity and management becomes more difficult, frequently requiring the use of the appropriate controlling system, and techniques to ensure that materials are delivered on time, cash flows are well managed, the construction schedule is not compromised, and that wastage is minimized [14].

Management is especially problematic for large and complex projects, where sophisticated tools and techniques are necessary. The management in complex construction projects needs adequate consideration due to the various elements involved and the importance of the project. The improper handling and management of the firm's property has the potential to severely buildup project performance [38]. This is because poor management will affect the overall construction time, quality and budget. Therefore, evaluation of an effective management system is required in order to avoid suffering of construction firms [7].

According to [6], there is a positive relationship between effective management and financial performance. This study also showed that the combined effect of financial management practices (working capital management, investment decision, financial decision) has a considerable positive relationship with a financial performance. The study recommends that to enhance firm's profit, the organizations should adopt integrated financial evaluation and control system.

The most common tools used in tracking and measuring of a company's financial performance status are the company's balance sheet and the income statement. The relationship among these values are financial ratios [23]. Financial ratios were derived from pulling two numbers from financial statement and dividing one by another [46, and 47].

According to [46], analysts should be able to use financial ratio analysis to examine the operating performance of firms in term of the followings: (i) whether the firm is utilizing its assets, (ii) whether its profit margins are in line with assets, (iii) whether there is excessive investment in fixed assets, (iv) whether the business is adequately financed, (v) whether there are signs of liquidity strains and (vi) whether the collection of receivables is efficient. Financial ratios analysis helps to understand the financial dynamics of business [44]. However, analysts cannot merely rely on one ratio, particularly if it's analyzing construction companies for bid processing [37].

In the bid process, predicting whether the contractor will suffer a financial crisis during the construction project is vital to project owners and other stakeholders in identifying problems and taking strategic action. In this study, the models for predicting the financial crisis of five selected construction firms have been extensively studied using Altman Z-score, Springate, and Zmijewski model. Finally, the effect of financial distress and other explanatory variable on financial performance will be modelled.

This model helps to understand how Grade one building construction firms are affected by financial distress. This will enable companies to take corrective measures in due time if they find themselves in distress to avoid the devastating results. This document is also expected to provide awareness to some of the most powerful and widely-used financial ratio tools for analyzing the financial health and performance of a company.

Furthermore, this thesis provides ways to look at how selected construction firms are performing compared to earlier periods of time and against their competitors in the context of finance.

1.2 Statement of the problem

Several studies have analyzed the performance of contractors in the construction industry, such as [2,3,6,13–17]. According to Agidew [11], 10%-15% of contractors are being bankrupted in the world. The researcher observes the current practice used to evaluate financial performance of the Contractors is not explicitly state the overall performance of the firms. According to FPPA bidding procedure (BDS) [18], the financial standing of any construction companies have to compare recent 3-5 years completed and Audited financial data as proof of financial standing. And the attached documents shall reflect the financial situation of the Bidder's Net Value (Total Asset - Total Liability), Working Capital (Current Asset –Current Liability) from Balance sheet and amount of Total revenue, Profit/Loss before tax from Income statement. But this BDS has failed to elucidate the operational efficiency and solvency performance of firms.

According to the best of the knowledge of the researcher, limited research has been done to clarify the financial performance and distress of firms involved with domestic contractors. However, the studies focused on the factors that led to the failure of contractors' performance as well as non-financial factors. This gap has prompted the researcher to perform in-depth studies to analyze the financial performance evaluation and distress prediction difficulties faced in the domestic construction industry.

1.3 Aim, objectives and the research questions

The general objective of the study was to assess the financial performance and distress in the case of selected grade one building contractors. using financial statement analysis of five year audited financial statements.

The specific objectives are:

I. To determine current financial performance evaluation and distress.
II. To analyze the chosen companies' existing financial situation through Profitability, Liquidity Operational efficiency/Activity, and Solvency.
III. To identify the financial soundness of the selected grade one building construction firms by comparing the result with different failure prediction models.

Hence, the research should address the following questions:

i. How are the financial performance and distress of building construction firms been evaluated?
ii. Does Grade 1 building contractor's evaluation report conform to the conceptual financial ratio range during the study period?

    How did the sample construction firms perform in terms of profitability, liquidity, activity and solvency during the study period?
iii. How is the selected grade one private building construction firm's performance curt soundness? And which model is more preferable for Ethiopian Grade 1 building contractors?

1.4 Significance of the Research

This study will benefit for the local contractors to understand how they can improve their performance and enables them to focus on the appropriate measure through evaluation of financial performance during different stages of a project. Taking into account the fact that the construction industry is considered as one of the riskiest industries, limited researchers have participated in addressing the financial challenges the construction industry is facing in the local market.

This research concentrates on evaluation of financial performance and distress which is used to describe a significant relationship between figures shown on balance sheet, in profit and loss account, in budgetary control system or any other part of the accounting organization. From contractor's perspective, managers can base on financial ratios to have the right choice in the decision-making process and efficiently adopt new policies and new management system. Moreover, investors can predict the future situation, earning capacity of their invested companies and how safe their investments are. Ratio analysis also lets other creditors know the ability of a company to pay off its debt and the company's potential in the future. The significance of financial ratios to the government can be found in industry's ratio. Financial ratio analysis can help the government to have a standard evaluation and decide what financial support they could offer in order to help companies beside the difficulty to collect the potential tax which the city can generate [21].

1.5 Scope and limitation of the Study

Financial performance evaluation and distress prediction, though it is important for project owners and contractors, the research is undertaken only from the point of view of contractors. This is due to the researcher's notion that contractors play a major role in financial management of a construction project. Despite, the number of construction companies in Ethiopia, the study focus only on Five Grade one construction companies located in Addis Ababa. The main reason for this was accessibility of accounting statements for commercial confidentiality, which forced the researcher to limit the study only five. In addition to this, analysts possibly adjust ("recast") the financial statements by adjusting the underlying assumptions to assist this computation. For instance, misclassification of material on site directly affects the balance sheet with respect to Inventory and Account Receivable, which affects the financial statement ratios.

2. REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews theoretical and empirical literature on financial management practices and financial performance of firms. Specifically, it covers the theoretical review and empirical review in relation to the study variables as discussed in the introduction one of the tools for the analysis of financial statements is the ratio analysis. This analysis describes a particular relationship between elements of one with the other elements in a financial report. Financial statements referred to is the balance sheet and income statement. Balance sheet shows assets, debt and the company's capital at a given time. Income statement reflects the results achieved by the company within a certain period (usually one year).

Financial ratio analysis of a company used to assess the situation and trends also measure the performance of management. Through analysis of the ratio can be used as a basis to assess whether management's performance has reached a predetermined goal or not, and early knowing on trends or trends that management performance can be anticipated earlier.

The results of analysis can be used to observe the weakness of the company during the period of time to walk, is there any weaknesses in the company can be repaired, while the results are good enough to be maintained in the future. Further historical ratio analysis can be used for the preparation of plans and policies in the coming years in order to determine the right policy direction. It also addresses the research gap and conceptual framework. A summary of the literature review is also provided.

2.2 Theoretical Review

The Second chapter is an evaluation of literature review. The chapter will be divided into four sections. The first section explains important technical terms and concepts in the financial Accounting. The second section elucidates the three important financial statements. The financial statements are the balance sheet, income statement and cash flow drives companies audit report. The third section explicates the role of financial analysis in informational support. And the last section reveals about the application of financial ratio analysis in construction sector.

2.2.1 Financial Accounting

Financial accounting is the process that closes in the preparation of financial reports on the enterprise for use by both internal and external parties. Users of these financial reports include investors, creditors, managers, unions, and government agencies [23].

Financial accounting is the process of systematic recording of the business transactions in the various books of accounts maintained by the organization with the ultimate intention of preparing the financial statement there from. These financial statements are basically presented in two forms. One, profitability statement which indicates the result of operations carried out by the organization during a given period of time and second balance sheet which indicates the state of affairs of the organization at any given point of time in terms of its assets and liabilities [24].

Main purpose of financial accounting is to determine profit or loss and to indicate financial position of an enterprise. Two fundamental statements of financial accounting are income and expenditure statement and balance sheet [25].

2.2.2 Financial Statements

Financial statements are records of a company's financial information in an accounting period that can be used to describe the performance of the company. Financial statements are part of the financial reporting process. The financial statements of a company have a very important meaning, especially for those who have an interest in the company [24].
Financial Statement refers to formal and original statements prepared by a business concern to disclose its financial information. According to [26], the financial statement provides a summary of the accounts of a business enterprise, the balance sheet reflecting assets, liabilities and capital as at a certain date and the income statement showing the result of operation during a certain period".

The financial statements are prepared with a view to depict the financial position of the concern. They are based on the recorded facts and are usually expressed in monetary terms. The financial statement is prepared periodically that is generally for the accounting period.

The term financial statement has been widely used to represent two statements prepared by accountants at the end of specific period. They are: Profit and loss account or income statement and Balance sheet or statement of financial position [27].

Financial statements are records of a company's financial information in an accounting period that can be used to describe the performance of the company. Financial statements are part of the financial reporting process. The financial statements of a company have a very important meaning, especially for those who have an interest in the company.

1.Balance Sheet/Statement of Financial Position:

According [26], 'The Balance Sheet' as the statement particularly of the assets, liabilities, and capital of a business or other organization at a point in time. The balance sheet is based on the equation: assets = liabilities + owners' equity. It indicates everything the company owns (assets), everything the company owes to creditors (liabilities) and the value of the ownership stake in the company [shareholders' equity, or capital.

The balance sheet date is the ending date of the period or year, and is a continuation of the amounts recorded since the inception of the company or organization. The balance sheet is a "snapshot" of the financial position of the company at the balance sheet date and shows the accumulated balance of the accounts. Assets and liabilities are separated between current and long-term, where current items are those items, which will be realized or paid, within one year of the balance sheet date. Typical current assets are cash, prepaid expenses, accounts receivable and inventory [27].

2.Income Statement of Financial Position:

The Income Statement is one of a company's core financial statements that shows their profit and loss over a period of time. The profit or loss is determined by taking all revenues and subtracting all expenses from both operating and non-operating activities. The income statement is one of three statements used in both corporate finance (including financial modeling) and accounting. The statement displays the company's revenue, costs, gross profit, selling and administrative expenses, other expenses and income, taxes paid, and net profit, in a coherent and logical manner [28].

Income and expenditure statement: - A record showing the amounts of money coming into and going out of an organization, during a particular period of time [29].

An income statement is a type of summary flow report that lists and categorizes the various revenues and expenses that result from operations during a given period - a year, a quarter or a month. The difference between revenues and expenses represents a company's net income or net loss. The amounts shown in the income statement are the amounts recorded for the given period - a year, a quarter or a month. The next period's income statement will start over with all amounts reset to zero. While the balance sheet shows accumulated balances since inception, the income statement only shows the amounts earned or expensed during the period in question [23].

3.Cash Flow Statement:

According to [26], "In financial accounting, it is a financial statement that shows how changes in balance sheet accounts and income affect cash and cash equivalents, and breaks the analysis down to operating, investing and financing activities. It also shows the reconciliation of the net profit from the income statement to the generated amount for that same period."

The statement of cash flow shows all sources and uses of a company's cash during the accounting period. Sources of cash listed on the statement include revenues, long-term financing, sales of noncurrent assets, an increase in any current liability account or a decrease in any current asset account. Uses of cash include operating losses, debt repayment, equipment purchases and increases in current asset accounts [27].

2.2.3 The Role of Financial Analysis in Informational Support

Financial analysis helps various parties, interested in a company's activities, to obtain financial information required for them. The main purpose of financial analysis is to estimate current financial conditions and define actions necessary to conduct work on improvement or preserving of these conditions [10].

Financial analysis also summarizes a firm's business activities in the past, at present and in the near future. Its main function is to identify the financial performance of a company,

reveal weaknesses, potential sources of problem occurrence in its further plans and to find out strengths on which the firm can rely. Financial performance of a company, being one of the major business characteristics, defines competitiveness, the potential of the business, economic interests of the company's management and reliability of present or future contractors [3].

2.2.4 The Application of Financial Ratio Analysis in Construction Sector.

Financial analysts often compare financial ratios (of solvency, profitability, growth, and other conditions of Past Performance (Across historical time periods for the same firm. For example, last 5 years), Future Performance (Using historical figures and certain mathematical and statistical techniques, including present and future values) and Comparative Performance (Comparison between similar firms). Comparing financial ratios is merely one way of conducting financial analysis [17].

According to [13], financial ratio analysis is employed for three main purposes: (1) as an analytical tool to identify the strengths and weaknesses of a firm in order to assess its viability and to determine whether a satisfactory return will be earned from the risk taken; (2) as a monitoring device to ensure that company objectives are compatible with its resources; and (3) as an effective tool in planning to achieve company goals.

A study in London [28], stated that the Ratio analysis of the income statement and balance sheet are used to measure company profit performance. The income statement and balance sheet are two important reports that show the profit and net worth of the company. Its analyses show how well the company is doing in terms of profits compared to sales. The research also shows how well the assets are performing in terms of generating revenue. He defines the income statement shows the net profit of the company by subtracting expenses from gross profit.

A study in Australia also had tried to introduce financial principals for the management of construction firms. The concept of accrual accounting is introduced. Also introduced the basis of ratio analysis for computation of overhead, billing ratio, and other key factors that allow comparison with other firms [30].

A study by [14], find out company financial health on Malaysian Construction firms by using financial ratios analysis relative comparison of company performance as well as comparison of performance across different companies for that selected six construction companies find the 17 financial ratios for three years; secondly data collection involved interviews with representatives from six respondent companies. Finally, a questionnaire was designed. The finding of the result was overall performance of the construction companies were below industry average. With weak liquidity ratios, their cash and capital would be insufficient to finance their construction projects, and a strong indication that companies were undercapitalized and would experience financial problems in the future.

In United Arab emirate, financial statement analysis has been carried out with respect to three construction companies that are, Arabtec Holding PSJC, Drake & Scull PSJC and Emaar Properties PSJC. In this research, financial ratio analysis has been conducted regarding profitability ratios, liquidity ratios, leverage ratios, activity ratios, cash flow ratios and market ratios. The data was taken from Dubai Financial Market, and the studied years were 2011, 2012 and 2013. The three years were chosen based on the fact that a recovery phase has been under process since 2010 and after the global financial crisis that hit the world in 2008. Based on the analysis, recommendations have been drawn to induce improvements in the operations of the companies that are not performing well comparatively [37].

Ephrem [44], find out the impact of working capital management and firm's performance in the case of grade one construction companies in Ethiopia. The study used secondary data obtained from audited financial statements of forty-five grade one construction companies registered and work in Ethiopia. The financial statements from the firms were analyzed to determine the effect of the cash conversion cycle, inventory conversion period, average Collection and payables outstanding on the gross operating profit. The data was analyzed using Stata (Version 12.0) Software. The results of the study, suggested that grade one contractor should adopt efficient and effective working capital management policies for keeping working capital at optimal level.

A study made by [27] revealed that, domestic contractors are incompetent than the foreign contractors in the comparison of local and foreign contractors in terms of their gross profit

margin. The comparison was made in the selected eight construction companies (four local contractors and four foreign contractors) which are operating in Ethiopia during 2004 to 2008 using 7 financial ratios. A study also indicates that local contractors are poor in production efficiency, pricing of their work, and inventory management.

However, during comparison of net profit margins of the two groups, the superiority of foreign contractors is reversed and replaced by the superiority of local contractors. This is because of their minimum operating expenses compared to foreign contractors. This may be taken as a good performance of local contractors unless the contractor reduces the quality of work in order to upsurge the net profit margin. The above analysis is supported by using Z-Score (distress prediction), which uses multiple discriminant analysis as the appropriate statistical tools to avoid possible ambiguities on relative performance. This study also further recommended for researchers to perform a detailed analysis of financial performance by considering different ratios.

2.3 Empirical Review

This section covers previous studies done in relation to financial performance evaluation and distress practices. Studies done abroad were looked at as well as studies done in Ethiopia. This section covers various financial ratios (profitability ratio, liquidity ratio, operational efficiency and solvency ratio) and financial distress model related to the study (Altman's model, Springate Model and Zmijewski Model) will be discussed. At the end of the chapter, the section will be summarized.

2.3.1 Financial Performance Analysis.

The word ‘Performance is derived from the word ‘parfourmen’, which means ‘to do’, ‘to carry out’ or ‘to render’. It refers the act of performing; execution, accomplishment, fulfillment, etc. [30]. In broader sense, performance refers to the accomplishment of a given task measured against preset standards of accuracy, completeness, cost, and speed. In other words, it refers to the degree to which an achievement is being or has been accomplished. [30]

Financial Performance is used to track and review an organization's progress against its strategic plan and specific performance goals. While financial performance measures are important to drive a company or to individual projects to ensure that deadlines are met and costs are controlled, etc., it is essential for the Project Manager to understand how the project itself supports the organization's strategy, and how the project will impact or influence the organization's key plan and growth [38]. According to [30], performance is a general term applied to a part or to all the conducts of activities of an organization over a period of time often with reference to past or projected cost efficiency, management responsibility or accountability or the like. Thus, not just the presentation, but the quality of results achieved refers to the performance.

Financial performance measures are intended to help operations, analyze their activities from a financial standpoint and provide useful information needed to make good management decisions. And it also is used to indicate firm's success, conditions, and compliance. Financial performance refers to the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation [30,38].

Financial statement analysis is the selection, evaluation, and interpretation of financial data, along with other pertinent information, to assist in investment and financial decision-making. Moreover, it is also the process of identifying financial strengths and weaknesses of the firm by properly establishing relationship between the items of the balance sheet and the profit and loss account. It also helps in short-term and long-term forecasting and growth can be identified with the help of financial performance analysis [31].

The analysis of financial statement is a process of evaluating the relationship between the component parts of financial statement to obtain a better understanding of the firm's position and performance. This analysis can be undertaken by management of the firm or by parties outside the namely, owners, creditors, and investors Thus the financial analysis helps to highlight the facts and relationships concerning managerial performance,

corporate efficiency, financial strength and weakness, and credit worthiness of the company [27].

Financial performance is used to track and review an organization's progress against its strategic plan and specific performance goals. While financial performance measures are important to drive a company or to individual projects to ensure that deadlines are met and costs are controlled, etc., It is essential for the project manager to understand how the project itself supports the organization's strategy, and how the project will impact or influence the organization's key plan and growth [32].

Financial analysts often assess firm's production and productivity performance, profitability performance, liquidity performance, working capital performance, fixed asset performance, fund flow performance and social performance. However, in the present study financial health is measured from the following perspectives: Working Capital Analysis, Financial Structure Analysis, Activity Analysis, and Profitability Analysis [30].

Financial statements, by themselves, do not provide a lot of information about how well a company performs year to year or in comparison to other businesses in its industry. One of the reasons why it is difficult to make comparisons is that companies rarely have exactly the same revenue [53]. Another reason is that companies have varying financing structures [55]. Ratios and other performance measures and techniques have been developed to make financial information comparable from company to company [26]. These tools form three broad categories: estimation of operating performance, evaluation of financial performance and defining the level of financial risk. Operating performance deals with efficiency of management. In other words, it is important to know if a company uses its assets in an efficient and profitable manner. Financial performance deals with issues related to a company's financial structure and ability to meet its financial obligations. Analysis of financial risk is important to banks, suppliers, and investors. The general objective of financial analysis is to evaluate the effectiveness in each of these areas [26].

The term ratio refers to the numerical or quantitative relationship between two variables. According to [33], "Accounting or financial ratio is a proportion or fraction or percentage expressing the relationship between one item in a set financial statements and another item

in the financial statements. Accounting ratios are the most powerful of all tools used in analyzed and interpreting financial statements".

Ratio analysis is a widely used tool in financial analysis. It is defined as the systematic use of ratios to interpret the financial statements so that the strength and weaknesses of a firm as well as its historical performance and current financial condition can be determined. Therefore, ratio analysis involves taking stats of number [or items] out of financial statements and forming ratios with them, to enhance informed judgments and decisions. Ratios can be divided into four major categories [27].

According to [29], financial ratios analysis in construction is used to address three main purposes. First, it is used as an analytical tool in identifying the strengths and weaknesses of the firm as well as to assess its viability as an ongoing enterprise or to determine whether a satisfactory return can be earned for the risk taken. Second, financial ratios are useful as monitoring tools for ensuring the company objectives are compatible with its resources. Third, financial ratios play a very effective role in planning to achieve the company's goals.

Financial ratio is a relationship that indicates a firm's activities. Financial ratios enable an analyst to make a comparison of a firm's financial condition over time or in relation to other firms. There are many dimensions to measuring firm performance. Financial ratios derived from financial data are important in order to objectively evaluate firm's performance. Based on the literature, accounting based performance indicators ROA and ROE are widely used financial ratios by investors in order to measure firm profitability [34]. In this study, ROA and ROE are used as dependent variables and Altman Z- score, gross profit margin, and Total Debt to equity ratio, are used as independent variables. ROA and ROE performance indicators derived from the MSE financial statements. According to panel regression results, ROA has more determinants than ROE [32].
Financial ratios relevant to the construction industry can be classified into five categories:

2.3.2 Common size ratios

One of the most useful ways for the owner of a small business to look at the company's financial statements is by using "common size" ratios. Common size ratios can be developed from both balance sheet and income statement items. The phrase "common size

ratio" may be unfamiliar, but it is simple in concept and just as simple to create. You just calculate each line item on the statement as a percentage of the total [35].

To calculate common size ratios from your balance sheet, simply compute every asset category as a percentage of total assets, and every liability account as a percentage of total liabilities plus owners' equity. To prepare common size ratios from your income statement, simply calculate each income account as a percentage of sales. This converts the income statement into a powerful analytical tool [36].

These are the statements which indicate the relationship of different items of a financial statement with a common item by expressing each item as a percentage of that common item [26]. The percentage thus calculated can be easily compared with the results of corresponding percentages of the previous year or of some other firms, as the numbers are brought to common base. Such statements also allow an analyst to compare the operating and financing characteristics of two companies of different sizes in the same industry. Thus, common size statements are useful, both, in intra-firm comparisons over different years and also in making inter-firm comparisons for the same year or for several years. This analysis is also known as 'Vertical analysis' [26,28].

2.3.3 Liquidity ratios

Balance sheets help to determine the financial reliability by providing liquidity ratios, which manifest how much the company earned in a day. The current ratio exhibits the relationship of working capital of available current assets in achieving the current obligations of the company. Moreover, quick ratio is almost the same in which assets can be easily converted to cash to find out the immediate working capital relationship [37].

Liquidity management is mostly evaluated from the perspective of working capital management, as most of the indicators used for evaluating liquidity [such as liquidity ratios and the cash conversion cycle are derived from the components of working capital. Thus, it is possible to review the literature regarding the effect of liquidity on profitability from two perspectives. While in some studies, liquidity ratios -considering cash and near-cash (current assets), and current liabilities in the form of current, acid-test (or quick) and cash ratios- are used to evaluate the effect of liquidity on profitability; the others focus on cash

conversion cycle as the main indicator of liquidity. Liquidity ratios capture financial aspects of a firm covering current assets and current debts. However, cash conversion cycle reflects only the operational side of the firm concentrating on accounts receivables, accounts payables and inventories [2].

Liquidity refers to the ability of a firm to meet both its long and short term obligations. The obligations of a firm may include; meeting daily operating costs, unforeseen emergencies, contingencies or accidents. In order to meet such obligations effectively, firms must therefore hold a certain percentage of their total liquid assets in the form of cash. A firm that is capable of meeting its obligations as and when they fall due creates a good image with its customers more so the creditors. To ensure that a firm remains liquid, financial managers must construct an appropriate asset-liability mix in that the total liabilities must not exceed the total assets of a firm. Liquidity ratios have been over the years preferred to be effective measures of liquidity. The ratios include the current ratio, quick ratio and debt ratio. Aside from the liquidity ratios, amount of cash reserves held by a firm can also be used to determine how capable a firm is at meeting its obligations [38].Liquidity ratios indicate the ease at which a business can turn current assets into cash in order to meet its current obligations. A classic indicator of funding liquidity risk is the;

- **Current ratio**

The ratio is generally applied to exhibit an idea of the company's ability to pay back its short-term liabilities (debt and payables) with its short-term assets (cash, inventory, receivables). The higher the ratio it is, the higher the ability to pay back short-term obligation. A ratio less than 1.0 proposes that the company would be incapable of paying off its obligations when they become payable at that point. Furthermore, it is a bad indication of financial health, yet it does not essentially mean that it will go bankrupt as there are many ways to access financing; however, it is definitely not a good sign [37]. The current ratio greater than 1.3 for a financially healthy construction company [29].

$$\text{Current Ratio} = \frac{Current\ Asset}{current\ Liability} * 100$$

Compares the ratio between current assets and current liabilities to determine the liquidity of the business and the ability of the business to meet short-term obligations. It is the liquid reserve available to satisfy contingencies and uncertainties [39]. A common rule of thumb

is that a "good" current ratio is 2 to 1. Of course, the adequacy of a current ratio will depend on the nature of the business and the character of the current assets and current liabilities. There is usually very little uncertainty about the amount of debts that are due, but there can be considerable doubt about the quality of accounts receivable or the cash value of inventory. That's why a safety margin is needed [36].

- **Quick Ratio / Acid-Test Ratio / Quick Assets Ratio**

The quick ratio is an indicator of a company's short-term liquidity, which is also measurement of a company's ability to meet its short-term obligations with its most liquid assets. Furthermore, it measures the Dollar amount of liquid assets existing for each Dollar of current liabilities. Higher the quick ratio, healthier the company's liquidity situation [37]. The acid test ratio or quick ratio greater than 1.1 for a healthy construction company [29].

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{inventory}}{current\ Liability} * 100$$

The quick ratio is similar to the current ratio, except it removes inventory from the asset equation and just considers cash, marketable securities and accounts receivable. This ratio must be used carefully though, as some companies can turn inventory into cash more quickly than others can collect receivables. The result can also be impacted by the business's industry [39].

In general, quick ratios between 0.5 and 1 are considered satisfactory, as long as the collection of receivables is not expected to slow [36].

- **Current Assets to Total Assets Ratio**

All assets that are reasonably expected to be converted into cash within one year in the normal course of business. Current assets include cash, accounts receivable, inventory, marketable securities, prepaid expenses and other liquid assets that can be readily converted to cash. If companies invest in low-current assets, the risk increases because of low liquidity, that make profitability go up because of the use of cash in investment in fixed assets, the biggest return. The Researchers will Measure the Investment in current Assets by the ratio of current assets divided by total assets as the following equation shows[40]**.**

The current assets to total assets ratio should be between 60% and 80% [29].

$$\text{Current Ratio} = \frac{Current\ Asset}{Total\ Asset} * 100$$

A company with a high ratio would have most of its assets in the form of current assets and would be very liquid. A company with a low ratio would have most of its assets tied up in long-term assets, such as fixed and other assets. The ratio varies by sector. For single-family residential, commercial, and most specialty trades the average current assets to total asset ratio runs between 0.70 and 0.80For heavy and highway the average runs between 0.55 and 0.65 because of their large investment in excavation equipment [23].

2.3.4 Profitability Ratios

According to [12], Profit is the excess of returns over expenditure in a transaction or series of transactions, especially: the excess of the selling price of goods over their cost.

Profitability ratios exhibit how the company generates its profits. Moreover, the company's profit margin shows the potential of standing firm against competition and depression period. A higher value relative ratio against competitor's ratio or comparative ratio from a previous period is indicative that the company is doing well. On the other hand, return on assets evaluates the efficiency of the company of creating profit returns on assets and net worth mainly concentrates on financial returns produced by the owner's invested capital. [37].

Profitability ratios measure the construction company's ability to earn profit from its operation. The three most commonly used profitability ratios are:

- **Gross Profit Margin Ratio**

A financial metric practiced to assess a business's financial viability by analyzing the proportion of money left over from revenues after accounting for the Contract Cost. The ratio guides as the foundation for paying further expenses and future savings.

$$\text{Gross Profit Margin Ratio} = \frac{Gross\ Profit}{Revenue} * 100$$

If subcontractors[pay-as-paid basis] occupy a significant portion of the cost of revenue, the goal can be reduced to 20% minimum [27].

- **Net Profit Margin Ratio**

A ratio of profitability calculated as net income to revenues, or net profits divided by sales multiplied by 100. It measures how much out of every Dollar of revenue a company actually keeps in earnings. Profit margin is extremely important when comparing

companies in similar industries. A higher profit margin indicates a more profitable company that has better control over its costs compared to its competitors.

$$\text{Net Profit Margin Ratio} = \frac{Net\ Profit\ before\ tax}{Revenue} * 100$$

The goal for net profit margin ratio is 5% minimum [29,37].

- **The return on equity ratio** (ROE)

The ratio is more important to investors of any company with respect to profitability, which measures a company's success in generating income for the benefit of common stockholders. The ratio is usually expressed in percentage. The return on stockholders' equity is calculated as:

$$\text{The return on equity Ratio} = \frac{Net\ Profit\ before\ tax}{Owner's\ equity} * 100$$

The goal of return on equity should be between 15% and 40% [29,37].

2.3.5 Activity / Operating ratios

In this study, the researcher examines the relation between operational efficiency and firm performance. In particular, the researcher is interested in examining whether measures of operational efficiency derived from border analysis improve profitability forecasts and, if so, whether capital market participants hold the predictive information on the efficiency measures. This is important to understand because future profitability is linked to firm operating efficiency.

These ratios are calculated on the basis of 'cost of sales' or 'sales'; therefore, these ratios are also called as 'Turnover Ratios'. Turnover indicates the speed or number of times the capital employed has been rotated in the process of doing business. In other words, these ratios indicate how efficiently the capital is being used to obtain sales; how efficiently the fixed assets are being used to obtain sales; and how efficiently the working capital and stock is being used to obtain sales. Higher turnover ratios indicate the better use of capital or resources and in turn lead to higher profitability. Turnover ratios include the following [41]. According to [43], a simple liner regression used to test a period 2008- 2011 in order to conclude the extent of the impact of activity turnover ratios on Companies' performance among Jordanian industrial sectors. The study showed there is significant impact of the

total asset turnover ratio on Jordanian Industrial sectors' return on asset (ROA), thus changes in return on asset (ROA) have described by the total asset turnover ratio. Also, there is significant impact of fixed asset turnover ratio on Jordanian Industrial sectors' return on asset (ROA), thus changes in return on assets (ROA) have described by fixed assets turnover ratio, finally, there is significant impact of activity turnover ratios on Jordanian Industrial sectors' performance.

- **Inventory Turnover Ratio**

The Inventory Turnover Ratio measures the number of times inventory "turned over" or was converted to sales during a time period. It may also be called the Cost of Sales to Inventory Ratio. It is a good indication of purchasing and production efficiency. In general, the higher the ratio, the more frequently the inventory turned over. You might expect a company with a perishable inventory, such as a grocery store, to have a very high Inventory Turnover Ratio.

Conversely, a furniture store might have a low Inventory Turnover Ratio [5].

- **Inventory day on hand**

Once you have calculated the Inventory Turnover Ratio, you can convert it to the actual number of days of inventory you have on hand. This key ratio combined with the Accounts Receivable Days on Hand and Accounts Payable Days convert to what is called the Cash Cycle [36].

- **Average Age of Material Inventory**

$$\text{Average Age of Material Inventory} = \frac{Material\ inventory}{material\ cost} * 365$$

The average age of material inventory should be shorter than 30 days.

- **Accounts Receivable Turnover Ratio**

The Accounts Receivable Turnover Ratio measures the number of time accounts receivable turned over during a time period. A higher ratio indicates a shorter time between making a sale and collecting the cash. The ratio is based on Net Sales and Net Accounts Receivable. Remember, Net Sales Equals Sales less any allowances for returns or discounts. Net Accounts Receivable Equals Accounts Receivable less any adjustments for bad debts [42].

- **Accounts Receivable Days on Hand**

When you have calculated your Accounts Receivable Turnover Ratio, you can convert it to the actual number of days' accounts receivable are outstanding. The goal as a business is to keep the number of days your accounts receivable is outstanding as low as possible. After all, you need the cash to build your company, not finance your customers [35].

- **Average Age of Accounts Receivable**

$$\text{Average Age of Account Receivable} = \frac{Account\ receivable}{Revenue} * 365$$

The average age of accounts receivable should be shorter than 45 days [29].

- **Accounts Payable Turnover Ratio**

The Accounts Payable Turnover Ratio measures the number of time Accounts Payable turned over during a time period. Much like our previous turnover ratios, you want to understand how long your Accounts Payable are on your books. This is important as Accounts Payable are a "source of cash." There is a balance between paying your suppliers within the terms they grant you and maximizing the use of the cash in your business [29].

- **Accounts Payable Days**

The Accounts Payable Days converts the Accounts Payable Turnover Ratio to the number of days your Accounts Payable are outstanding. Again, this is important as you manage your cash to make sure you have enough on hand to run your business and keep your suppliers paid on time [42].

$$\text{Average Age of Account Payables} = \frac{Account\ Payables}{Revenue} * 365$$

The average age of accounts receivable should be shorter than 45 days [29].

- **Cash Cycle**

Once you have calculated the number of days in Accounts Receivable, Inventory and Accounts Payable for your company, you can use them to calculate your Cash Cycle. The Cash Cycle is sometimes referred to as the Trading Cycle or the Cash Conversion Cycle and measures the time in days it takes to acquire and sell inventory and convert sales to cash. It measures your effectiveness as a manager of this process [36].

$$\text{CCC} = \text{Account receivable} + \text{Inventory Days on hand} - \text{Account Payables days}$$

The average age of accounts receivable should be shorter than 45 days [29].

- **Return on Assets Ratio**

The Return on Assets Ratio is the relationship between the profits of your company and your total assets. It is a measure of how effectively you utilized your company's assets to make a profit. It is a common ratio used to compare how well you performed in relationship to your peers in your industry [36].

$$ROA\ (Return\ on\ Asset) = \frac{Net\ Income}{Average\ total\ Asset}$$

The goal of return on equity should be between 15% and 40% [29,37].

2.3.6 Solvency Ratios

Solvency ratios measure the stability of a company and its ability to repay debt. These ratios are of particular interest to bank loan officers. They should be of interest to you, too, since solvency ratios give a strong indication of the financial health and viability of your business.

- **Debt-to-Worth Ratio**

The Debt-to-Worth Ratio (or Leverage Ratio) is a measure of how dependent a company is on debt financing as compared to owner's equity. It shows how much of a business is owned and how much is owed.

If the Debt-to-Worth Ratio is greater than 1, the capital provided by lenders exceeds the capital provided by owners. Bank loan officers will generally consider a company with a high Debt-to Worth Ratio to be at greater risk. Debt-to-Worth Ratios will vary with the type of business and the risk attitude of management. Capital structure refers to the mix of long-term sources of funds, such as debentures, long-term debt, preference share capital and equity share capital including reserves and surpluses (i.e. retained earnings). It is only a part of financial structure. If short-term liabilities are added in capital structure, it becomes financial structure. Thus, capital structure refers to that part of the financial structure which represents long-term sources [30].

The financial performance was measured in terms of return on equity while capital structure was measured in terms of debt ratio [34]. The study consisted of 61 listed firms duly registered with a capital market authority of Kenya in 2012 was made. Secondary data were obtained from the Nairobi securities exchange handbook and also in firm's

publications. Data analysis was done by use of regression analysis model with the help of Statistical Package for Social Sciences Software. The results obtained reveal that there was an inverse relationship between capital structure and financial performance of listed firms in securities exchange in Kenya. The findings indicate that the higher the debt ratio, the less the return on equity, which therefore supports the need to increase more capital injection rather than borrowing, as the benefits of debt financing are less than its cost of funding [34].

Indicate the ability of the construction company to manage liabilities, common capital structure ratios are:

$$Debt\ to\ Equity\ ratio = \frac{Total\ Liability}{Owner's\ Equity} * 100$$

The debt to equity ratio should be lower than 2.5 [29].

$$Leverage = \frac{Total\ Asset}{Owner's\ Equity} * 100$$

The leverage should be lower than 3.5 [29].

It shows what proportion of equity and debt the company is utilizing to finance its assets in the long-run. A high debt/equity ratio usually elaborates that a company has been aggressive in financing its growth with debt. Consequently, it will give a volatile earnings as against of the additional interest expense. In addition, the debt/equity ratio is reliant on the industry in which the company operates [37].

- **Working capital ratio**

Working capital ratio is a measure of cash flow and is not a real ratio. It represents the amount of capital invested in resources that are subject to relatively rapid turnover (such as cash, accounts receivable and inventories) less the amount provided by short-term creditors. Working capital should always be a positive number. Lenders use it to evaluate a company's ability to weather hard times. Loan agreements often specify that the borrower must maintain a specified level of working capital.[36]

Working capital ratio is talking about utilization of working capital for the firm. Working capital turnover ratios express the relation between net sales and working capital. This provides some useful information as to how effectively a company is using its working

capital to generate sales. The working capital turnover is a measurement comparing the reduction of working capital to the generation of sales over a given period [43].

A study was conducted using descriptive research design to determine the frequency of occurrence or the extent to which the variables were related to three major construction companies in Ethiopia. Random sampling method was used to select nine grade one construction firms from a population of 119 grade one construction firms categorized by Ministry of urban Development, Housing and construction in Ethiopia.

The researcher relied on secondary data from audited financial statements to obtain data relating to the research question. The data were analyzed through the use of regression analysis and correlation analysis. The correlation coefficient and coefficient of determination were used to test whether the expected values of quantitative variable with several pre-defined groups differed from each other.

The study found that there is a significant effect of working capital management on financial performance of a construction company in Ethiopia. The study recommends that there should be proper working capital management in manufacturing firms to avoid over investment in accounts receivables. The study also recommends grade one construction companies should adopt efficient and effective working capital management policies to keep working capital at optimal level. [44]

Measure how well the construction company is utilizing its working capital, common working capital ratios are:

$$\text{Working Capital Turnover} = \frac{Revenue}{Working\ capital}$$

The working capital turnover should be between 8 and 12 times per year.

$$\text{Degree of Fixed Asset Newness} = \frac{NetprNet\ depreciable\ Fixed\ Asset}{\text{Total depreciable fixed Asset}} * 100$$

The degree of fixed asset newness should be between 40% and 60% [29].

- **Net Sales to Working Capital**

The relationship between Net Sales and Working Capital is a measurement of the efficiency in the way working capital is being used by the business. It shows how working capital is

supporting sales. In general, a low ratio may indicate an inefficient use of working capital; that is, you could be doing more with your resources, such as investing in equipment. A high ratio can be dangerous, since a drop in sales, which causes a serious cash shortage, could leave your company vulnerable to creditors [42].

Net Profit to Working Capital Ratio= (Net profit before tax)/ (Working capital) *100

The net profit to working capital ratio should be between 40% and 60% [29].

Table 1 Summary of financial ratio from literature

No	**Ratio**	**Range**
R1	Quick ratio (QR)	0.5 to 1
R2	Current ratio (CR)	2 to 1
R3	Current asset to total asset CATA	0.6 to 0.8
R4	Gross profit margin ratio	0.2 and grater
R5	Net profit margin ratio	0.05 and grater
R6	Return on equity (ROE)	0.15 to 0.4
R7	Inventory days on hand	Maximum of 30days
R8	Average age of accounts payable (AAAP)	Maximum of 45 days
R9	Average age of accounts receivable (AAAR)	Maximum of 45days
R10	Cash conversion cycle	Maximum of 45 days
R11	Return on assets ratio (ROA)	0.02 and grater
R12	Debt to Worth ratio (D/E)	Maximum of 2.5
R13	Leverage (Debt to Asset ratio)	Maximum of 3.5
R14	Net profit to working capital	0.4 to 0.6
R15	Working capital turn over	8 to 12 times
R16	Net sale to working capital	0.4 to 0.6
R17	Degree of fixed assets newness (DFAN)	0.4 to 0.6

Financial ratios or benchmarks are used to assess business profitability, balance sheet structure and overall business performance. Typically, these measures are expressed as a ratio (number of times) or a percentage. As such, they are no more than one number expressed as a percentage or fraction of another number [5]. No ratio can give an absolute

picture of business performance, but in combination, their trends over time can be used to identify areas of strength and weakness within the business [13]. In many respects, financial ratios are like a soil test. They identify that you have a high or low level of a certain element compared with established standards, but they won't tell you why you have it, how much it will affect yield, or how to manage the problem [26]. Once an area of concern is established, we need to get behind the figures to see what is causing the problem, so physical production benchmarks will be closely linked to the financial ratios [13]. You have to make sure that you are comparing 'like with like' if you use a range of data to make comparisons. However, few researches have been done to predict the business failure of construction companies as compared with the prediction of business failure of banking and finance sectors.

Furthermore, surveys indicate that study has been conducted in Saudi Arabia [37]. Ervina [32], used ratio analysis to assess the financial performance of the construction firms in Malaysia. Fred [46], investigate the viability of using structural models of credit risk for predicting contractor default probabilities, by adopting ratio analysis and logit regression. Assessment of Malaysian contracting firms using financial ratio analysis by Hassim [47], examine the financial health of Malaysian construction companies with financial ratio analysis.

2.4 The limitations on using financial ratios

Financial ratios have certain limitations in their use and are not meant to be applied as definitive answers. They are usually used to provide additional details in the determination of the results of financial and management decisions. They can provide clues to the company's performance or financial situation. However, on their own, they cannot explain whether performance is good or bad. As for the internal financial analysis, ratios also play a role of basic indicators, showing just an overview of studying business entity [45].
Ratios have to be interpreted carefully, to point out some restraints about using ratios in financial analysis.

Ratios with large deviations from the norm only indicate symptoms of a problem. It is essential always to carry out additional analysis based on internal data to isolate the causes

of the problem. Ratio analysis just directs attention to potential weak spots. It does not provide conclusive evidence and only shows the existence of a problem;

- A single ratio does not provide enough information sufficient to judge the overall performance of a firm. Only a group of ratios can practically play a key role in it;
- The ratio comparison should be made using ratios calculated with financial statements dated at the same point in time. Otherwise, the effects of seasonality may produce incorrect conclusions. (For example, it is especially important while comparing contractors' companies where seasonality is crucial);
- The use of audited financial statements for ratio analysis is preferable. Using an audited financial statement guarantees a certain level of trust both for analyst and for the end-user. If the statements have not been audited, the data contained in them may not reflect the true financial situation;
- The financial data being compared should have been developed in the same way. The use of differing accounting practices is especially relative to inventory and depreciation and can distort the results of ratio analysis [45].

According to [45], Ratio analysis is a useful tool, but a person who deals with it has to be always aware of these limitations and make adjustments as necessary and whenever possible. First, the ratio analysis is not just a mechanical process, as it seems to be. It involves an accurate results interpretation. For instance, a correct conclusion about financial ratio value is impossible without analysis of economic situation both in the industry and in the country. Knowing of environment where studied companies operate helps to make better conclusions for an analyst.

Analysis of financial ratios can provide useful insights about the company's operations, but preferably, it should be used together with other methods such as potential bankruptcy prediction, the liquidity of a balance sheet, evaluation of profit changes and its composition and studying of structure of assets and liabilities.

2.5 Financial Distress

The uncertainty is the most crucial factor that would be a key interruption of the company [49]. Prior to a company fails, the firm's financial status is frequently in distress. [30] This study is basically based on Financial Distress towards the Company Failures. Indeed, the

concept of Financial Distress has received a significant attention from the global context recently and that has been accelerating as a trend in all over the world. For, this study is entirely woven around the concept called "Financial Distress", thereby used to go through the literature as well as per my knowledge, Financial Distress is a situation where, if any company is unable to pay off its short-term & long-term Liabilities. In a real sense, Company's assets are not plenty of settling their financial obligations [48].

Financial distress is also known by the bankruptcy and liquidation in different studies [30]. If a company does not have enough cash flow to pay its current contract obligations, debt to suppliers of the stock and salaries of the workers then it is considered in a state of financial distress. [48] These obligations may also contain debts from court legal procedures and reimbursement of interests. The breach of debt contract can be a message that financial distress is forthcoming. The financial theory proposes that financial distress is the preliminary phase in the life cycle of a corporation and it also gives an indication to change the management [49]. Moreover[50], also considered inadequate Cash flow as the major measure of financial distress.

Financial failure is the situation when profit is lower than investing capital, keeping the risk in observation, even if the same investment is used in the different economic situation at prevailing rates and where the average returning output of the firm is always below the capital cost of firm [49]. A firm is not in financial distress if it is unable to pay its slight amount of debt or deficiency of debts. Insolvency can also be used to describe dismissive corporate performance. [30] The financial distress of a firm is further ascribed using four general terms in many research studies: failure, default, insolvency and bankruptcy.

Furthermore, the financial idea of default also means that a company is not in a condition to pay debt or interest to creditors on due time. At last, the financial distress is elaborated in technical and legal case. The technical, financial distress is the case where a corporation is unable to keep its contractor and legal case refers to the failure of the company to meet regular repayments on loan [31].

Moreover, a financially distressed company in order to restructure its debts and improve its financial situation can make formal or informal negotiations with creditors. These

restructuring programs often involve reorganization of the company through layoffs and closure of loss generating operations. Here, exit of resources from the industry can be the case. At last, when there is no other option left, the liquidation of the financially distressed company is the case; in other term, physical exit of the company from the business is the last option available for the financially distressed company to utilize [51].

Financial distress has a wide range of definitions in literature. A long and dynamic financial distress process can start with a short-lived massive single event or consecutive chain events or a long-term repetitive unfavorable event causing company's financial state to decrease below some lower threshold. The dynamic nature of financial distress involves separate stages through which the distressed company passes. Each of the stages has its own characteristics that contribute differently to corporate failure. However, the starting point or intervals of a financial distress process and its characteristics are not easily determinable.

Accuracy of bankruptcy prediction models significantly decreases if the prediction period exceeds three years before the bankruptcy. The existence of preliminary indicators of declining performance is questionable. Even if the indicators exist, they are very weak and therefore almost impossible to notice. Unfavorable developments generally become visible about a couple of years before default, when the company becomes severely distressed [50]. In addition, temporary or permanent characteristics of financial distress determine the continuity of the company. The stages of process interpenetrate and a clear discrimination between them is not possible in the intersections. The latter stages are results of previous stages and previous stages are part of latter stages. Therefore, financial distress stages cannot be separated from each other with absolute lines [51].

2.5.1 Stages of Financial Distress

According to [50], different stages in the financial distressed companies are early stage, mid-stage and final or later stage. The symptoms of companies in these stages are:

1. Early stage: Customers start complaining about the services and quality, the company starts to feel sales are decreasing and stock return turns less than expected.

2. Mid-Stage: in the mid-stage of the financial distress the company faces problems like cash shortage, less profit and unable to pay dividend payments and disturbance in the payment of debt to suppliers.

3. Final or later stage: The company has a constant cash deficit and it breaches the debt contract with the creditors [50].

2.5.2 Factors of Financial distress

There are two factors of financial distress discussed in different research studies Internal and External.

Internal Factors: There are many different internal factors related to financial distress some of the important are

1. Bad management,
2. Lack of communication between the business entities.
3. Major project's failure,
4. Expansion of business with no stability,
5. No agreement between domain growths.

Other researchers also considered poor management a significant factor in the financial distress of a company [52].

External factors: Each company has to exist in an environment. The External factors involve environmental factors that lead to financial distress and some of them are discussed by the researchers as follows: [52]

1. **Social Environment**

According to [55], factors that made the task environment have a direct impact on the system and moreover, that it is the nearest environment of the system. This surrounding comprises of elements such as consumers, competitors, suppliers, labor market, industrial and financial resources.

2. **Economic Environment**

A failure of a system has many reasons and a time of downturn is one of the reasons that can bring about failures to a system. According to [55], in a poor economy, customers with an inflexible budget shift to cheap priced materials. Nonetheless, if the customers prefer to

save their money by using inferior materials, the magazine outlines that a long-term reduction of business activity can expose inferior goods to profit/ losses.

3. Legal and Political Environment

A politically balanced environment is also of great importance in the productive and decisive operation of the business. The political surroundings is seen through the legal framework in which the system works and this is done through the rules and regulations that lead the operations of business in question. The authority of the system must take cognizance of these constraints, actual and potential and seek out the implications for the business organization from legal advisers [55].

4. Technological Environment

Technology is constantly changing; this means the business must change in order to keep up. This affects the business in three ways:

1. Production
2. Workers
3. Marketing New technology can be used to improve production. New technology has positive and negative effects upon workers. [55]

5. Natural Environment

Encompasses all living and non-living things occurring naturally, meaning in this case not artificial. The term is most often applied to the Earth or some parts of Earth. This environment encompasses the interaction of all living species, climate, weather and natural resources that affect human survival and economic activity [12].

6. Industrial Environment

An industrial environment is a term used to describe working conditions that may be outside of optimal. Industrial environments are usually harsher than normal work environments, such as an office. In an industrial environment, people and equipment are exposed to more extreme conditions. Depending on the job, these conditions can be very severe. [12].

2.5.3 Application of Distress Prediction in Construction Sector

When predicting bankruptcy of a company basing on its financial statements, the line of business in which the company is operating plays a significant role in terms of prediction

accuracy. This accuracy is particularly crucial to banks and businesses which realize sales mostly on credit [43]. The failure to recognize a client's or business partner's financial difficulties or the threat of bankruptcy with sufficient accuracy could lead to significant losses. Bankruptcy prediction models are used for these purposes [53]. Most of the models created have been dedicated to the branch of manufacturing, while the branch of construction is relatively neglected by the mainstream literature. Traditional bankruptcy prediction models cannot be used effectively due to specifics of construction business [43].

However [46], the application of Altman's bankruptcy prediction model in the construction industry by measuring its percentage accuracy on a dataset consisting of 108 bankrupt and non-bankrupt firms selected across the timeline of 1985-2013 were evaluated. The main goal of this paper was to explore the predictive power of an expanded variable set tailored to the construction industry compared to the original Altman model. The result shows the Altman model stands both valid and effective in the context of bankruptcy prediction in the North American Construction Industry.

Moreover, the factors accounting for probability of financial distress in the context construction industry of India were studied. Financial ratios covering four broad categories, namely Liquidity, Solvency, Activity and Profitability have been used as predictor variables. Further this study has applied the linear probability and logit models in order to scrutinize the preeminent predictor of financial distress. The results conclude that the return on equity (ROE) is the most preeminent predictor that classifies the financially healthy of construction companies. [51]

2.5.4 Analysis for Possibility of a Distress

Distress is defined as a risk that the company will be unable to meet its debt obligations. This legal risk affects not only the company and its shareholders [owners], but also customers, service providers, their employees and their respective supply chains including subcontractors and indirect customers. Studying the possibility of Distress is the one of the most common tasks in financial analysis practices. There are at least twenty known methods of a Distress prediction [45]. In the thesis only three of them will be used: 1) The Altman's model and 2) Springate Model, 3) Zmijewski Model.

1. The Altman's Model of Distress prediction

The Z-score formula for predicting bankruptcy was published in 1968 by Edward I. Altman, who was, at the time, an Assistant Professor of Finance at New York University. The formula may be used to predict the probability that a firm will go into bankruptcy within two years. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies. The Z-score uses multiple corporate income and balance sheet values to measure the financial health of a company [22].

The Altman's Z-value is based on a multiplicative discriminant analysis, allowing at a very first approach to distinguish companies to normally operate and potential bankrupts. The resultant Z-value is calculated based on five indicators and each of them has statistically approved specific weight. The Z-value makes possible to predict the possibility of a bankruptcy during next two years [45].

The Altman's model has the following form:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + 0.999E$$

$$where:$$

$$A = Working\ Capital/Total\ Assets$$

$$B = Retained\ Earnings/Total\ Assets$$

$$C = Earnings\ Before\ Interest\ \&\ Taxes/Total\ Assets$$

$$D = Market\ Value\ of\ Equity/Book\ Value\ of\ Debt$$

$$E = Sales/Total\ Assets$$

The probability of a bankruptcy is evaluated on the following assumptions:

If (the Z-Value) < 1.8, then the probability of a bankruptcy is very high;

If 1.8 < the Z-Value < 2.7, then the probability is moderate;

If 2.7 < the Z-Value < 3, then the probability is low;

If the Z-Value > 3, then the probability is negligibly low [36].

2. Springate Model

This model was introduced by Gordon L. V. Springate in 1978. The Springate model is the ratio model which is used to measure the company's financial condition. It is almost the same as the Altman model; this model also uses more than one financial ratios that are considered to be related to conditions that can measure the bankruptcy level of a company. To determine the ratios that can detect the possibility of bankruptcy, Springate uses multiple discriminant analysis (MDA) methods to select 4 ratios of 16 popular financial ratios in the literature that are capable of distinguishing the companies that are going to bankrupt and in good condition. The Springate model is as follows:

$$Z = 1.03x_1 + 3.07x_2 + 0.66x_3 + 0.4x_4$$

$$where:$$

$$x_1 = Working\ Capital/Total\ Assets$$

$$x_2 = Net\ Profit\ Before\ Interest\ \&\ Taxes/Total\ Assets$$

$$x_3 = Net\ Profit\ Before\ Taxes/Current\ Liabilites$$

$$x_4 = Sales/Total\ Assets$$

If the value of Z less or equals 0.82 then the company is classified as a bankrupt company, this model produces a level of accuracy of 92.5% by using 40 companies that are tested by Springate [53].

3. Zmijewski Model.

This model was introduced in 1984. This model uses ratio analysis that measures the performance, leverage, and liquidity of a company. Zmijewski used a random sampling technique in his research. The sample which was used is 840 companies consisting of 40 companies that went bankrupt and 800 that did not go bankrupt.

The equations of this model are:

$$Z = -4.3 - 4.5x_1 + 5.7x_2 - 0.004x_3$$

$$x_1 = ROA = Earnings\ After\ Tax/Total\ Assets$$

$$x_2 = Leverage = Total\ Debt/Total\ Assets$$

$$x_3 = Current\ Assets/Current\ Liabilities$$

The value of Z that is used is 0 where if the positive (+) Z value, it means the company has the potential to go bankrupt. While the more negative (-) value of Z then the company is getting away from bankruptcy [53].

2.6 Impact of Financial Distress on Financial Performance

The current study relies on identifying an impact of financial distress on the firm's performance. According to [48], conducted a research to investigate the association between financial distress and financial performance. As per the study findings, there is a significant association between finance distress and financial performance. Simply put, the upsurge in the Altman's Z score values, which, means lessening the financial distress and thereby it caused to upsurge in the financial performance.

Financial distress is one of the most significant threats for many firms globally despite their size and nature. The term financial distress is used in a negative connotation to describe the financial situation of a company confronted with a temporary lack of liquidity and with the difficulties that ensue in fulfilling financial obligations on schedule and to the full extent [32]. According to [46], companies are financially distressed when they are technically insolvent and or illiquid. Insolvency is the inability of a business to have enough assets to cover its liabilities. A situation where a firm's operating cash flows are not sufficient to satisfy current obligations and the firm is forced to take corrective action.

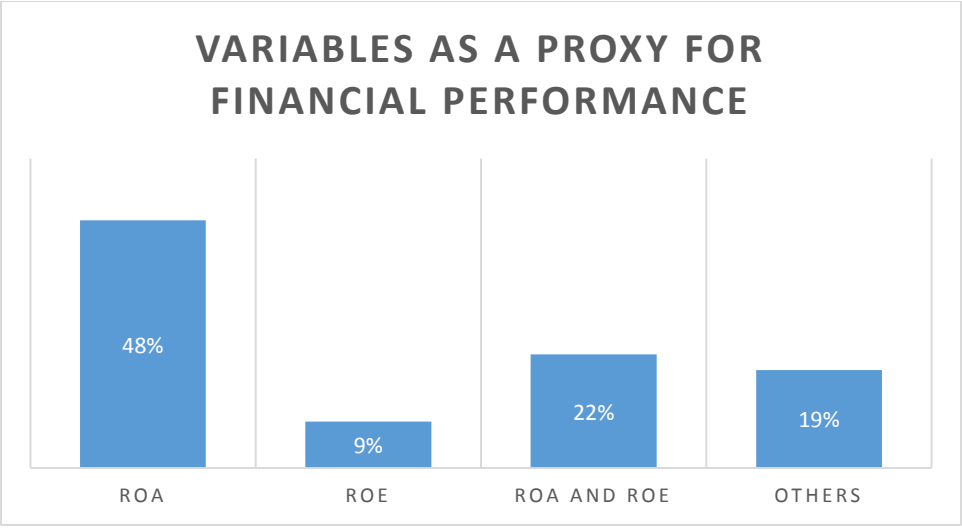
This literature also found that leverage is a financial distress factor and hampers financial performance of Grade one construction companies in Ethiopia. Companies' management should ensure that financial decisions made by them are in consonance with shareholders' wealth maximization objectives which encompasses the profit maximization objective of the firm. The amount of debt finance in the financial mix of the firm should be at the optimal level so as to ensure adequate utilization of the firms' assets and reduce the effect of financial distress on financial performance. Therefore, managers should employ financial leverage in a way that enhances value for their company owners' that will lead to an increase in returns to equity holders of commercial banks, other than being a financial distress factor affecting the financial performance negatively.

2.7 Selecting The Right Variable as A Proxy for Financial performance.

Being profitable is one of the most important objectives of any business organization. Moreover, one of the important objectives of financial management is to maximize the shareholder's wealth/value and profitability is a very important determinant of organizational performance and the shareholders' value [46]. The word 'profitability' is modulation of two words, namely; profit and ability. The accounting profit is the difference between total revenue and explicit cost incurred in the process of doing business [43].

According to economic perspective, profit is the difference between total revenue and total cost, both implicit and explicit. The term ability indicates the earning power or operating performance of a firm. The business ability points towards the financial and operational ability of the business. So, on this basis profitability is the ability of a firm to earn profit from all the activities of an enterprise by efficient utilization of its resources [54].

A good number of studies have been conducted to identify the measures that can be employed as a proxy for profitability. Much of the research has been done in determining the profitability of banks within and outside India and the studies on bank profitability reveal that there are different ways to measure profitability via: return on assets, return on equity, net interest margin.



Source: Data collected from various journals by -Journal of Arts, Science & Commerce

Figure 1 Chart showing % of various profitability proxies employed

As per Figure 1, profitability reveals that approximately 48% of the researchers employed only return on assets as a proxy for profitability, 9% employed only return on equity, 22% employed both return on assets and return on equity, and other combinations contribute 19% as is presented in Figure 1. It can therefore be deduced that ROA as a measure of profitability is employed by most of the researchers and as such seems to be a suitable proxy variable for profitability.

ROA is regarded as the best and widely used indicator of earnings and profitability supplemented by return on equity (ROE). A Number of studies have shown that ROA assesses how efficiently an organization is managing its revenues and expenses, and also reflects the ability of the management to generate profits by using the available financial and other assets [46,48,54]. Whereas, return on equity (ROE) measures a company's profitability which reveals how much profit a company generates with the money shareholders have invested. However, ROA is considered as the key proxy for profitability, instead of the alternative return on equity (ROE). Because an analysis of ROE disregards financial leverage and the risks associated with it [54,55].

As a measure of financial performance, ROE is prone to three problems: a timing problem, a risk problem, and a value problem. These problems connote that ROE is seldom an unambiguous measure of performance. The ROE has remained a useful and important indicator, but it must be interpreted in light of its limitations and no analyst should mechanistically infer that a higher ROE is always better than a lower one. Many business opportunities require sacrifice of present earnings in anticipation of future earnings. This is true when a company introduces a new product involving high start-up costs. If the company´s ROE is calculated after the introduction of the new product, the ROE is low, suggesting poor performance of the company, while as the low ROE is the result of the company´s new product introduction not because of any other factor. Since ROE includes earnings for only one financial year, it frequently fails to capture the complete impact of long term decisions. The problem with ROE is that it says nothing about what risks a company has taken to generate its ROE and it takes care of only return but ignoring risk. Hence it can be an inaccurate indicator of financial performance. ROE measures the return on shareholder´s investment, but the investment figure used is the book value of

shareholder´s equity, not the market value. Because of possible divergence between the market value of equity and its book value, a high ROE may not be synonymous with a high return on investment to shareholders [54].

According to [56], profitability in case of banks is best measured by ROA. Because ROA is not distorted by high equity multipliers and ROA represents a better measure of the ability of a firm to generate returns on its portfolio of assets. However [54], argues that ROE is a good approximation of profitability as it takes into account off balance sheet activities which contribute to the overall profitability of the banks while as ROA excludes off balance sheet activities which may be misleading. There are divergent views among scholars on the superiority of one indicator over the other as a good measure of profitability. Moreover, in case of insurance companies, According to [57], the performance is normally expressed in terms of net premium earned, profitability from underwriting activities, annual turnover, return on investment, and return on equity.

These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of construction stated that the key indicator of a firm's profitability is return on assets (ROA) defined as before tax profits divided by total assets [32]. With all the ratios that investors toss around, it's easy to get confused. Consider the return on equity (ROE) and return on assets (ROA). Because they both measure a kind of return, at first glance, these two metrics seem pretty similar. Both gauges a company's ability to generate earnings from its investments. But they don't exactly represent the same thing. A closer look at these two ratios reveals some key differences. Together, however, they provide a clearer representation of a company's performance.

2.8 Financial ratios commonly used in bid evaluations.

This outsourcing guidance note was prepared by the Infrastructure and Projects Authority, and Cabinet Office of UK government. In order to have roles to play in approving and assuring large projects. This guide is modified from The Green Book: appraisal and evaluation in central government.

Financial information required from bidders; contracting Authorities are encouraged to exercise flexibility when specifying the financial information, Standard information required from a bidder would normally comprise audited accounts for the past two years of trading (this may be extended to three years where the criticality of the potential contract requires use of trend analysis) and information on the structure and ownership of any group of which it is a member. Assessments should be based on the most recent audited accounts available even if these have not been filed. Bidders should be encouraged to provide narrative where appropriate to reduce the need for subsequent clarifications. [Article 2.5.2 [43]].Where audited accounts are not available, other financial information that Contracting Authorities may use, in accordance with [Regulation 60 [24]], to demonstrate a bidder's financial information but is not limited to:

- Parent or ultimate parent company audited accounts (if applicable);
- Guarantees and bonds;
- Bankers' statements and references;
- Management accounts;
- Financial projections (including cash flow forecasts) and order book pipeline;
- Details and evidence of previous contracts, including contract values; and
- Other evidence of capital availability. [Article 2.5.3 [43]].

In terms of lack of access to liquidity is the typical cause of financial failure. It is therefore important to understand a supplier's, or a supplier group's, funding strategy and the nature of all borrowing arrangements. Relevant questions include:

- Are its existing borrowing facilities committed or can they be withdrawn by the lender?
- When do the existing facilities mature and what plans does the supplier or its group have to repay or replace them (where maturing facilities need to be replaced, most companies start to do this at least 12 – 18 months prior to maturity)?
- How much borrowing headroom do the facilities provide against peak future borrowing requirements and how will the supplier manage any pinch points?
- Has the supplier or its group provided security to its lenders?
- How tightly drawn are the covenants in the facilities? How much covenant headroom is there? [Article 4.5.1 [43]].

The tender document for the procurement of works for public bodies in the Federal Democratic Republic of Ethiopia Standard Bidding Document (SBD) For Procurement of Works in National Competitive Biddings (NCB) Public Procurement Agency (PPA) January 2006, Addis Ababa. And hence, the tender document to be referred to here in the research is this document. The proclamation defines the successful bidder as follows: the bid that is found to be responsive to the technical requirements and with the lowest evaluated price [Article 43[18]].

The responsiveness is determined by the technical evaluation of bidders. In order to participate in public procurement, candidates must qualify by meeting the following criteria and such other criteria, as the public body considers appropriate under the circumstances: that they possess the necessary manpower, equipment, financial and technical capabilities; that they have legal capacity to enter into the contract; that they are not insolvent; that they are registered in the suppliers list, that they are not suspended from participating in public procurement in that period; that they have renewed trade license and tax clearance; and that they have a bank account [Article 28 [18]].

2.9 Payment Method in Construction.

The payment method of construction projects can be divided into two typical methods: a periodic payment method and a milestone payment method [69,71]. A periodic payment is a method of calculating the amount of construction work for a specific period and paying periodically (mainly by month). This method is advantageous for the construction company in managing their cash flow [69]; however, it is difficult to calculate the amount to be paid to the construction company using this method [71,72]. A stage and milestone payment is a method of paying a predetermined amount according to the completion of the main events (stage and milestone), determined under an agreement between an owner and a contractor [72]. In addition to these two payment methods, the payment method can be modified and combined depending on the circumstances of the construction project. Generally, the later the payment time point is postponed, the larger the amount of UAR is sustained during the construction project [68]. On the other hand, if there is little disagreement between an owner and contractor regarding progress, or if the contractor receives advanced payments, the UAR decrease or over billed receivables occur.

According to Ethiopian FPPA [article 64 [18]], unless otherwise specified in the SCC, the shall submit a monthly statement for interim payments to the Engineer at the end of each period referred to in GCC clause 64.7 in a form approved by the Engineer.

2.9.1 Unbilled Accounts Receivable in Construction Contractor Accounting

Large-scale construction projects take a relatively long time to complete, compared to products or services of other industries [69]. Therefore, if a contractor's revenue and profit are recognized based on the completed contract method (CC), it becomes difficult to evaluate the construction organization's performance in a continuous manner [68,69].

Therefore, a construction organization's profit is calculated according to the percentage-of-completion (POC) method, which means the degree to which a construction project has been completed [68–70]. However, owners' and contractors' perspectives may not align in terms of how to evaluate the progress of construction projects [68]. Taking a contractor's point of view, to be paid for construction works as soon as possible is an advantageous way to manage their finances [69]. On the other hand, taking the perspective of an owner, whose purpose is focused on managing their contracts to obtain facilities that meet their requirements, it is better to pay after they get a solid outcome or to pay in a way that maximizes the performance of construction projects [69]. Such a perspective on payment causes a difference in time when owners assent a project progress rate. In the case where the amount of revenue that a contractor perceives based on the POC is in excess of the payment amount according to the owner's contract, the difference is included as a UAR, which is defined in the International Accounting Standards 11 (IAS 11) Construction Contracts [69] as the gross amount due from customers for contract work. If, however, the amount of revenue evaluated by a contractor is less than the amount payable by the owner, the difference is referred to as an "over billed accounts receivable"—defined in the IAS 11 [70] as the gross amount due to customers for contract work.

According to FPPA [article 60.5 [18]],the contractor shall use the advance payment /UAR only to pay for Equipment, Plant, Material, and mobilization expenses required specially for execution of the contract. The contractor shall demonstrate the advance payment has been used in this way by suppling copies of invoices or other document to the Engineer.

As UAR is defined as the difference between the amount of a contractor's earned revenue (ER) and owner's payment (OP) according to the contract, as illustrated in Equation (1), the UAR is determined depending on the payment method and the POC method:

$$UAR = ER - OP(ER > OP)$$

Table 2 Financial performance qualification Criteria recommended by PPA 2006 users guide

No.	Qualification Criteria	Minimum Requirements
1.0	Average annual volume of construction work over the past (For major contracts, it is normally 5 years, for smaller contracts 3 years would be sufficient)	At least (Ideally the minimum value of the annual turnover of construction work should be set at not less than 2.5 times the estimated annual cash flow for the Contract. For low risk works, this minimum could be reduced to 2 times or less)
2.0	Experience as a prime contractor in the construction of at least(number of similar contracts, which should be in the range of one to three, depending on the size of contract, risk of contractor default and market conditions)	Works of a nature and complexity equivalent to the Works over the last (number of years, normally in the range of five to ten. For smaller contracts, low risk works or a newly established local industry, the number of years could be reduced to 3) years(to comply with this requirement, works cited should be at least 70 percent complete).
3.0	Proposal of the timely acquisition of equipment(own, lease, hire, etc.] of the following essential equipment:	(list of equipment, For smaller contracts, the list should be limited to specialized items that are critical to the execution of the contract and that may be difficult for the successful Bidder to obtain quickly)
4.0	Liquid assets and/or credit facilities net of other contractual commitments and exclusive of any advance payments which may be made under the Contract	Of no less than(amount). (The successful Bidder must demonstrate that it has or has access to the financial means sufficient to meet the construction cash flow requirements for the contract. The minimum liquid assets and credit should normally be set as the estimated payment flow over approximately 3 months at the average("straight lined") construction rate.

2.10 Summary of the Literature Review

The literature review indicated that financial performance evaluation and distress is a broad concept that consists of several situations in which a company faces financial difficulties.

Financial statement analysis is the process of interpretation of the company's financial information. Furthermore, financial statement analysis is a quantifying process of identifying the potential, past and present performances of a company. Financial statement analysis technically outlines the process of accounting and categorizes the account titles and the amount of money as well. Also, it helps to understand the financial decision that already made and how it does affect the profit or income. However, balance sheet with equivalent profit and loss must be well compared to find the strength and weaknesses of the firm. Financial statement analysis shows the health and stability of the company. The information from these statements provides an understanding of the operation of the business and able to discover if the management used funds and resources wisely.

Hence, government, regulatory authorities and private sector use financial statements in assessing the legality of fiscal/financial decisions of the company that whether they are following the right accounting procedures, or they are deciding the correct policies and decisions. It is also the study of accounting ratios such as profitability ratios, liquidity ratios, operating efficiency ratios, and solvency ratios between different items that are included in the balance sheet and Income statement. Moreover, common terms to describe the situation are bankruptcy, failure, inability to pay off debts, and defaults/companies that violate regulations with creditors and may be subject to punishment. Financial distress is a condition where the company is experiencing financial difficulties and is threatened with bankruptcy. The condition of financial distress should be avoided by the company. In addition, bankruptcy is usually interpreted as a failure of the company running the company's operations to generate profits. Various analyzes which are conducted are expected to predict the survival of a company. For that we need a special method that can provide assessment and predict the company in the present and the future. There are various bankruptcy analysis tools that have been found, but the widely used bankruptcy analysis tools are Altman Z-Score Model, Springate Model, and Zmijewski Model. Therefore, this

research aims are review of financial performance and distress for Five Grade one private building contractors who are involved in the Addis Ababa building construction industry.

2.11 Research Gaps

There is limited research made in the Review of Financial Performance and Distress in the Addis Ababa construction industry. Shortage of cash to fund their construction projects, contractors enjoy a small profit or loss from projects, the contractor's firm has a high debt burden, firms management inefficiency of their assets, are some of the cases and this have been results for project cost overrun and delay which remain an everyday event in most construction projects [11,17]. Moreover, it is well known that cost overruns in construction projects are the major causes of company's distress [13]. If the distress is not identified and corrective project management decisions are not taken timely, a project may incur extra cost and extension of project time, which gives rise to dissatisfaction to all the parties involved. This situation leads to the failure of the financial performance of the construction company as a whole. Nowadays, it's becoming a major obstruction for the advancement of developing countries like Ethiopia. Therefore, need for research to develop a better understanding such as Evaluation of Financial Performance and Distress is a key to evaluating the financial health of the company. In addition, whether the financial distress has a significant impact on financial performance. There is a gap on which traditional tools like (ROA, or ROE) are the key indicator of a firm's Financial performance.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Research as a process of collecting, analyzing and interpreting information to provide solutions to questions. [59], Developing a model to detect financial distress is a difficult task due to the multi-dimensional nature of corporate performance. The resulting model needs to contain the appropriate inputs and outputs that most accurately represent the evaluation process.

To construct a model that evaluates contractor performance it is vital to understand the details associated with the construction industry. Once this is accomplished, the most relevant financial inputs and outputs can be chosen.

To reduce the potential of ideas presented in no clear order, the researcher focused the literature review on areas relevant to the study objectives. Thus, the study made use of several sources of literature such as relevant books, reports, journals of performance evaluation of a firm.

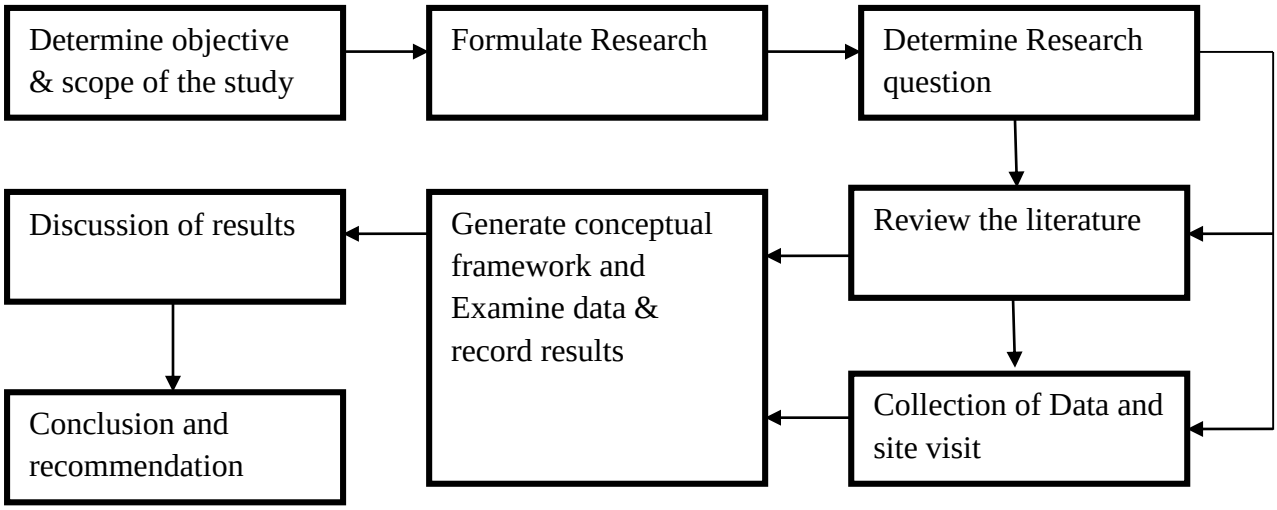


Figure 2 Research process

3.2 Research strategy

The research strategy used in this study is both qualitative and quantitative approaches of exploratory type, which diagnoses a situation, assesses alternatives, and discover new ideas. The research has four main parts as described hereunder;

- Establishing the basis of the research: aimed at defining the theoretical basis, and formulating the research questions through the following steps.

  • Literatures were reviewed to obtain a theoretical basis for the research and formulating the research questions and defining the scope. To this effect, financial performance evaluation books, internet sources were used to obtain recent articles and research papers in the area.

  • Grade 1 private contractors were selected for the case study to examine the Financial Ratio Analysis and what kind of suggestion will deliver to the project success.

  • Acceptable range for financial ratio was selected based on literature review.

- Conducting the study: aimed at finding out how are the existing practices of financial performance evaluation made by "Grade 1" building contractor with the following approaches:

  • Structured and unstructured interview will apply to the key respondent to get in-depth understanding of financial performance evaluation being practiced, and to explore their opinions on the financial performance evaluation method.

- Analysis the findings: aimed at analyzing the findings of case studies in relation to conceptual range, and that of the interview using descriptive and deterministic statistics methods of analysis.

Conclusion and recommendation: aimed at concluding the research findings, and drawing recommendations.

3.3 Target Population of the study

The term population refers to the aggregate or the totality of all the objects, subjects, or members that conform to a set of specifications [22]. In quantitative studies, the researcher identifies the population to be studied during the planning phase. A smaller population can be studied more extensively at a fixed cost than a larger population, so it is important to

decide what population is really of critical importance. According to Adam [59], all the items under consideration in any field of inquiry constitute a 'universe' or 'population'.
A complete enumeration of all the items in the 'population' is known as a census inquiry. It can be presumed that in such an inquiry when all the items are covered no element of chance is left and highest accuracy is obtained.

The population of this research is the grade one building contractor's companies who had valid registration according to Ministry of Urban Development and Construction (MoWUD), which participated in any building projects.
According to (MoWUD, 2013), the local construction firms are broadly classified based on trend of work as follows: General Contractors, GC; Building Contractors, BC; Road Contractors, RC; Specialized Contractors, SC. The first three categories are again divided into ten grades based on equipment, manpower and turnover requirement. There are over 4034 contracting companies registered under G1 up to G10 in Ethiopia (MoWUD C., 2014). Therefore, the populations this research, include building contractors classified as BC1 that is owned by private sectors that have a valid registration by MoWUD. Because this selected category has experienced, efficiency and managerial and financial capability above 210 million birr.

3.4 Determining Sample Design

Samples can be either probability samples or non-probability samples. With probability samples each element has a known probability of being included in the sample, but the non-probability samples do not allow the researcher to determine this probability [59]. Probability samples are those based on simple random sampling, systematic sampling, stratified sampling, cluster/area sampling whereas non-probability samples are those based on convenience sampling, judgement sampling and quota sampling techniques [65].
The researcher chooses non- probability deliberate sampling design technique.

Deliberate sampling is also known as purposive or non-probability sampling. This sampling method involves purposive or deliberate selection of particular units of the universe for constituting a sample which represents the universe. When population elements are selected for inclusion in the sample based on the ease of access, it can be

called convenience sampling. If a researcher wishes to secure data from, say, gasoline buyers, he may select a fixed number of petrol stations and may conduct interviews at these stations [65].

3.4.1 Deliberate sampling

First of all, the data were obtained from consultant's and contractor's firms and it is permitted to use for academic research purpose, while the researcher didn't disclose the companies name for the sake of confidentiality.

The sample pool consisted of all Grade 1 Building Contractors of 2017 with information collected from Ministry of Urban Development, Housing and Construction the sample pool size was comprised of 72 Grade 1 building contractors. Only five grade one building construction companies are used for the analysis.

The selection involves three criteria: the first criterion selects only Grade 1 building contractors that are registered under Ministry of Urban Development, Housing and Construction. Second, the researcher requires that the financial statements submitted by private companies comply with Generally Accepted Accounting Principles (GAAP). All analysis methods discussed in this research are designed around GAAP reporting; therefore, it is logical to choose appropriate data to fit the analysis applicable to this study. The third criterion for sample selection is the accessibility of accounting statements.

Based on the criteria listed above, the 2nd and 3rd research question, were responding. In order to answer these questions, study the cases of five Grade 1 building construction firms had been chosen. These cases indicate the real purpose and objectives of the research.

3.5 Data collection

In dealing with any real life problem, it is often found that data at hand are inadequate, and hence, it becomes necessary to collect data that are appropriate. There are several ways of collecting the appropriate data which differ considerably in the context of money costs, time and other resources at the disposal of the researcher.

Primary data can be collected through survey [65]. In this study, the researcher conducts some quantitative measurements, or the data, with the help of which he examines the truth

contained in his hypothesis. But in the case of a survey, data can be collected through personal interview.

3.5.1. Through personal interview:

Patton [64] explains, Qualitative inquiry is prevalent with ambiguities. There are purposeful strategies instead of methodological rules. There are inquiry approaches instead of statistical formulas. Qualitative inquiry seems to work best for people with a high tolerance for ambiguity. Nowhere is this ambiguity clearer than in the matter of sample size. There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources.

"I started out to interview 20 people for 2 hours each, but I've lost 2 people. Is 18 large enough, or do I have to find 2 more?"

"I want to study just one organization, but interview 20 people in the organization. Is my sample size 1 or 20 or both?" Universal, certain, and confident reply to these questions is this: "it depends." [64].

The sample for this study will be top level managers working in the Grade 1 building construction company. The key respondents targeted for this research were professionals from the Administration and contract implementation departments of the Grade one building contractors. Those professionals who specifically worked in Contract administration, and monitoring implementation of Building projects were selected for the interview.

This helps to reply the 1st research question is "How the selected grade one private building construction firms are evaluating their financial performance and distress? The answer for this question and supplementary information for other research questions were searched from key respondents in order to deepen the findings.

Accordingly, 10 key respondents were interviewed with pre-distributed questionnaire. The respondents' profile is shown in Table 3 below.

Table 3 Respondent profile

a) Educational status

Descriptions	**Number of Respondents**			
	Civil Eng.	**Architecture**	**Construction Technology and Management**	**Total**
MSc.			2	2
BSc	4	2	2	8
Total	4	2	4	**10**

b) Experience in Grade 1 building contractors (years)

Descriptions	**Number of Respondents**
5-10 years	3
10-15 years	5
Over 15 years	2
Total	**10**

3.6 Data Analysis and Presentation

The case study will be analyzed in relation to the desk study. The method used to analyze the interview data is descriptive method. This method of analysis helps to analyze the responses in actual numbers. Accordingly, frequency distribution was used to distribute the data into categories and determine the number of individual or cases belonging to each category, which were presented in the form of a table.

In this study, mixed method data analysis is used. Firstly, quantitative data will be analyzed using Excel and A multiple linear regression model with k predictor variables X1, X2, ..., Xk and a response Y, will be determined by the statistical package for the Social Sciences (SPSS). The case study and interview will be analyzed in relation to the theoretical propositions and the data will be presented is a descriptive statistic method. This method of analysis helps to analyze the "T" graph. Accordingly, frequency distribution was used to distribute the data into categories and compare the number of individual or cases belonging to each category, which were presented in the form of a table. Thirdly, the

available documents will be reviewed to substantiate the primary and secondary data. Then, findings will be discussed by combining interview results with survey data. Finally, based on the findings, conclusions and recommendations will be made.

4. RESULTS AND DISCUSSION

4.1 Introduction

The chapter presents the result of data analysis. This part is separated into three categories. The first part tries to present the findings of the questions asked to test the level of awareness for financial performance and the distresses of grade one building contractor involved in Ethiopian building construction projects. Second, discuss about liquidity, profitability, operational efficiency ratio, and a solvency ratio of the construction firm and what this finding means the researcher briefly examined the performance of five grade one private building construction firms. Third, the researcher demonstrates about the financial soundness of the selected grade one private building construction firms using three known model called the Altman's model, Springate Model, and Zmijewski Model and it will recommend the best model for Ethiopian building construction firms among the listed and lastly, the researcher will introduce new model which elucidate the impact of financial distress on financial performance.

4.2 Analysis and Result of the Interviews

In the analysis and results the findings from the semi-structured interviews are described. The previous chapters clarified various definitions, models and indicators. In this chapter interview question (see appendix I) are formulated based on the theoretical framework from the preceding chapters. Grade one private building contractor's personnel for the position of Deputy Manager, Contract administrator and operation manager were interviewed.

A response by all Respondents to a question that inquires whether formal Evaluation of Financial performance and distress prediction system consisting of the foregoing processes is in place has revealed "No formal Financial performance and distress prediction system consisting of the foregoing processes is in place to manage probability of distress that may occur in Grade one private building contractors".

However, working capital (Current Asset –Current liability) from Balance sheet and Net Profit/Loss from Income statement used as a tool to evaluate the financial performance and no distress prediction method is available.

According to the respondent, the traditional practice to deal with Evaluation of Financial performance and distress prediction system, companies shall reduce their Debt-to-Worth Ratio a company with a high Debt-to-Worth Ratio to be at greater risk of distress due to high interest rates. Include the following:

Table 4 Traditional practice to evaluate financial performance and distress

Firms traditional practice to deal with Evaluation of Financial performance and distress .	Number of respondents	Number of respondent in present.
Reduce their Debt-to-Worth Ratio	10	100%
Monitoring the works by Internal Auditor jointly with project manager.	6	60%
Acquisition of Performance security.	9	90%
Giving timely solution upon occurrence, as much as practicable.	8	80%
Quarterly, semiannually and annually evaluate the financial position of the firm.	7	70%
Application of EVM (Earned value management) for each project.	8	80%

As it is indicated in the Table 4, ten respondents were asked "what are firms traditional practice to deal with evaluation of financial performance and distress". And 100% of the respondents replied they reduce their Debt-to-Worth ratio, 60% of the respondents replied monitoring the works by internal auditor jointly with project manager, 90% of the respondents replied acquisition of performance security,80% of the respondents replied giving timely solution upon occurrence, as much as practicable, 70% of the respondents replied quarterly, semiannually and annually evaluate the financial position of the firm and 80% of the respondents replied application of EVM (Earned value management) for each

project are firms traditional practice to deal with evaluation of financial performance and distresses.

Table 5 The main impediments to establish the formal financial performance and distress

The main impediments to establish the formal financial performance and distress prediction system, according to the Respondents, include:	Number of respondents	Number of respondent in present.
More engagement in routine works.	8	80%
Lack of Organizational structure for financial performance and bankruptcy prediction.	6	60%
Lack of Financial performance and bankruptcy prediction experts.	7	70%
Lack of know-how in Financial performance and distress prediction.	10	100%
• Lack of initiatives.	9	90%

As it is indicated in the Table 5, ten respondents were asked, "what are firms the main impediments to establish the formal financial performance and distress prediction system". And 80% of the respondents replied more engagement in routine works, 60% of the respondents replied lack of organizational structure for financial performance and bankruptcy prediction, 70% of the respondents replied lack of financial performance and bankruptcy prediction experts, 100% of the respondents replied lack of know-how in financial performance and distress prediction, and 90% of the respondents replied lack of initiatives are firm's main impediments to establish the formal financial performance and distress prediction system.

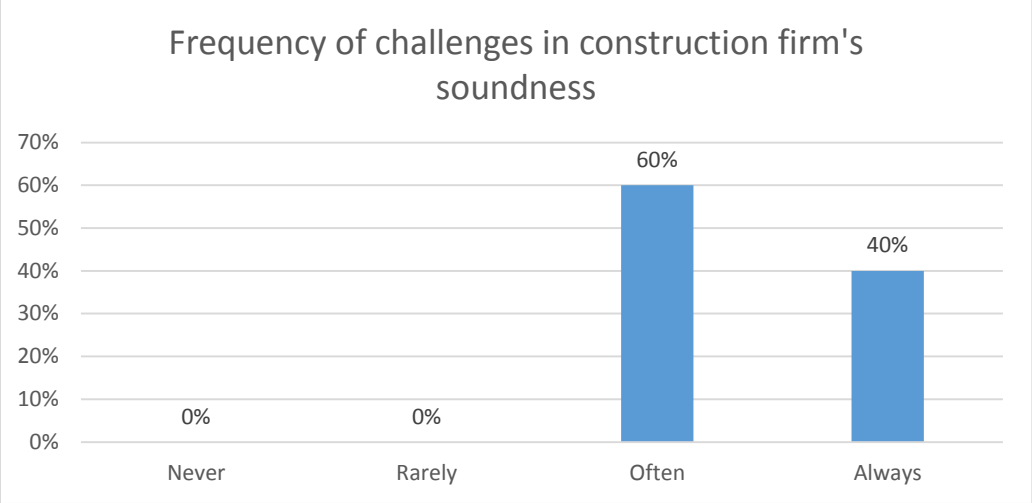


Figure 3 Challenges in construction firm's soundness

From often to always response category, 100% of the respondents believe that there is a shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets in the Ethiopian construction sector. Therefore, either of the above challenges can be taken as one of the big challenges of the Grade one private building construction industry that should be fought in a holistic manner.

According to the respondent, the main reason for either of listed challenges were caused by the small capital the firm had during its start; delays in receiving payments; smaller profits due to higher prices of building materials; low price of contracts; and contractor delays in the completion of the project. Other factors included less efficient management of assets; acquisition of fixed assets at high rates; and no cash flow planning.

The **main impediments** to control Shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets.

According to the respondents,

- Lack of initiatives.
- Lack of know-how to how to manage a company Cash flow in an effective and efficient manner.

- Unforeseen changes in jobsite conditions, a death or illness of a key employee, rising interest rates on a bank loan, oil and materials price increases, subcontractor management problems.
- All respondents agree about the potential construction companies seems to be in a dilemma regarding the sustainability as well as a challenge for the success in the construction sector. So, many construction sector start another business as an alternative, the influence of these businesses would affect the construction project Cash Flow, change contractors focus form professional thinker to profit pursuer. As a result, the project will not be finished on time, lack quality standards, and need extra budget this will lead the firm to financial distress.

4.3. Profitability Ratio

Profitability ratios designate a company's overall efficiency and performance. It measures the company how to use of its assets and control of its expenses to generate an acceptable rate of return. It also used to examine how well the company is operating or how well current performance compares to past records of the selected Grade one private building contractor's company.

There are three important profitability ratios that will be analyzed:

1. Net Profit Margin
2. Gross Profit Margin
3. Return on Equity

4.3.1. Net Profit Margin

The net profit margin is determined of net profit after tax to net sales. It argues that how much of the sales are changeover after all expenses. The higher net profit margins are the better for any construction company.

$$Net\ Profit\ Margin = \frac{Net\ Profit\ After\ Tax}{Sales} * 100\%$$

Table 6 Net Profit Margin Ratio

Net profit Margin Ratio						
Year	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E	lower range
2017	0.07	0.06	0.03	0.06	0.03	0.05
2016	0.09	0.10	0.08	0.05	0.04	0.05
2015	0.10	0.08	0.08	0.08	0.04	0.05
2014	0.09	0.06	0.06	0.07	(0.00]	0.05
2013	0.15	0.07	0.06	0.12	0.01	0.05
Average	**0.10**	**0.07**	**0.06**	**0.07**	**0.02**	0.05

Analysis: In this analysis the researcher can see that the net profit margin of Contractor C in 2017 and Contractor E throughout the reporting period is below 5%. But the rest of the companies are above 5% in each of money collected by a company as revenue translates into profit.

As a result, company whose net profit below 5% is not in standard position. The researcher also sees that Contractor C except in 2017 and Contractor (A, B, D) throughout the reporting years are in good position because the company's net profit and sales is a little bit more than 5%.

4.3.2 Gross Profit Margin

Gross profit margin expresses of the company efficiency of raw material and labor during the working process. If any companies have a higher gross profit margin than other company, it would have more efficiency to control their raw material and labors. So it is most important for performance evaluation of the construction company. It can be assigned to single products or an entire company. It determines the gross profit to divide by net sales. The gross profit margin ratio formula as follows:

$$Gross\ Profit\ Margin\ Ratio = \frac{Gross\ Profit}{Sales} * 100\%$$

Table 7 Gross Profit Margin Ratio

Gross Profit Margin ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower range
2017	0.16	0.09	0.11	0.10	0.08	0.2
2016	0.18	0.09	0.13	0.11	0.10	0.2
2015	0.21	0.13	0.14	0.14	0.09	0.2
2014	0.19	0.12	0.10	0.13	0.06	0.2
2013	0.23	0.15	0.09	0.17	0.07	0.2
Average	**0.19**	**0.11**	**0.11**	**0.13**	**0.08**	**0.20**

Analysis: In this analysis, the researcher can see that the gross profit margin of all contractors except Contractor A in 2013 and 2015 are below 20%. To increase gross profit margin, they should try to decrease their expenses. As a result, a company whose gross profits below 20% are not in standard position. Instead, the researcher also can see that all Contractors except Contractor A during 2013 and 2015 throughout the reporting years are not in a good position because the company's gross profit and sales is less than 20%. Therefore, don't just price their works to match competition. Instead, find out what the competition offers, and then offer something better, consider asking their supplier for lower prices via purchase more product in bulk, and reduce inventory wastage. Contractors lose a lot of money due to wasted inventory.

4.3.3 Return on Equity

Return on Equity is computed by dividing net income less preferred dividends by average company net worth. It demonstrates how a company to generate earnings growth for uses investment fund. It has some alternative name such Return on average common equity, return on net worth, Return on ordinary net worth's ' fund.

$$Return\ on\ Equity = \frac{Net\ Income}{Common\ Stockholders} * 100\%$$

Table 8 Return on Equity

Return on Equity						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	0.40	0.10	0.03	0.05	0.66	0.15
2016	0.42	0.17	0.09	0.17	0.41	0.15
2015	0.55	0.15	0.12	0.15	0.51	0.15
2014	0.38	0.17	0.13	0.08	[0.02]	0.15
2013	0.62	0.22	0.19	0.17	0.18	0.15
Average	**0.47**	**0.16**	**0.11**	**0.12**	**0.35**	**0.15**

Analysis: In this analysis, the researcher can see that the Return on Equity of contractors B, and D in 2017, contractor C in 2017, 2016, 2015 and 2014, and contractors D, E in 2014 are below 15%. But Contractor A throughout reporting period can manage its ROE effectively in using equity financing to fund operations and grow the company. To increase Return on equity, Companies can finance themselves with debt and equity capital. By increasing the amount of debt capital relative to its equity capital, a company can increase its return on equity. As a result, company whose ROE is less than 15% are not in standard position. And contractors whose ROE are below 15%, should finance themselves either with debt or equity capital.

4.4 Liquidity ratio

Liquidity ratio refers to the ability of a company to interact its assets that are most readily converted into cash. Assets are converted into cash in a short period of time that are concerns to liquidity position. However, the ratio made the relationship between cash and current liability.

There are three important Liquidity ratios that the researcher has to analyze:

1) Current ratio

2) Quick ratio or acid test

3) Current Assets to Total Assets Ratio

4.4.1 Current ratio

The current ratio is calculated by dividing current assets by current liabilities. Current asset includes inventory, trade debtors, advances, deposits and repayment, investment in marketable securities in short term loan, cash and cash equivalents, and current liabilities are comprised short term bank loan, long term loans-current portion, trade creditor liabilities for other financial etc. Generally, the current ratio is acceptable of short term creditors for any company. The formula is shown as below:

$$Current\ Ratio = Current\ Assets/Current\ Liabilities$$

Table 9 Current Ratio

Current Ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	0.41	0.26	1.59	1.08	1.00	1.00
2016	0.40	0.13	1.54	0.99	1.04	1.00
2015	0.81	0.15	1.47	1.07	1.03	1.00
2014	0.58	0.14	1.32	1.15	0.97	1.00
2013	2.13	1.90	1.08	1.17	1.00	1.00
Average	**0.87**	**0.52**	**1.40**	**1.09**	**1.01**	1.00

Analysis: In this analysis the researcher can see that the Current ratio of Contractor A and B in 2013, and contractor D throughout the reporting period, except in 2016, contractor E throughout the reporting period, except in 2014, and contractor C throughout the reporting period are above 1.0 times current liabilities are covered by current assets. The rest of the reporting period all contractors can have enough current assets to meet the payment schedule of current liabilities with a margin of safety. For those of who were scored below 1.0 times, to increase current ratio, the construction companies shall improve through exercising either of the following options Paying down debt, acquiring a long-term loan and selling a fixed asset.

4.4.2 Quick ratio or acid test

Quick ratio or acid test ratio is estimating the current assets minus inventories then, divide by current liabilities. It is easily converted into cash at turn to their book values and it also indicates the ability of a company to use its near cash.

The formula of quick ratio or acid test ratio are as follows:

$$Quick\ Ratio = \frac{Current\ Assets - Inventories}{Current\ Liabilities}$$

Table 10 Quick Ratio

Quick Ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	0.41	0.26	1.53	0.98	0.94	0.5
2016	0.40	0.13	1.50	0.92	0.96	0.5
2015	0.81	0.15	1.43	0.95	0.97	0.5
2014	0.58	0.12	1.26	1.05	0.94	0.5
2013	2.13	1.63	1.04	1.13	0.92	0.5
Average	**0.87**	**0.46**	**1.35**	**1.01**	**0.95**	0.5

Analysis: In this analysis the researcher can see that the Quick ratio of Contractor A, B, C, D and E throughout the reporting period except contractor A during 2016 and 2017, and Contractor B, from 2014 up to 2017, are above 0.5. So, the company has no enough quick assets to pay for its current liabilities during this time. And Contractor C through reporting period can have good Quick assets (cash and cash equivalents, marketable securities, and short-term receivables) that can be converted very easily into cash. Hence, companies with good quick ratios are favored by creditors.

As a result, all contractors except Contractor C. Shall follow either of three options Increasing sales can improve their inventory turnover, which can increase a company's cash on hand. And because cash is the most liquid asset, the better the company is at

increasing its sales or improving inventory turnover, the more cash will be available for the company to meet its short-term obligations, reducing the collection period of accounts receivable will have a direct and positive impact on a company's quick ratio. When the collection period is shorter, it can help boost a company's incoming cash flow. The probability of encountering long-term debtors, and bad debts are reduced. And the contractors can be keeping the company's liabilities under controlled is essential to improving the quick ratio. Current liabilities are in the denominator of the quick ratio, and keeping them low will put their business in a better position.

4.4.3 Current Assets to Total Assets Ratio (CATA)

It indicates the extent of total funds invested for the purpose of working capital and throws light on the importance of current assets of a firm. It should be worthwhile to observe that how much of that portion of total assets is occupied by the current assets, as current assets are essentially involved in forming working capital and also take an active part in increasing liquidity.

The formula of Current Assets to Total Assets Ratio are as follows:

$$\text{CATA} = \frac{\text{Current Assets}}{\text{Total Assets}}$$

Table 11 Current Asset to total Asset ratio

Current Assets to Total Assets Ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	0.32	0.10	0.90	0.53	0.95	0.60
2016	0.28	0.06	0.89	0.78	0.94	0.60
2015	0.58	0.08	0.87	0.58	0.92	0.60
2014	0.36	0.08	0.83	0.63	0.92	0.60
2013	0.69	0.39	0.79	0.47	0.88	0.60
Average	**0.45**	**0.14**	**0.86**	**0.60**	**0.92**	**0.60**

Analysis: In this analysis the researcher can see that the Current Assets to Total Assets Ratio of Contractor A throughout the reporting period, except in 2013, Contractor B, and contractor D in 2013, 2015 and 2017 are under 0.6. So, current assets to total assets (CATA) results indicate that the company has a heavier investment in fixed assets because the ratios in all the stated year were below the recommended range. This simply confirmed the company's background, that is, involves majorly in Machine intensive works. And, Contractor E, Contractor A in 2013 and Contractor D during 2014 and 2016 are above 0.6. So, the researcher observes companies invest in high-current assets, the risk decreases because of high liquidity.

As a result, contractors whose Current asset to total asset ratio below 0.6 would have understood most of its assets tied up in long-term assets, such as fixed and other assets. So, the stated contractors shall either acquire a long-term loan or sell a fixed asset.

4.5 Working Capital Ratios

Net working capital is a measure of liquidity. It shows how much short-term resources the company would have in continuing its operations if it had to settle all of its current liabilities. Working capital ratio is talking about utilization of working capital for the firm. A high net working capital is a good sign for the company. However, excessive current assets may not be so good after all. They could have been invested in more productive assets. There are three important working capital ratios that are to be analyzed:

4.5.1 Working Capital Turnover

Working capital turnover is a ratio which measures how efficiently a company is using its working capital to support a given level of sales. Also referred to as net sales to working capital, it shows the relationship between the funds used to finance a company's operations and the revenues a company generates as a result.

The formula of working Capital turnover is as follow as:

$$Working\ Capital\ Turnover = \frac{Revenue}{Working\ Capital}$$

Table 12 Working Capital tur over ratio

Working Capital Turnover						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	(3.11)	(2.98)	1.25	12.62	(377.27)	8
2016	(3.42)	(2.25)	1.42	(106.24)	23.89	8
2015	(11.30)	(1.82)	2.29	20.63	38.17	8
2014	(6.48)	(1.88)	4.23	4.23	(23.71)	8
2013	7.54	9.86	14.54	14.54	682.81	8
Average	**(3.35)**	**0.19**	**4.74**	**(10.84)**	**68.78**	**8**

Analysis: In this analysis the research can see that the Working Capital turnover ratio of Contractor A and B from 2014 to 2017, Contractor D in 2016, and Contractor E in 2014 and 2017 are negative signed. Because the current liability is greater than the current asset, the companies during stated period have not enough current assets to meet the payment schedule of current liabilities with a margin of relative safety.

The working capital turnover ratio of Contractor C and B in 2013, Contractor D in 2013, 2015, and 2017 and Contractor E in 2013, 2015 and 2016 are above 8. A high turnover ratio shows that management is being very efficient in using a company's short-term assets and liabilities for supporting sales, i.e., It is generating a higher amount of sales for every expense of the working capital used.

The Return on working capital of Contractor A in 2013, Contractor C, from 2014 to 2017, and Contractor D in 2014 are under 8. A low ratio may indicate that a business is investing in too many accounts receivable and inventory to support its sales, which could lead to an excessive amount of bad debts or obsolete inventory. Because the current liability is greater than the current asset, the companies during stated period have not enough current assets to meet the payment schedule of current liabilities with a margin of safety.

As a result, to gauge just how efficient a company is at using its working capital, contractors also compare working capital ratios to those of other companies in the same industry, and

look at how the ratio has been changing over time. However, such comparisons are meaningless when working capital turns negative, because the working capital turnover ratio then also turns negative. And if the working capital turnover ratio is under 8 the contractors should collect its Account receivable and convert its inventory in to payment.

4.5.2 Net Profit to Working Capital Ratio

The return on working capital ratio compares the earnings for a measurement period to the related amount of working capital. This measure gives the user some idea of whether the amount of working capital currently being used is too high, since a minor return implies too large an investment. To calculate the return on working capital, divide earnings before interest and taxes for the measurement period by working capital.

The formula of Return on working capital is as follows:

$$Return\ on\ Working\ Capital = \frac{\left({}^{Profit}/_{Loss\ Before\ Interest\ and\ Taxes}\right)}{Current\ Assets - Current\ Liabilities}$$

Table 13 Net Profit to working Capital ratio

Net Profit to Working Capital Ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower rang
2017	(0.20)	(0.18)	0.04	0.70	(10.52)	0.4
2016	(0.30)	(0.22)	0.12	(5.58)	0.92	0.4
2015	(1.18)	(0.15)	0.18	1.70	1.56	0.4
2014	(0.55)	(0.11)	0.24	0.45	0.04	0.4
2013	1.15	0.72	0.86	1.44	9.83	0.4
Average	**(0.22)**	**0.01**	**0.29**	**(0.26)**	**0.37**	**0.40**

Analysis: In this analysis the research can see that the Return on working capital of Contractor A and B from 2014 to 2017, Contractor D in 2016, and Contractor E in 2017 are negative signed. Because the current liability is greater than the current asset, the companies during stated period have not enough current assets to meet the payment schedule of current liabilities with a margin of safety.

The working capital turnover ratio of Contractor A, B, and C in 2013, contractor D throughout the reporting period, except in 2016, and Contractor E in 2013, 2015 and 2016 are above 40%. A high Return on working capital shows that management is being very efficient in using a company's short-term assets and liabilities for supporting sales, i.e., It is generating a higher amount of Net profit for every expense of the working capital used. The return on working capital of Contractor C throughout the reporting period, except in 2013, and Contractor E in 2014 are under 40%. A low ratio may indicate that a business is investing in too many accounts receivable and inventory or the company have a considerable amount of expenses to generate income which could lead to an excessive amount of bad debts or obsolete inventory. Because the current liability is greater than the current asset, the companies during stated period have not enough current assets to meet the payment schedule of current liabilities with a margin of safety.

As a result, to measure just how efficient a company is at using its return on working capital, contractors also compare working capital ratios to those of other companies in the same industry, and look at how the ratio has been changing over time. However, such comparisons are meaningless when return on working capital turns negative, because the working capital turnover ratio then also turns negative. And if the return on working capital is below 40%, the contractors either should collect its Account receivable and convert its inventory in to payment or reduce its overhead expenses.

4.5.3. Degree of Fixed Asset Newness

The degree of fixed asset newness is a measurement of how new a company's assets are. The degree of fixed asset newness is calculated as follows:

Degree of Fixed Asset Newness = Net Fixed Assets /Total Fixed Assets

Remembering that the net fixed assets equals the total assets at their purchase price less the depreciation taken; the degree of fixed asset newness represents the percentage of the asset's original value that has not depreciated. The land should not be used in these calculations because land does not depreciate.

Table 14 Degree of Fixed Asset newness

Degree of Fixed Asset Newness						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Lower range
2017	0.61	0.71	0.29	0.72	0.31	0.4
2016	0.48	0.74	0.31	0.52	0.36	0.4
2015	0.58	0.76	0.40	0.61	0.40	0.4
2014	0.66	0.82	0.47	0.60	0.46	0.4
2013	0.50	0.70	0.58	0.70	0.50	0.4
Average	**0.57**	**0.75**	**0.41**	**0.63**	**0.41**	**0.4**

Analysis: In this analysis the researcher can see that, except the Degree of fixed assets newness (DFAN) of Contractor C and Contractor E in 2016 and 2017, all contractors are above 40%.

Degree of fixed assets newness (DFAN) shown that the company procure a lot of new equipment. Contractor A in 2014 and 2017, Contractor B throughout the reporting period, Contractor D in 2013,1015 and 2017, with a ratio of DFAN greater than 60% indicate that it has a significant new number of equipment, which is often accompanied by a large loan payment and investment of capital in equipment. Contractor C and E during 2016 and 2017 have a degree of the fixed asset newness ratio less than 40%. A company with a degree of the fixed asset newness ratio less than 40% would have a lot of older equipment, often indicating that the company will need to invest heavily in fixed assets to maintain its operations. As a reminder, the depreciation method used when preparing the financial statements should be matched to the actual depreciation of the equipment.

As a result, a good target range for a construction company is between 60% and 40% or near the middle. A company with a degree of fixed asset newness ratio greater than 60% would have a lot of new, shiny equipment, which is often accompanied by large loan payments and represents a large investment of capital in equipment. A company with a degree of the fixed asset newness ratio less than 40% would have a lot of older equipment,

often indicating that the company will need to invest heavily in fixed assets to maintain its operations.

4.6 Solvency /Capital structure ratio.

The capital structure is how a firm finances its overall operations and growth by using different sources of funds. Debt comes in the form of bond issues or long-term notes payable, while equity is classified as common stock, preferred stock or retained earnings. Short-term debt, such as working capital requirements is also considered to be part of the capital structure.

4.6.1. Total Debt to Equity ratio

Debt is one of the two main ways companies can raise capital in the capital markets. Companies like to issue debt because of the tax advantages. Interest payments are tax deductible. Debt also allows a company or business to retain ownership, unlike equity. Additionally, in times of low interest rates, debt is abundant and easy to access. Equity is more expensive than debt, especially when interest rates are low. However, unlike debt, equity does not need to be paid back if earnings decline. On the other hand, equity represents a claim on the future earnings of the company as a part owner.

The formula for calculating the D/E ratio is:

$$\frac{D}{E}\ Ratio = \frac{Total\ Liability}{Equity}$$

Table 15 Debt to Equity Ratio

Total Debt to Equity ratio						
Year	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E	Upper range
2017	3.34	1.01	1.32	0.96	28.13	2.5
2016	2.35	1.16	1.38	3.77	12.63	2.5
2015	2.48	1.48	1.44	1.19	12.43	2.5
2014	1.67	2.13	1.72	1.22	18.12	2.5
2013	0.48	0.71	2.64	0.68	10.38	2.5
Average	**2.06**	**1.30**	**1.70**	**1.56**	**16.34**	**2.50**

Analysis: In this analysis the researcher can see that, Contractor E throughout the Reporting period is extremely relying on their debt as compared to capital a borrower that cannot pay back its debt obligations is at considerable risk of entering bankruptcy protection. Contractor A in 2017 and Contractor C in 2013 and Contractor D 2016, the D/E ratio is above 2.5. So, the companies during this period are relatively dependent on debt financing. Such Companies that use more debt than equity to finance assets have a high leverage ratio and an aggressive capital structure. For the rest of the Contractors, the D/E ratio is under 2.5. So, the companies during this period are not relatively dependent on debt financing. A company that pays for assets with more equity than debt has a low leverage ratio and a conservative capital structure.

As a result, a high D/E ratio and/or an aggressive capital structure can also lead to higher growth rates, whereas a conservative capital structure can lead to lower growth rates. It is the goal of company management to find the optimal mix of debt and equity, also referred to as the optimal capital structure. But, Bank loan officers will generally consider a company with a high Debt-to-Worth Ratio to be at greater risk. Debt-to-Worth Ratios will vary with the type of business and the risk attitude of management.

4.6.2. Leverage ratio

Leverage ratios are used to determine the relative level of debt load that a business has incurred. These ratios compare the total debt obligation to either the assets or equity of a business. A high ratio indicates that a business may have incurred a higher level of debt than it can be reasonably expected to service with ongoing cash flows.

Total Asset to equity ratio. Compares equity to Total Asset, and is calculated as total debt plus Total Equity divided by total equity. A high ratio indicates that the business owners may not be providing sufficient equity to fund a business.

The formula for calculating the Leverage ratio is:

$$Leverage\ Ratio = \frac{Total\ Debt}{Total\ Asset}$$

Table 16 Leverage Ratio

Leverage ratio						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Upper range
2016	3.35	2.16	2.38	4.77	13.63	3.5
2015	3.48	2.48	2.44	2.19	13.43	3.5
2014	2.67	3.13	2.72	2.22	19.12	3.5
2013	1.48	1.71	3.64	1.68	11.38	3.5
2017	4.34	2.01	2.32	1.96	29.13	3.5
Average	**3.06**	**2.30**	**2.70**	**2.56**	**17.34**	**3.50**

Analysis: In this analysis the researcher can see that, Contractor E throughout the Reporting period is extremely relying on their debt as compared to capital a borrower that cannot pay back its debt obligations is at considerable risk of entering bankruptcy protection. Contractor A in 2017 and Contractor C in 2013 and Contractor D 2016, the Leverage ratio is above 3.5. So, the companies during this period are relatively dependent on debt financing. Such Companies that use more debt than equity to finance assets have a high leverage ratio and an aggressive capital structure. For the rest of the Contractors, the Leverage ratio is under 3.5. So, the companies during this period

are not relatively dependent on debt financing. A company that pays for assets with more equity than debt has a low leverage ratio and a conservative capital structure.

As a result, a high leverage ratio and/or an aggressive capital structure can also lead to higher growth rates, whereas a conservative capital structure can lead to lower growth rates. It is the goal of company management to find the optimal mix of debt and equity, also referred to as the optimal capital structure. But, Bank loan officers will generally consider a company with a high Total Asset-to-Worth Ratio to be at greater risk. Total Asset-to-Worth Ratios will vary with the type of business and the risk attitude of management as of Debt- to- Equity ratio.

4.7 Operating efficiency /Activity ratio.

Activity ratios measure a firm's ability to convert different accounts within its balance sheets into cash or sales. Activity ratios measure the relative efficiency of a firm based on its use of its assets, leverage, or other similar balance sheet items and are important in determining whether a company's management is doing a good enough job of generating revenues and cash from its resources.

There are five important activity ratios that the researcher thought to be analyzed:

1. Average age of Material inventory.
2. Average age of Account receivable.
3. Average age of Account payable.
4. Cash Conversion cycle.
5. Return on Asset (ROA)

4.7.1 Average age of Material inventory.

The average age of inventory is the average number of days it takes for a firm to sell off inventory. It is a metric that analysts use to determine the efficiency of sales.

Formula for calculating Average age of material inventory is:

$$Average\ Age\ of\ Material\ Inventor = \frac{Material\ Inventory}{Material\ Costs} * 100\%$$

Table 17 Average Material Inventory

Average age of Material Inventory						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Upper range
2017	-	-	34.21	158.27	54.43	30
2016	-	0.15	23.45	56.73	70.76	30
2015	-	0.45	13.66	57.99	76.02	30
2014	-	4.50	15.20	94.68	26.08	30
2013	-	13.00	12.73	17.94	42.86	30
Average	**-**	**3.62**	**19.85**	**77.12**	**54.03**	**30.00**

Analysis: In this analysis the researcher can see that, Contractor A throughout the Reporting period and B in 2017 indicates the Zero Average age of Material inventory. A Zero Average age of Material inventory shows that a company may be no material inventory in the stock in the product line or marketing effort. It is a sign of ineffective inventory management. Inventory in construction projects, sometimes is considered as Account receivable because the contractor may be entitled, even if not yet incorporated in the permanent works provided that, Inventories/Accounts receivable are your customers' unpaid bills.

A receivable represents a sale that has already taken place; now you're just waiting for the customer to settle up. So, Contractor A and B in 2017 necessary considered Inventory as Account receivable because it has millions of material costs over reporting periods. And Contractor B and A except in 2017 indicate the low average age of material inventory, the amount of on-hand inventories a home builder keeps will depend substantially upon the types of homes he builds. Since both are Building contractors that are largely customized, the companies would likely keep a small inventory on hand, and would sub-contract most of the products they use in their construction period. Contractor C except in 2017, Contractor D except in 2013 and Contractor E in 2014 are under 30 days. Low Average age of Material inventory is considered a positive indicator of effective inventory management.

Apart from stated above are over 30 days. The Higher a company's average age of inventory means, the less profitable it is. A higher average age of inventory can indicate that a firm is not properly managing its inventory or that it has inventory that is difficult to collect payment.

As a result, Contractors business volumes are so subject to change with the seasons and as market conditions, it is vital that owners of businesses of this type maintain a healthy average age of material inventories. Individuals who own businesses of this type and keep an excessively large on-hand inventory run the risk of amassing debt that they cannot pay as work dries up with the season change or due to economic hardship.

4.7.2 Average age of Account receivable.

The age of your accounts receivable is a good indicator of the efficiency of your company accounts receivable. It is also gives you a good indication of which customers require collection attention.

Formula for calculating Average age of material account receivable is:

$$Average\ Age\ of\ Accounts\ Receivable = \frac{Accounts\ Receivable}{Revenue} * 365$$

Table 18 Average Age of Account Receivable

Average age of Account receivable						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Upper range
2017	161.73	24.63	609.03	331.96	392.50	45
2016	144.01	21.40	697.50	344.04	348.84	45
2015	136.23	34.26	457.88	220.47	317.29	45
2014	71.79	27.20	322.01	296.39	439.47	45
2013	87.79	63.07	301.82	187.09	213.81	45
Average	**120.31**	**34.11**	**477.65**	**275.99**	**342.38**	**45.00**

Analysis: In this analysis the researcher can see that, Contractor A, C, D, E throughout the reporting period and B in 2013 are over 30 days. High average age of Account receivables would be less favorable. Higher ratios mean that companies are collecting their receivables

less frequently throughout the year. But contractor B from 2014 to 2017 the average age of account receivable is under 30 days. Less average age of Account receivables would be more favorable. Smaller ratios mean that companies are collecting their receivables more frequently throughout the year.

Lastly, if a company can collect cash from customers' sooner, it will be able to use that cash to pay bills and other obligations sooner.

4.7.3 Average age of Account payable.

A company is paying its suppliers very quickly, it may mean that the suppliers are demanding fast payment terms, either because short terms are part of their business model or because they feel the company is too high a credit risk to allow longer payment terms. Formula for calculating Average age of material account receivable is:

$$Average\ Age\ of\ Accounts\ Payable = \frac{Accounts\ Payables}{Revenue} * 365$$

Table 19 Average age of Account payable

Average age of Account Payables						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Upper range
2017	161.62	111.67	474.06	365.92	385.07	45
2016	93.61	74.92	437.59	420.99	401.52	45
2015	83.61	131.63	306.71	243.06	332.25	45
2014	94.78	143.02	262.33	336.66	451.02	45
2013	18.49	24.09	292.52	150.17	273.88	45
Average	**90.42**	**97.07**	**354.64**	**303.36**	**368.75**	**45.00**

Analysis: In this analysis the researcher can see that, except Contractor A, and B, in 2013 all contractors Average age of Account payables is over 30 days. High average age of Account payables would be less favorable. If the number of days' increases from one period to the next, this indicates that the company is paying its suppliers more slowly, and

may be an indicator of worsening financial condition. A change in the number of payable days can also indicate altered payment terms with suppliers, though this rarely has more than a slight impact on the total number of days, since the terms must be altered for many suppliers to alter the ratio to a meaningful extent.

Lastly, if a company can pay cash for customers' sooner, your company's reputation and trustworthiness will intensify. In this study all contractors are known for late payments, they're likely to be distrusted by suppliers, financial service providers, and potential business partners.

4.7.4 Cash Conversion Cycle.

The Cash Conversion Cycle (CCC) is a metric that shows the amount of time it takes a company to convert its investments in inventory to cash. The cash conversion cycle formula measures the amount of time, in days, it takes for a company to turn its resource inputs into cash.

To calculate your Cash cycle, use the formula:

$$CCC = Accounts\ Receivable\ Days + Inventory\ Days\ on\ Hand - Account\ Payables\ Days$$

Table 20 Cash Conversion Cycle

Cash Conversion Cycle						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Upper Range
2017	0.11	(87.04)	34.21	124.32	61.86	45
2016	50.40	(53.38)	283.35	(20.22)	18.07	45
2015	52.62	(96.91)	164.83	35.40	61.07	45
2014	(22.98)	(111.32)	74.88	54.42	14.52	45
2013	69.30	51.97	22.03	54.85	(17.20)	45
Average	**29.89**	**(59.34)**	**115.86**	**49.76**	**27.66**	**45**

Analysis: In this analysis the researcher can see that, Contractor B, during the reporting period, except in 2013, Contractor A in 2014, Contractor D in 2016, and Contractor E in 2013 the cash conversion cycles are negative. i.e. The company is selling its products

faster, collecting payments quicker or taking longer to pay its outflow. Cash conversion cycle is negative, meaning it generates revenue from customers before it has to pay its suppliers for inventory, among other things, a negative cash conversion cycle is simply an interest free way to finance operations through borrowing from suppliers. A smaller result indicates a healthier cycle and High Cash conversion cycle time is less favorable.

Lastly, companies with High Cash conversion cycle time means, that the company is having difficulty collecting payment from customers. This is because AR is essentially a loan to the customer, so the company loses out whenever customers delay payment. The longer a company has to wait to be paid, the longer that money is unavailable for investment elsewhere. On the other hand, the company benefits by slowing down payment of AP to its suppliers, because that allows it to make use of the money longer.

Therefore, these three steps purchasing inventory, selling inventory and collecting accounts receivable are critical to the cash flow and profitability of your company. You, and only you, as the business owner have the ability to affect change in this number. You are responsible for directing how each of the steps is managed to maximize your return.

4.7.5 Return on Asset (ROA)

Return on Assets (ROA) is a type of return on investment (ROI) metric that measures the profitability of a business in relation to its total assets. This ratio indicates how well a company is performing by comparing the profit(net income) it's generating to the capital it's invested in assets. The higher the return, the more productive and efficient management is in utilizing economic resources. Below you will find a breakdown of the ROA formula and calculate.

ROA is calculated as per the following equation:

$$ROA = \frac{Annual\ Net\ Income}{Total\ Assets}$$

Table 21 Return on Asset

Return on Asset (ROA)						
Year	Contractor A	Contractor B	Contractor C.	Contractor D	Contractor E	Reference. Lower range
2017	0.09	0.05	0.01	0.03	0.02	0.02
2016	0.13	0.08	0.04	0.04	0.03	0.02
2015	0.16	0.06	0.05	0.07	0.04	0.02
2014	0.14	0.05	0.05	0.04	(0.00)	0.02
2013	0.42	0.13	0.05	0.10	0.02	0.02
Average	**0.19**	**0.07**	**0.04**	**0.05**	**0.02**	**0.02**

Analysis: The return on assets ratio of Contractor A is better than contractor B and Contractor B better than Contractor D, contractor C and Contractor E respectively. A negative return on Asset of Contractor E in 2014 indicates A negative return. This occurs when a company has a financial loss returns on an investment during a specific period of time. In other words, the business loses more money than it brings in and experiences a net loss. For instance, the average ROA of Contractor A is 0.19 this means 0.19 birr in profit is generated by each 1.00 birr in assets. When we compare this ratio to the historical performance profit generation of all contractors, there is some up and down on ROA ratio. The ROA ratio is typically used when comparing a company's performance between periods or when comparing different companies of similar size and industry to understand if it is an acceptable ratio or not. Therefore, Higher ROA indicates more asset efficiency.

Table 22 Summary of financial ratio, industry range for Listed construction companies

No	Ratio	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E	Range
R1	Quick ratio (QR)	0.87	0.46	1.35	1.01	0.95	0.5 to 1
R2	Current ratio (CR)	0.87	0.52	1.4	1.09	1.01	2 to 1
R3	Current Asset to total asset ratio	0.45	0.14	0.86	0.6	0.92	0.6 to0.8
R4	Gross profit margin Ratio	0.19	0.11	0.11	0.13	0.08	Minimum of 0.2
R5	Net profit Margin Ratio	0.1	0.07	0.06	0.07	0.02	Minimum of 0.05
R6	Return on Equity	0.47	0.16	0.11	0.12	0.35	0.15 to 0.4
R7	Average age of material inventory	-	3.62	19.85	77.12	54.03	30days
R8	Average Age of Accounts Receivable	120.31	34.11	477.65	275.99	342.38	45days
R9	Average Age of Accounts Payable	90.42	97.07	54.64	303.36	68.75	45days
R10	Cash conversion cycle	29.89	59.34)	15.86	49.76	27.66	45 days
R11	Return on Asset (ROA)	0.19	0.07	0.04	0.05	0.02	
R12	Total Debt to equity ratio	2.06	1.3	1.7	1.56	16.34	Maximum of 2.5
R13	Leverage ratio	3.06	2.3	2.7	2.56	17.34	Maximum of 3.5
R15	Working capital turn over	-3.35	0.18	4.74	-10.77	68.78	8 to 12
R16	Net profit to working capital	-0.22	0.01	0.29	-0.26	0.37	0.4 to 0.6
R17	Degree of Fixed Asset Newness	0.57	0.75	0.41	0.63	0.41	0.4 to 0.6

- Profitability is the performance indicator of companies. Gross profit margin of all contractors except Contractor A in 2013 and 2017 are below 20% this indicate almost all contractors have poor performance. As a result, company whose Gross profit below 20% will have a high probability of distress.
- Liquidity ratios have been analyzed and the desirable liquidity ratio of (1.3-2 times) are a good indicator of a company's position and among the sample chosen companies Contractor A, B, and E, are not meeting the standards of the desirable liquidity ratio. The answer is evident if someone is a shortfall of cash in the business. Furthermore, the operating cash flows for all companies are not healthy enough over the reporting years. The reasons may be multiple i.e. Poor control over liquidity and operations. Additionally, those companies need more investment in the form of debt or equity to carry on existing projects, and they need to make their operations more efficient by converting and collecting early and utilizing the collected cash in the operating cycle to earn more.
- Solvency ratios have been studied to observe the debt dependency of the companies. Higher Debt to equity ratio is undesirable and risky, and it is concluded that Contractor E, proved that, company whose debt to Equity ratio is greater than 2.5 and the company has a high probability of distress.
- Activity/Efficiency ratios have been scrutinized to trace the reasons of efficient or inefficient use of working capital as compared to other companies. Contractors A, C, D, and E, have High average age of Account receivables and this would be less favorable.

4.8 Financial Distress Condition

Financial distress is a condition where there is an inability of a company to meet its current liabilities that are due for example; trade payables, tax debt, short-term bank loans. According to many researchers the definition of financial distress divided into several types, namely economic failure, business failure, technical insolvency, insolvency in bankruptcy, and legal bankruptcy.

4.8.1 Altman Z-score model

To reiterate, according to Altman, a business with a z-score less than 1.8 implies certainty of imminent failure. However, a score between 1.8 and 2.7 is regarded as a gray area where companies are deemed to be at risk and a score greater than 2.7 indicates a potential for long term solvency.

Table 23 Altman Z-Score model

Altman Z score model					
Year	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E
2017	1.42	1.98	1.31	1.27	0.98
2016	1.72	1.79	1.41	0.98	1.04
2015	2.26	1.43	1.59	1.62	1.18
2014	2.34	1.22	1.63	1.63	0.75
2013	6.42	3.31	1.40	1.40	1.27
Average	**2.83**	**1.95**	**1.47**	**1.38**	**1.04**

The above financial analysis shows the financial situation of the five representative private building contractors in Ethiopia. By applying Altman (1993) Z-scoring, three contractors, namely Contractor A, D, E out of these five major companies in 2013 and 2017 exhibited a very high likelihood of imminent failure which with a distress score below 1.8.

The distress ratios recorded in these major construction firms are quite alarming, signaling a critical situation for the construction industry. Contractor B, had an average z-score 1.95 during 2013 to 2017 period, in between, about 1.8 and 2.7 is regarded as a gray area where Contractor B is deemed to be at risk.

Despite the average z-score over the past five years indicate a declining trend. Contractor C during 2013 the company is probably safe from bankruptcy, but this is not continuing for the rest of the periods, in 2014 and 2015 the Z-Score is in between of 1.8 and 2.7 regarded as a gray area where Contractor C is deemed to be at Risk. Moreover, in 2016 and 2017 the Z-Score being 1.72 and 1.42 respectively, which reveals a very high likelihood of imminent failure which with a distress score below 1.8.

4.8.2 Springate model

This model was developed in 1978 by the Gorgon LV Springate. Springate model is a model that uses the ratio of multiple discriminant analysis (MDA). In the MDA method takes more than one financial ratio related to the bankruptcy of the company to establish a good model. To determine the ratios anywhere that can detect the possibility of bankruptcy, Springate use MDA to choose 4 ratios of 15 financial ratios were popular in the literature, which was able to distinguish between sound business insolvent and bankrupt. Score Criteria of Springate Method

$$\boldsymbol{S\ Score < 0.862 \rightarrow Classified\ as\ potential\ company\ bankrupt}$$

$$\boldsymbol{S\ Score > 0.862 \rightarrow Classified\ as\ a\ healthy\ company};$$

Table 24 Springate model

Springate Model					
Year	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E
2017	0.45	0.29	0.57	0.35	0.41
2016	0.65	0.32	0.66	0.40	0.47
2015	1.10	0.14	0.75	0.65	0.54
2014	1.00	0.10	0.74	0.74	0.25
2013	3.64	1.73	0.62	0.62	0.49
Average	**1.37**	**0.52**	**0.67**	**0.55**	**0.43**

Analysis: The above financial analysis shows the financial situation of the five representative private building contractors in Ethiopia. By applying Springate model, four contractors, namely Contractor B, A, D, E out of these five major companies in 2013 and 2017 exhibited a very high likelihood of imminent failure which with a distress S-score below 0.862. The distress ratios recorded in these major construction firms are quite alarming, signaling a critical situation for the construction industry. Contractor B, had S-score 1.73 during 2013 and it was probably safe from bankruptcy. Unfortunately, from 2014 to 2017 decline dramatically and becomes below 0.862 where Contractor B is deemed to be at risk. Contractor C during 2013 to 2015 the company is probably safe from bankruptcy, but this is not continuing for the rest of the period, in 2016 and 2017 the S-Score being 0.65 and 0.45 respectively, which reveals a very high likelihood of imminent failure which with a distress score below 0.862.

4.8.3 Zmijewski Model

The expansion of the study in bankruptcy prediction was carried out by Zmijewski (1983) which added the validity of financial ratios as a detection tool for corporate financial failures. The calculation result of Zmijewski method used cut-off score. If the score was >0 (zero), the companies were predicted to go bankrupt. However, if the score was <0 (zero), the companies were classified as healthy companies.

Table 25 Zmijewski Model

Zmijewski Model					
Year	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E
2017	(0.19)	(1.60)	(1.07)	(1.59)	1.14
2016	(0.69)	(1.48)	(1.12)	0.09	0.90
2015	(0.72)	(1.09)	(1.10)	(1.37)	0.86
2014	(1.19)	(0.59)	(0.85)	(1.29)	1.11
2013	(3.70)	(2.36)	(0.33)	(2.32)	0.85
Average	**(1.30)**	**(1.43)**	**(0.90)**	**(1.29)**	**0.97**

Analysis: the above financial analysis shows the improving financial situation of the five representative contractors in Ethiopia. By applying Zmijewski, only one company out of these five major companies in 2014 to 2017 exhibited a very high likelihood of imminent failure which with a distress score above 0. Conversely, throughout the reporting period Contractor C, B, and A are indicated that the companies are healthy, Moreover, Contractor D except in 2016 are a potentially healthy company (not potentially bankrupt).

4.8.4 Hypothesis testing

The hypothesis is the answer to a problem. Therefore, it needs to be tested in its truth through a research of data analysis. According [60], hypothesis are a temporary answer to the formulation of research problems that have been expressed in the form of a question sentence. It is said temporarily because the answer given is based on relevant theory, it is not yet based on the empirical facts which are obtained through data collection.

- **Hypothesis testing one**

1. H0: There are no different on the average of distress prediction analysis result between Altman Z-score, Springate, and Zmijewski model in Grade one private building construction companies.

2. H1: There are some differences on the average of distress prediction analysis result between Altman Z-score, Springate, and Zmijewski model in a model in Grade one private building construction companies.

Using a comparative research approach. Comparative research is a research that is comparing the problem of an object with other objects. In this study, the variables are self-sufficient but for more than one sample or at different times. The technique to collect data in this study is documentation that is by collecting, recording, and reviewing secondary data in the form of financial statements of companies that are Audited by Authorized body. With data financial statements used from 2013 to 2017. This study uses Different Test Technique of mean/K sample independent test/kruskal-wallis test. Kruskal-Wallis is used to analyze the mean differences of "more than two" sample groups that are unrelated to each other. After doing a different test, then do the calculation to find the predicted model of bankruptcy, which is the most accurate by using accuracy level and Error type.

The accuracy level shows the proximity of the measured results to the true value.

$$Accuracy\ Rate = \left({Correct\ Number\ of\ Predictions}/{Number\ of\ Samples}\right) * 100\%$$

$$Type\ Error = \left({Number\ of\ Errors}/{Number\ of\ Samples}\right) * 100\%$$

Table 26 The calculation of Altman z-score model

Year	Company	X1	X2	X3	X4	X5	Z-Score	Code	Rank
2017	Contractor A	(0.45)	0.06	0.09	0.30	1.40	1.42	1	2
	Contractor B	(0.29)	0.50	0.05	0.99	0.87	1.98	1	2
	Contractor C	0.33	0.00	0.01	0.76	0.42	1.31	1	2
	Contractor D	0.04	0.02	0.03	1.04	0.49	1.27	1	2
	Contractor E	(0.00)	0.06	0.02	0.04	0.81	0.98	1	2
2016	Contractor A	(0.42)	0.08	0.13	0.43	1.44	1.72	1	2
	Contractor B	(0.36)	0.46	0.08	0.86	0.80	1.79	1	2
	Contractor C	0.32	0.02	0.04	0.73	0.45	1.41	1	2
	Contractor D	(0.01)	0.02	0.04	0.27	0.68	0.98	1	2
	Contractor E	0.03	0.05	0.03	0.08	0.79	1.04	1	2
2015	Contractor A	(0.13)	0.10	0.16	0.40	1.52	2.26	1	2
	Contractor B	(0.41)	0.40	0.06	0.68	0.75	1.43	1	2
	Contractor C	0.28	0.03	0.05	0.69	0.63	1.59	1	2
	Contractor D	0.04	0.03	0.07	0.84	0.80	1.62	1	2
	Contractor E	0.02	0.04	0.04	0.08	0.93	1.18	1	2
2014	Contractor A	(0.26)	0.09	0.14	0.60	1.69	2.34	1	2
	Contractor B	(0.46)	0.32	0.05	0.47	0.87	1.22	1	2
	Contractor C	0.20	0.03	0.05	0.58	0.84	1.63	1	2
	Contractor D	0.08	0.02	0.04	0.82	0.57	1.31	1	2
	Contractor E	(0.03)	0.04	(0.00)	0.06	0.70	0.75	1	2
2013	Contractor A	0.37	0.41	0.42	2.09	2.77	6.42	1	1
	Contractor B	0.18	0.01	0.13	1.42	1.80	3.31	1	1
	Contractor C	0.06	0.05	0.05	0.38	0.87	1.40	1	2
	Contractor D	0.07	0.07	0.10	1.48	0.87	2.26	1	2
	Contractor E	0.00	0.06	0.02	0.10	1.07	1.27	1	2

Table 27The calculation of Springate model

Year	Company	X1	X2	X3	X4	Z-Score	Code	Rank
2017	Contractor A	(0.45)	0.09	0.12	1.40	0.45	2	2
	Contractor B	(0.29)	0.05	0.13	0.87	0.29	2	2
	Contractor C	0.33	0.01	0.02	0.42	0.57	2	2
	Contractor D	0.04	0.03	0.05	0.49	0.35	2	2
	Contractor E	(0.00)	0.02	0.02	0.81	0.41	2	2
2016	Contractor A	(0.42)	0.13	0.18	1.44	0.65	2	2
	Contractor B	(0.36)	0.08	0.19	0.80	0.32	2	2
	Contractor C	0.32	0.04	0.06	0.45	0.66	2	2
	Contractor D	(0.01)	0.04	0.05	0.68	0.40	2	2
	Contractor E	0.03	0.03	0.03	0.79	0.47	2	2
2015	Contractor A	(0.13)	0.16	0.22	1.52	1.10	2	1
	Contractor B	(0.41)	0.06	0.12	0.75	0.14	2	2
	Contractor C	0.28	0.05	0.09	0.63	0.75	2	2
	Contractor D	0.04	0.07	0.12	0.80	0.65	2	2
	Contractor E	0.02	0.04	0.04	0.93	0.54	2	2
2014	Contractor A	(0.26)	0.14	0.23	1.69	1.00	2	1
	Contractor B	(0.46)	0.05	0.10	0.87	0.10	2	2
	Contractor C	0.20	0.05	0.08	0.84	0.74	2	2
	Contractor D	0.08	0.04	0.07	0.57	0.47	2	2
	Contractor E	(0.03)	0.00)	(0.00)	0.70	0.25	2	2
2013	Contractor A	0.37	0.42	1.30	2.77	3.64	2	1
	Contractor B	0.18	0.13	0.64	1.80	1.73	2	1
	Contractor C	0.06	0.05	0.07	0.87	0.62	2	2
	Contractor D	0.07	0.10	0.25	0.87	0.89	2	1
	Contractor E	0.00	0.02	0.02	1.07	0.49	2	2

Table 28 The calculation of Zmijewski model

Year	Company	X1	X2	X3	Z-Score	Code	Rank
2017	Contractor A	0.06	0.77	0.41	(0.19)	3	1
	Contractor B	0.04	0.50	0.26	(1.60)	3	1
	Contractor C	0.00	0.57	1.59	(1.07)	3	1
	Contractor D	0.02	0.49	1.08	(1.59)	3	1
	Contractor E	0.01	0.97	1.00	1.14	3	2
2016	Contractor A	0.09	0.70	0.40	(0.69)	3	1
	Contractor B	0.05	0.54	0.13	(1.48)	3	1
	Contractor C	0.03	0.58	1.54	(1.12)	3	1
	Contractor D	0.02	0.79	0.99	0.09	3	2
	Contractor E	0.02	0.93	1.04	0.90	3	2
2015	Contractor A	0.11	0.71	0.81	(0.72)	3	1
	Contractor B	0.04	0.60	0.15	(1.09)	3	1
	Contractor C	0.04	0.59	1.47	(1.10)	3	1
	Contractor D	0.03	0.54	1.07	(1.37)	3	1
	Contractor E	0.03	0.93	1.03-	0.86	3	2
2014	Contractor A	0.10	0.62	0.58	(1.19)	3	1
	Contractor B	0.04	0.68	0.14	(0.59)	3	1
	Contractor C	0.03	0.63	1.32	(0.85)	3	1
	Contractor D	0.03	0.55	1.15	(1.29)	3	1
	Contractor E	(0.00)	0.95	0.97	1.11	3	2
2013	Contractor A	0.27	0.32	2.13	(3.70)	3	1
	Contractor B	0.09	0.41	1.90	(2.36)	3	1
	Contractor C	0.04	0.73	1.08	(0.33)	3	1
	Contractor D	0.07	0.40	1.17	(2.32)	3	1
	Contractor E	0.01	0.91	1.00	0.85	3	2

The Differences of Potential Bankruptcy on the Model of Altman Z-Score, Springate, and Zmijewski at Grade one private building contractor.

The results of the potential bankruptcy analysis in Grade one building contractor's company that are listed in above by using 3 analytical models are then ranked based on the Z value criteria of each analysis model. Where the rank is categorized in 1 healthy, 2 gray area. The following is shown in (Table 28) the level of rank which is produced by each analysis model.

Table 29 The Rank of Potential Bankruptcy on the Model of Altman Z-Score, Springate, and Zmijewski at Grade one Private building contractor's company**.**

Year	**Company**	**Altman z-score model (1)**	**Springate model (2)**	**Zmijewski model (3)**
2017	Contractor A	2	2	1
	Contractor B	2	2	1
	Contractor C	2	2	1
	Contractor D	2	2	1
	Contractor E	2	2	2
2016	Contractor A	2	2	1
	Contractor B	2	2	1
	Contractor C	2	2	1
	Contractor D	2	2	2
	Contractor E	2	2	2
2015	Contractor A	2	1	1
	Contractor B	2	2	1
	Contractor C	2	2	1
	Contractor D	2	2	1
	Contractor E	2	2	2
2014	Contractor A	2	1	1
	Contractor B	2	2	1
	Contractor C	2	2	1
	Contractor D	2	2	1
	Contractor E	2	2	2
2013	Contractor A	1	1	1
	Contractor B	1	1	1
	Contractor C	2	2	1
	Contractor D	2	1	1
	Contractor E	2	2	2

The rank which is obtained is then analyzed using IBM SPSS 20 to test the difference of bankruptcy potential analysis results on Grade one private building contractor's company

that are listed here, by using Altman Z-Score, Springate, Zmijewski methods. (Table 28) below shows the results of kruskal-wallis analysis using SPSS.

Table 30 Kruskal-Wallis Test

Ranks

	Altman, Springate, Zmijewski	N	Mean Rank
Ratio	Altman	25	60.52
	Springate	25	35.76
	Zmijewski	25	17.72
	Total	75	

The table above is kruskal-wallis output with SPSS, mean rank value shows the rank of each method. The Altman method rank is higher than the average Springate method rank, the average Springate method rank is higher than the average Zmijewski method rank. This means that there is a difference between one method and another. To see the output of kruskal-wallis hypothetical answers, it can be seen in the following (Table 30).

Table 31 Test Statistics

Test Statistics[a,b]

	Ratio
Chi-Square	48.602
Df	2
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Altman, Springate, Zmijewski

In order to assess the relationship between two categorical variables, use a chi square (X^2) test. A chi square test is a widely-used non-parametric test, which examines if the frequency distribution of the observed data matches that of either the expected data or other known distribution. A typical question for this type of test is whether there is an association between two categorical variables [60]. The above table is the output of kruskal-wallis hypothesis answer with SPSS: P value is indicated by Asymp value. Sig of 0.00 were less than 0.05 which means there are differences in predicted results of Distress that are generated by

three prediction models. It shows that there are differences in the potential bankruptcy Grade one private building construction companies that are listed in by the method of Altman Z-Score, Springate, and Zmijewski.

- **The Most Accurate Model of Bankruptcy**

To test the accuracy of the bankruptcy prediction model of the three models, the calculations are shown in (Table 31) as follows

Table 32 Summary prediction bankruptcy Model Altman Z-Score, Springate Model, and Model Zmijewski

prediction	**Altman Z-Score**	**Springate**	**Zmijewski**
Highly distressed	23	20	6
Healthy company	2	5	19
Total	25	25	25
% accuracy	92%	80%	24%
% Error	8%	20%	76%

Of the total sample of 5 company's 5years Audit report which is used, Zmijewski model predicts that 76% of the company is healthy in other words, 24% of the companies during the studied period have a tendency towards high financial distress and it can be concluded that Zmijewski model has the incorrect number of 19 samples or 24% accuracy rate. Altman Z-Score model predicts that the 23 samples Audit report of companies has a great tendency toward financial distress and 2 companies of a single year Audit report have a tendency of low financial distress and it can be concluded that Altman Z-score model has the accuracy level is 92 % with error type 8%. Springate model predicts that 20 samples of the audit report of companies have a great tendency toward financial distressed. So that the accuracy rate is 80% with the error type 20%. Based on all calculation of prediction model that has been done, it can be concluded that Altman Z-score model shows high accuracy of 92% and then followed by Springate of 80%. This means that Altman Z-score model is an

appropriate prediction model to be used in predicting financial distress in Grade one private building construction companies in Ethiopia.

- **Conceptual Framework**

This conceptual framework model represents the relationship between financial distress and other financial ratio tools with the financial performance indicators (ROA and ROE). According to Table 45 in appendix 2 the researcher would consider there are six independent variables (Gross profit, Net profit, Altman's Z-Score, Debt to equity ratio, Current ratio and Average age of Account receivables). This may affect the dependent variable of financial performance of the selected Grade one private building contractor.
But, in order to avoid multi collinearity problems each variable should not depend each other. By the rule of thumb many statisticians were agreed on variance inflation factor above (VIF) > 5 means there are multi collinearity problems between the independent variables.

Accordingly, Table 46 in the appendix 2 describe that Current ratio, NPMR and average age of Account receivable are independent variable which have either multiple collinearity problem or insignificant contributory for the individual T test. In addition to this, independent variables (Quick ratio, Current Asset to Total asset ratio, working capital turnover ratio, Net profit to working capital Ratio, Degree of fixed Asset newness, Leverage ratio, Average age of inventory Average age of account payable and CCC has no significant contribution either for entire regression model or for the individual T test.

Independent Variable		**Financial Performance** (Dependent Variables)
• Gross profit(X1) • Debt to Equity ratio(X2) • Financial Distress (Altman's Z score) (X3)		• ROA • ROE

Figure 4 Conceptual Framework

- **Hypothesis testing two**

Lastly, the researcher has constructed the following hypothesis for the current study.

H0 – There is no any impact of the financial distress on the Firm's financial Performance.

H1-There is an impact of the financial distress on the Firm's financial Performance.

Explanatory Variables: Financial Distress (Altman's Z score), Gross Profit, and Debt to Equity ratio are explanatory variables.

Table 33 Descriptive statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Altman	25	.75	6.42	1.7567	1.11456
ROE	25	-.02	.66	.2440	.19151
ROA	25	.00	.42	.0760	.08307
Total debt to equity ratio	25	.48	28.13	4.5928	6.71952
GPMR	25	.06	.23	.1268	.04394
Valid N (list wise)	25				

N=25, Independent variables: Altman Z Score, GPMR, and Total debt to equity ratio. Dependent variable: ROA and ROE.

The above Table shows the descriptive statistics of three independent variables and two dependent variables. The Altman Z Score/distress variable has a maximum value of 6.42 the average change is 176% during five years and deviation rate is 111%.

The GPMR/profitability variable has a maximum value of 0.23 the average change is 12.7% during five years and deviation rate is 4.4%. And Total debt to equity ratio variable has a maximum value of 28.1 the average change is 459.3% during five years and deviation rate is 671.9%. The ROE/ Return on Equity variable has a maximum value of 0.66, the average change is 24.4% during five years and deviation rate is 19.2%. The ROA/ Return on Asset variable has a maximum value of 0.42, the average change is 7.6% during five years and deviation rate is 8.3%.

Table 34 Correlation Analysis

Correlations

		Altman	GPMR	ROE	ROA	Total debt to equity ratio
Altman	Pearson Correlation	1	.692**	.397*	.951**	-.359
	Sig. (2-tailed)		.000	.050	.000	.078
	N	25	25	25	25	25
GPMR	Pearson Correlation	.692**	1	.449*	.805**	-.504*
	Sig. (2-tailed)	.000		.024	.000	.010
	N	25	25	25	25	25
ROE	Pearson Correlation	.397*	.449*	1	.544**	.368
	Sig. (2-tailed)	.050	.024		.005	.070
	N	25	25	25	25	25
ROA	Pearson Correlation	.951**	.805**	.544**	1	-.334
	Sig. (2-tailed)	.000	.000	.005		.103
	N	25	25	25	25	25
Total debt to equity ratio	Pearson Correlation	-.359	-.504*	.368	-.334	1
	Sig. (2-tailed)	.078	.010	.070	.103	
	N	25	25	25	25	25

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The above Table shows that the there is a positive relationship between Altman Z score and ROA. The value of correlation is 0.951 and the value of p using a t tailed approach is 0.00 less than 0.01 so the relationship is significant. Whereas, there is a positive relationship between Altman Z score and ROE. The value of correlation is 0.397 and the value of p using a t tailed approach is 0.050 greater than 0.01 so the relationship is insignificant but significant at 0.05 level. There exist a significant positive association between GPMR and ROA. The value of Pearson correlation is 0.805 and the value of correlation using 2 tailed approaches is 0.00 whereas, there exist a significant positive association between GPMR and ROE. The value of Pearson correlation is 0.449 and the value of correlation using 2 tailed approaches is 0.024.

The Table depicts a Negative association between Total Debt to Equity ratio and ROA. The correlation is -0.334 and the value using a 2 tailed approach is 0.103 showing an

insignificant relationship between Total Debt to Equity and ROA. Moreover, there exists an insignificant positive association between Total Debt to Equity and ROE. The value of Pearson correlation is 0.368 and the value of correlation using 2 tailed approaches is 0.070.

- **Multiple regression analysis**

The main purpose of this analysis is to know to what extent is the Return on Asset and Return on Equity influenced by the four independent variables and what are those measures that should be taken based on the results obtained with using SPSS - Statistical Package for Social Sciences [60]. Using the SPSS program kit in the case of multiple regressions we have come to the following results:

MODEL 1

Table 35 Regression coefficients

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.109	.015		-7.131	.000		
	Altman	.057	.005	.759	11.767	.000	.522	1.917
	GPMR	.630	.132	.333	4.784	.000	.447	2.238
	Total debt to equity ratio	.001	.001	.107	1.976	.061	.746	1.341

a. Dependent Variable: ROA

A new regression equation results from the above presented:

$$y = 0.057x_1 + 0.001x_2 + 0.63x_3 - .109$$
$$where:$$
$$x_1 = Altman\ Z - score$$
$$x_2 = Total\ Debt\ to\ Equity\ Ratio$$
$$x_3 = GPMR;$$

Table 36 Estimation of standard error deviation Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.977[a]	.954	.948	.01895	.954	146.668	3	21	.000

a. Predictors: (Constant), Total debt to equity ratio, Altman, GPMR

In this case the coefficient of determination R^2 is 95.40% (Table 36).

The analysis of variance for multiple regression will be made starting from the following results:

Table 37 Variation analysis – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.158	3	.053	146.668	.000[b]
	Residual	.008	21	.000		
	Total	.166	24			

a. Dependent Variable: ROA

b. Predictors: (Constant), Altman, Total debt to equity ratio, GPMR

In order to test the validity of the multiple regression model a global test must be used, which researches whether all the independent variables have regression coefficients equal to zero, or in other words if the explained variance is not due to a random. The regression coefficients of the sample have as correspondents the following regression coefficients β1, β2, β3 [61]. The alternative and null hypotheses are formulated as follows:

H0= β1= β2 =β3= 0

H1= not all β coefficient are equal to 0

In order to test the null hypothesis, we turn to F test that requires an analysis of the variance identified in the ANOVA table above. From the data in the previous table (Table 37) it can be ascertained that the value of the calculated F is 146.668 for the variance generated by

the regression. The critical value of F, at the significance level of 0.05 with 3 degrees of freedom in the numerator and 21 at denominator is 3.072. By comparing the values of F it results that it is compulsory to accept the alternative hypothesis, meaning that not all regression coefficients are equal to zero. This means that a significant influence of the multiple regression model occurs over the dependent variables. The issue that arises now is to know which regression coefficients may be zero and which may not. It is imposed therefore to achieve an individual evaluation of the regression coefficients. It is compulsory to make an assessment the realization of a statistical test for each under the conditions where the null hypothesis states that each coefficient β is equal to zero and the alternative hypothesis test that are different from zero.

The test used is the Student test, respectively t with n-(k+1) degrees of freedom.
For each of the three variables, from the SPSS results, we get the calculated t values (Table 35). These are: 11.767 for Altman Z-score, 1.976 for Total Debt to Equity ratio, 4.784 for Gross profit margin Ratio. In order to define the decision rule concerning the null hypothesis, the calculated t values will be compared with the critical value of t at a significance level of 0.05 in the case of a two-tailed test, with 25- (3+1), meaning with 21 degrees of freedom. This value is ±2.080. The results are:

- In the case of Altman Z-score, calculated t (11.767) is higher than the critical t (2.080). The level of significance indicated by the test 0.000 is Lower than the chosen level of significance of 0.05. Therefore, the null hypothesis is rejected and it is accepted that β1 is different from zero.
- Looking at the Gross Profit Margin ratio, we can observe that calculated t (4.784) is higher that critical t (2.080). The null hypothesis is rejected and it is accepted that β2 is different from zero.

While observing the Total debt to equity ratio, we can see that the calculated t (1.976) is lower than the critical t (2.080). This means that the Null Hypothesis accepted and β3 is Zero. Therefore, it is considered that one of the variables: Total debt to Equity ratio is not significant predictors for the dependent variable: Return on Asset (ROA). In this case the regression model will no longer contain these variables. If we make the determinations for the new regression model, the results will be:

Table 38 new Regression coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.090	.013		-7.084	.000		
	GPMR	.531	.130	.281	4.098	.000	.522	1.917
	Altman	.056	.005	.757	11.030	.000	.522	1.917

a. Dependent Variable: ROA

Table 39 Estimation of standard error deviation Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.973[a]	.946	.941	.02017	.946	192.624	2	22	.000

a. Predictors: (Constant), GPMR, Altman

In this case the coefficient of determination R^2 is 94.60% (Table 39).

Table 40 Variation analysis – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.157	2	.078	192.624	.000[b]
	Residual	.009	22	.000		
	Total	.166	24			

a. Dependent Variable: ROA

b. Predictors: (Constant), Altman, GPMR

In order to test the validity of multiple regression model a global test must be used, which researches whether all the independent variables have regression coefficients equal with zero, or in other words if the explained variance is not due to a random.

The regression coefficients of the sample have as correspondents the following regression coefficients β1, β2 .(61) The alternative and null hypotheses are formulated as follows:

H0= $\beta 1 = \beta 2 = 0$

H1= not all β coefficient are equal to 0

In order to test the null hypothesis, we turn to F test that requires an analysis of the variance identified in the ANOVA table above. From the data in the previous table (Table 40) it can be ascertained that the value of the calculated F is 192.624 for the variance generated by the regression. The critical value of F, at the significance level of 0.05 with 2 degrees of freedom at numerator and 22 at denominator is 3.443. By comparing the values of F it results that it is compulsory to accept the alternative hypothesis, meaning that not all regression coefficients are equal to zero. This means that a significant influence of multiple regression model occurs over the dependent variables. The issue that arises now is to know which regression coefficients may be zero and which may not. It is imposed therefore to achieve an individual evaluation of the regression coefficients. It is compulsory to make an assessment the realization of a statistical test for each under the conditions where the null hypothesis state different from zero.[61)

The test used is the Student test, respectively t with n-(k+1) degrees of freedom.

For each of the six variables, from the SPSS results, we get the calculated t values (Table 36). These are: 11.03 for Altman Z-score, 4.098 for Gross profit margin Ratio. In order to define the decision rule concerning the null hypothesis, the calculated t values will be compared with the critical value of t at a significance level of 0.05 in the case of a two-tailed test, with 25- (2+1), meaning with 22 degrees of freedom. This value is ±2.074. The results are:

- In the case of Altman Z-score, calculated t (11.03) is greater than critical t (2.074). The level of significance indicated by the test 0.00 is smaller than the chosen level of significance of 0.05. Therefore, the null hypothesis is rejected and β1 is different from zero.
- Looking at the Gross Profit Margin ratio, we can observe that calculated t (4.098) is higher that critical t (2.074). The null hypothesis is rejected and it is accepted that β4 is different from zero

Therefore, it is considered that two of the variables: Altman Z-score, GPMR, are significant predictors for the dependent variable: Return on Asset (ROA). In this case the regression

model will contain these two variables. If we make the determinations for the new regression model, the results will be:

$$y = 0.056x_1 + 0.531x_2 - 0.090$$
$$where:$$
$$x_1 = Altman\ Z - Score$$
$$x_2 = GPMR$$

MODEL 2

Table 41 Regression coefficients

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.316	.092		-3.442	.002		
	GPMR	3.162	.790	.726	4.004	.001	.447	2.238
	Total debt to equity ratio	.023	.004	.799	5.698	.000	.746	1.341
	Altman	.031	.029	.182	1.084	.291	.522	1.917

a. Dependent Variable: ROE

Based on the nonstandard coefficients we obtain the regression equation:

$$y = -0.316 + 3.162x_1 + 0.023x_2 + 0.031x_3$$
$$where:$$
$$x_1 = GPMR$$
$$x_2 = Total\ Debt\ to\ Equity\ Ratio$$
$$x_3 = Altman\ Z - Score$$

Table 42 Estimation of standard deviation - Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.832[a]	.692	.648	.11364	.692	15.719	3	21	.000

a. Predictors: (Constant), Altman, Total debt to equity ratio, GPMR

The coefficient of determination R^2 indicating the percent of how much of the total variance is explained by the independent variable is 69.20% (Table 42). The analysis of variance for multiple regressions will be made starting from the following results.

Table 43 Variation analysis – ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.609	3	.203	15.719	.000[b]
	Residual	.271	21	.013		
	Total	.880	24			

a. Dependent Variable: ROE

b. Predictors: (Constant), Altman, Total debt to equity ratio, GPMR

In order to test the validity of multiple regression model a global test must be used, which researches whether all the independent variables have regression coefficients equal with zero, or in other words if the explained variance is not due to a random.

The regression coefficients of the sample have as correspondents the following regression coefficients β1, β2, β3 (61). The alternative and null hypotheses are formulated as follows:

H0= β1= β2 =β3= 0

H1= not all β coefficient are equal to 0

In order to test the null hypothesis, we turn to F test that requires an analysis of the variance identified in the ANOVA table above. From the data in the previous table (Table 43) it can be ascertained that the value of the calculated F is 15.719 for the variance generated by the regression. The critical value of F, at the significance level of 0.05 with 3 degrees of freedom at numerator and 21 at denominator is 3.072. By comparing the values of F it results that it is compulsory to accept the alternative hypothesis, meaning that not all regression coefficients are equal to zero. This means that a significant influence of multiple regression models occurs over the dependent variables. The issue that arises now is to know which regression coefficients may be zero and which may not. It is imposed therefore to achieve an individual evaluation of the regression coefficients. It is compulsory to make

an assessment the realization of a statistical test for each under the conditions where the null hypothesis state different from zero.(61)

The test used is the Student test, respectively t with n-(k+1) degrees of freedom.

For each of the three variables, from the SPSS results, we get the calculated t values (Table 39). These are: 1.084for Altman Z-score, 5.698 for Total Debt to Equity ratio, 4.004 for Gross profit margin Ratio. In order to define the decision rule concerning the null hypothesis, the calculated t values will be compared with the critical value of t at a significance level of 0.05 in the case of a two-tailed test, with 25- (3+1), meaning with 21 degrees of freedom. This value is ±2.080. The results are:

- In the case of Altman Z-score, calculated t (1.084) is smaller than critical t (2.080). The level of significance indicated by the test 0.291 is greater than the chosen level of significance of 0.05. Therefore, the null hypothesis is accepted and β1 is zero.
- Looking at the Total debt to equity, we can observe that calculated t (5.698) is higher that critical t (2.080). The null hypothesis is rejected and it is accepted that β2 is different from zero.
- Looking at the Gross Profit Margin ratio, we can observe that calculated t (4.004) is higher that critical t (2.080). The null hypothesis is rejected and it is accepted that β4 is different from zero

Therefore, it is considered that one of the variables: Altman Z- score, is not significant predictors for the dependent variable: Return on Equity (ROE). In this case the regression model will no longer contain these variables.

If we make the determinations for the new regression model, the results will be:

Table 44 Estimation of standard error deviation Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.821[a]	.675	.645	.11409	.675	22.811	2	22	.000

a. Predictors: (Constant), GPMR, Total debt to equity ratio

b. Dependent Variable: ROE

In this case the coefficient of determination R^2 is 67.50% (Table 44).

Table 45 Regression coefficients

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.330	.091		-3.609	.002
	Total debt to equity ratio	.023	.004	.796	5.658	.000
	GPMR	3.704	.614	.850	6.037	.000

a. Dependent Variable: ROE

A New regression equation results from the above presented:

In order to test the validity of multiple regression model a global test must be used, which researches whether all the independent variables have regression coefficients equal with zero, or in other words if the explained variance is not due to a random.

The regression coefficients of the sample have as correspondents the following regression coefficients β1, β2, β3 (61). The alternative and null hypotheses are formulated as follows:

H0= β1= β2 =β3= 0

H1= not all β coefficient are equal to 0

In order to test the null hypothesis, we turn to F test that requires an analysis of the variance identified in the ANOVA table above. From the data in the previous table (Table 45) it can be ascertained that the value of the calculated F is 22.811 for the variance generated by the regression. The critical value of F, at the significance level of 0.05 with 2 degrees of freedom at numerator and 22 at denominator is 3.443. By comparing the values of F it results that it is compulsory to accept the alternative hypothesis, meaning that not all regression coefficients are equal to zero. This means that a significant influence of multiple regression models occurs over the dependent variables. The issue that arises now is to know which regression coefficients may be zero and which may not. It is imposed therefore to achieve an individual evaluation of the regression coefficients. It is compulsory to make

an assessment the realization of a statistical test for each under the conditions where the null hypothesis state different from zero (61).

The test used is the Student test, respectively t with n-(k+1) degrees of freedom.

For each of the three variables, from the SPSS results, we get the calculated t values (Table 39). These are: 5.658 for Total Debt to Equity ratio, 6.037 for Gross profit margin Ratio. In order to define the decision rule concerning the null hypothesis, the calculated t values will be compared with the critical value of t at a significance level of 0.05 in the case of a two-tailed test, with 25- (3+1), meaning with 21 degrees of freedom. This value is ±2.074. The results are:

- Looking at the Total debt to equity, we can observe that calculated t (5.658) is higher that critical t (2.074). The null hypothesis is rejected and it is accepted that β2 is different from zero.
- Looking at the Gross Profit Margin ratio, we can observe that calculated t (6.037) is higher that critical t (2.074). The null hypothesis is rejected and it is accepted that β4 is different from zero.

Therefore, it is considered that two of the variables: Total Debt to Equity ratio and GPMR, are significant predictors for the dependent variable: Return on Equity (ROE). In this case the regression model will contain these two variables. If we make the determinations for the new regression model, the results will be:

$$y = 0.023x_1 + 3.704x_2 - .33$$

$$where:$$

$$x_1 = Total\ Debt\ to\ Equity\ Ratio$$

$$x_2 = GPMR$$

5. CONCLUSION AND RECOMMENDATION

This chapter presents conclusions that conform to the research objectives stated in the introduction part. Recommendations will also be forwarded to improve the performance of the Grade 1 building contractors for the successful achievement of domestic the construction industry, to point out amendments if there is any to come out from the research and highlighting topics for future study.

5.1 Introduction

Ultimately, to apply the analysis of the research, the research questions must be answered. In this research, financial ratio analysis has been conducted regarding profitability ratios, liquidity ratios operational efficiency ratio, and Solvency ratios. Financial performance and distress prediction system consisting of the foregoing processes is in place has revealed.

And there is no formal financial performance and distress prediction system consisting of the foregoing processes is in place to manage probability of distress in grade one building contractors. However, working capital (Current Asset –Current liability) from Balance sheet and Net Profit/Loss from Income statement used as a tool to evaluate the financial performance and prediction of distress. But only a group of financial performance evaluation ratios (profitability ratios, liquidity ratios, operational ratios, and solvency ratios) are explicitly elucidates the performance of a firm.

- The traditional practice to deal with Evaluation of Financial performance and distress prediction system, companies try to reduce their Debt-to-Worth Ratio, reducing scope of the work or allocation of additional budget that may be from retained earnings, monitoring the works by Internal Auditor jointly with project manager, Acquisition of Performance security, giving timely solution upon occurrence, as much as practicable, Quarterly, Semiannually and Annually evaluate the Financial position of the firm. An application of EVM (Earned value management) for each project.
- The main impediments to establish the formal Financial performance and distress prediction system are more engagement in routine works, Lack of Organizational structure for Financial performance and bankruptcy prediction, Lack of Financial performance and bankruptcy prediction experts, Lack of know-how in Financial performance and distress prediction, and Lack of initiatives.so, either of these challenges like Shortage of cash to

fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets are one of the big challenges of the Grade one private building construction industry that should be fought in a holistic manner instead of starting alternative business. The influence of this business would affect the construction project Cash Flow, change owner focus form professional thinker to profit pursuer.

- Working capital management has always been a concern for many businesses to maintain healthy liquidity and activity ratios. It is desirable for every company to collect their money early and convert their inventory into a final product efficiently. Furthermore, payment to suppliers may be planned in a way that the reputation of the company is not affected in the market. Furthermore, the soundness of the company and the differences in prediction results between 3 models of Altman Z-Score Model, Springate Model, and Zmijewski Model at Grade one private construction companies are analyzed. The analytical method is the analysis of kruskal-wallis difference test and the accuracy with accuracy level and error type. Based on data analysis by using IBM SPSS Statistics 20, it can be concluded that there are differences in potential bankruptcy of the three predictive models. This can be proved through the Kruskal-Wallis test which has been done with a significance value of 0.00. Based on the above study results, it is advisable to use Altman Z-Score, a Bankruptcy model for all construction companies in Ethiopia.
- Lastly, this study investigates the impact of financial distress on financial performances with using 5 listed Grade one private construction companies with a data set covering 05 years' period from 2013-2017. Based on the outcomes of the descriptive statistics, Correlation coefficient analysis, ANOVA F test, Multiple regression analysis and T test were made the following conclusions. The correlation analysis indicates that, financial distress measurement which is Altman Z score, GPMR, has a positive relationship towards the both of ROA and ROE while the Total Debt to Equity ratio has a negative relationship with ROA and has a positive relationship with ROE. Simply put, financial distress and other financial analysis tools (both of Altman Z score, GPMR) positively correlates with the financial performance (ROA) The normal regression results shows that, financial distress has a significant impact on the Firm's financial performance since the overall significance of the model is there. And financial distress prediction model with modified Altman-Z Score results show that it is robust in explaining the variations in dependent

variable i.e. Return on Asset (ROA). Conversely, the majority of the firm's profit has been generated by Debt Financial distress has not indicated its significant impact on ROE.

5.2 Recommendations for next research

The findings of the research show the poor method of Evaluation of financial performance and no distress prediction method is adopted. The author of this thesis strongly recommends the Ethiopia contractors should be financially evaluated with respect to liquidity, profitability, operational efficiency and capital structure during bid evaluation rather than simply looking their annual turnover and working capital. On the other hand, the traditional method of evaluation of financial performance may not reflect the actual construction situation because it can only have expressed from working capital and profitability point of view. I.e. The assessment should reflect every aspect of financial performance and distress level in order to know the current position of the construction company and to reduce unnecessary risk during the construction stage. In addition to this,

1) This research is only limited on performance evaluation and distress prediction by using three known model, for five Grade One Building Contractors due to Lack of compiled Audit report. So, Mistry of Urban Development, Housing and Construction should disclose Every Contractor Audited Report for transparency, to create a new prediction model for further researches.

2) The number of samples is five and the limited period only from 2013-2017. To be more representative, it is recommended that in the next research, the number of samples and periods should be added.

3) Further research can be made for Fraud detection using other prediction models available.

4) This research is only made for evaluation of financial performance and distress of the entire company level. And It is recommended that in the next research, to evaluate financial performance and distress with respect to project level.

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APPENDIX 1: INTERVIEW SCHEDULE

Introduction

This interview schedule is prepared to obtain information from key respondent with semi structured questions. The information is required for the academic research entitled ***"****Evaluation of Financial Performance and Distress of Selected Grade One Building Contractors"***.** which is being conducted as partial fulfillment of MSc in construction technology and management. The main objective of the research is to assess the financial performance and distress in the case of selected grade one private building contractors. From the contractor's perspective through financial statement analysis and bankruptcy prediction model of five year audited financial statements, and make recommendations based on the findings.

The schedule consists of two sections with a total of 13 questions. Section 1 contains general questions about the informant. Section 2 assesses the current practices on evaluation of Financial performance and bankruptcy prediction.

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.

Thank you,

Eyobed Miriye
Post graduate student, Construction technology and management
A.A University, Technology Faculty, Civil Engineering Department
Tel: 0911 25 00 80
Addis Ababa

1. General Profile of the Respondent

1.1 Position: ……

1.2 Organization: ……

1.3 Address: ……

1.4 Educational status?

☐ BSc ☐ MSc

☐ Others; please specify…….

1.5 What is your field of specialization?

☐ Civil engineering ☐ Transportation engineering

☐ Highway engineering ☐Geotechnical engineering

☐ Others, please specify……

1.6 How long have you worked in the Building sector?

☐ 0 – 5 years ☐ 6 – 10 years ☐ 11 – 15 years ☐ More than 15 years

2. Evaluation of Financial performance and Distress Prediction.

The literature review indicated that Financial performance evaluation and distress is a broad concept that consists of several situations in which a company faces financial difficulties. Financial statement analysis is the process of interpretation of the company's risk and probability by examining their financial information. Furthermore, financial statement analysis is a quantifying process on identifying the potential, past and present performances of a company. Financial statement analysis technically outlines the process of accounting and categorizes the account titles and the amount of money as well. Also, it helps to understand the financial decision that already made and how it does affect the profit or income.

It is also the study of accounting ratios such as Profitability ratios, Liquidity ratios, Capital structure ratios, and Working capital ratios between different items that are included in the balance sheet and Income statement. Moreover, Common terms to describe the situation are bankruptcy, failure, inability to pay off debts, and defaults/companies that violate regulations with creditors and may be subject to punishment. Financial distress is a condition where company is experiencing financial difficulties and is threatened with bankruptcy. The condition of financial distress should be avoided by the company. In addition, bankruptcy is usually interpreted as a failure of the company in running the company's operations to generate profits. Various analyzes which are conducted are expected to predict the survival of a company. For that we need a special method that can provide assessment and predict the company in the present and the future. There are various bankruptcy analysis tools that have been found, but the widely used bankruptcy analysis tools are Altman Z-Score Model, Springate Model, and Zmijewski Model.

The following questions are, intended to assess the current practice of evaluation of Financial performance and distress of the Grade one private building construction firms.

2.1 Do you have a formal Financial performance and distress prediction system consisting of the foregoing processes?

☐ Yes ☐ No

2.2 If you have a formal Financial Performance Evaluation system, what methods/tools how could you evaluate?

a) Profitability of the company

…….

…….

b) Liquidity of your company

…….

…….

c) Efficiency of your company

…….

…….

d) Solvency of your company

…….

…….

2.3 If you have a formal **distress prediction system**, what methods/tools/models you apply?

a) Altman Z-Score Model.

…….

b) Springate Model

…….

c) Zmijewski Model

…….

d) or Others

…….

2.4 If you conduct a formal **Financial performance and distress** prediction system,

a) which **types of ratio do** you concentrate on?

……..……..

b) What **types of distress prediction model do** you concentrate on? ……

C) How do you **manage** the traditional practice of Financial performance and distress prediction system?

1.0	Reduce their Debt-to-Worth Ratio
2.0	Monitoring the works by Internal Auditor jointly with project manager.
3.0	Acquisition of Performance security.
4.0	Giving timely solution upon occurrence, as much as practicable.
5.0	Quarterly, semiannually and annually evaluate the financial position of the firm.
6.0	Application of EVM (Earned value management) for each project.

2.5 What are the main impediments to establish the formal Financial performance and distress prediction system?

1.0	More engagement in routine works.
2.0	Lack of Organizational structure for financial performance and bankruptcy prediction.
3.0	Lack of Financial performance and bankruptcy prediction experts.
4.0	Lack of know-how in Financial performance and distress prediction.
5.0	• Lack of initiatives.

2.6 How frequent the grade one building construction company that you are working in encountered, Shortage of cash to fund their construction projects?

Never Rarely Often Always

a) what are the main reason for Shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?.....

b) What are the **main impediments** to control Shortage of cash to fund their construction projects enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?

……

2.7 How frequent the grade one building construction company that you are working in encountered, a loss from projects?

Never Rarely Often Always

c) what are the main reason for Shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?.....

d) What are the **main impediments** to control Shortage of cash to fund their construction projects enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?

……

2.8 How frequent the grade one building construction company that you are working in encountered, High debt burden?

Never Rarely Often Always

e) what are the main reason for Shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?.....

f) What are the **main impediments** to control Shortage of cash to fund their construction projects enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?

……

2.9 How frequent the grade one building construction company that you are working in encountered firms inefficiently manage their assets?

Never Rarely Often Always

g) what are the main reason for Shortage of cash to fund their construction projects, enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?.....

h) What are the **main impediments** to control Shortage of cash to fund their construction projects enjoys a small profit or a loss from projects, High debt burden, or Firms inefficiently manage their assets?

……

Thank you!

APPENDIX 2: REGRESSION RESULTS

Table 46 Pearson correlation

		ROE	ROA	Total debt to equity ratio	Altman	GPMR	NPMR	current ratio	Average age of account receivable
ROE	Pearson Correlation	1	.544**	.368	.397*	.449*	.287	.025	-.264
	Sig. (2-tailed)		.005	.070	.050	.024	.164	.907	.202
	N	25	25	25	25	25	25	25	25
ROA	Pearson Correlation	.544**	1	-.334	.951**	.805**	.778**	.301	-.455*
	Sig. (2-tailed)	.005		.103	.000	.000	.000	.144	.022
	N	25	25	25	25	25	25	25	25
Total debt to equity ratio	Pearson Correlation	.368	-.334	1	-.359	-.504*	-.628**	-.021	.292
	Sig. (2-tailed)	.070	.103		.078	.010	.001	.921	.157
	N	25	25	25	25	25	25	25	25
Altman	Pearson Correlation	.397*	.951**	-.359	1	.692**	.716**	.454*	-.404*
	Sig. (2-tailed)	.050	.000	.078		.000	.000	.023	.045
	N	25	25	25	25	25	25	25	25
GPMR	Pearson Correlation	.449*	.805**	-.504*	.692**	1	.824**	.177	-.352
	Sig. (2-tailed)	.024	.000	.010	.000		.000	.398	.085
	N	25	25	25	25	25	25	25	25
NPMR	Pearson Correlation	.287	.778**	-.628**	.716**	.824**	1	.083	-.440*
	Sig.(2-tailed)	.164	.000	.001	.000	.000		.692	.028
	N	25	25	25	25	25	25	25	25
current ratio	Pearson Correlation	.025	.301	-.021	.454*	.177	.083	1	.506**
	Sig.(2-tailed)	.907	.144	.921	.023	.398	.692		.010
	N	25	25	25	25	25	25	25	25
Average age of account receivable	Pearson Correlation	-.264	-.455*	.292	-.404*	-.352	-.440*	.506**	1
	Sig. (2-tailed)	.202	.022	.157	.045	.085	.028	.010	
	N	25	25	25	25	25	25	25	25

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 47 P value for dependent variable of ROA

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.111	.016		-6.989	.000
	Total debt to equity ratio	.002	.001	.162	3.036	.007
	GPMR	.506	.142	.268	3.558	.002
	Altman Z score	.058	.007	.777	8.378	.000
	NPMR	.407	.221	.162	1.845	.082
	Average age of account receivable	1.293E-005	.000	.028	0.354	.728
	Current ratio	-.019	.013	-.119	-1.416	.174

a. Dependent Variable: ROA

Table 48 P value for dependent variable of ROE

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.266	.106		-2.507	.022
	GPMR	2.581	.953	.592	2.709	.014
	Altman Z score	.041	.047	.235	.871	.395
	NPMR	1.006	1.479	.173	.680	.505
	Current ratio	-.053	.088	-.147	-.599	.557
	Total debt to equity ratio	.025	.004	.874	5.634	.000
	Average age of account receivable	-7.160E-005	.000	-.068	-.292	.773

a. Dependent Variable: ROE